

Czestochowa University of Technology
Faculty of Management

Series:
CITPM
No. 2

PROCEEDINGS
OF THE 2nd INTERNATIONAL CONFERENCE
CONTEMPORARY ISSUES IN THEORY
AND PRACTICE OF MANAGEMENT
CITPM 2018

Czestochowa 2018

Organizer

Czestochowa University of Technology
Faculty of Management
Poland



In partnership with:

Alexander Dubček University of Trenčín
Faculty of Social and Economic Relations
Slovak Republic



VŠB -Technical University of Ostrava
Faculty of Economics
Czech Republic



SPONSOR

Faculty of Management, Czestochowa University of Technology, Poland

PROCEEDINGS OF THE 2nd INTERNATIONAL CONFERENCE CONTEMPORARY ISSUES IN THEORY AND PRACTICE OF MANAGEMENT CITPM 2018

Edited by:

Małgorzata Okręglicka
Anna Korombel
Anna Lemańska-Majdzik

Publication has not been a subject of language check.
Papers are sorted by authors's names in alphabetical order.
All papers passed a double-blind review process.

ISBN 978-83-65951-12-0

ISBN 978-83-65951-18-2

ISSN 2544-8579

ISSN 2544-8587

© Copyright by Wydawnictwo Wydziału Zarządzania
Politechniki Częstochowskiej
Częstochowa 2018



Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej
42-200 Częstochowa, al. Armii Krajowej 36 B
Phone +48 34 325 04 80, distribution +48 34 325 08 67
e-mail: wydawnictwo@wz.pcz.pl
Edition I; 150 copies

Honorary Chair

Prof. dr hab. Maria Nowicka-Skowron
Czestochowa University of Technology, Poland

Chair of the Scientific Committee

Assoc. Prof. Anna Korombel, Ph.D.
Czestochowa University of Technology, Poland

Scientific Committee

Prof. univ. dr. Maria-Viorica Bedrule-Grigoruta, “Alexandru Ioan – Cuza” University of Iasi, Romania
Prof. WSiFZ dr hab. Agnieszka Bitkowska, University of Finance and Management in Warsaw, Poland
Prof. Juan Sapena Bolufer, Ph.D., Catholic University of Valencia “San Vicente Martir”, Spain
Assoc. Prof. Miloslava Chovancová, Tomas Bata University in Zlín, Czechia
Prof. dr. sc. Marijan Cingula, University of Zagreb, Croatia
Assoc. Prof. Dr. Anna Dunay, Szent István University, Hungary
Assoc. Prof. Janusz Grabara, Ph.D., Czestochowa University of Technology, Poland
Prof. Miguel Ángel Latorre Guillem, Ph.D., Catholic University of Valencia “San Vicente Martir”, Spain
Prof. Adnan ul Haque, Ph.D., University of Wales Trinity Saint David, UK
Ing. Katarina Haviernikova, Ph.D., Alexander Dubček University of Trenčín, Slovakia
Prof. univ. dr. Mihaela Herciu, “Lucian Blaga” University of Sibiu, Romania
Assoc. Prof. Ulrike Hugl, University of Innsbruck, Austria
Prof. Dr. Csaba Bálint Illés, Szent István University, Hungary
Assoc. Prof. Dorota Jelonek, Ph.D., Czestochowa University of Technology, Poland
Prof. dr hab. Olena Kolomytseva, Cherkasy State Technological University, Ukraine
Assoc. Prof. Eng. Sebastian Kot, Ph.D., Czestochowa University of Technology, Poland
Prof. Zoran Krupka, Ph.D., University of Zagreb, Croatia
Prof. Marcela Rebeca Contreras Loera, Universidad de Occidente, Sinaloa, Mexico
Prof. Ing. Martin Macháček, Ph.D., VŠB - Technical University of Ostrava, Czechia
Asst. Prof. Kaushik Mandal, National Institute of Technology, Durgapur, India
Prof. Daniel F. Meyer, Ph.D., North-West University, South Africa
Ing. Bc. Monika Mynarzová, Ph.D., VŠB - Technical University of Ostrava, Czech Republic
Prof. Ing. Dr. Valentinas Navickas, Kaunas University of Technology, Lithuania
Prof. univ. dr Claudia Ogorean, “Lucian Blaga” University of Sibiu, Romania
Assoc. Prof. Eng. Iwona Otolá, Ph.D., Czestochowa University of Technology, Poland
Prof. dr hab. Arnold Pabian, Czestochowa University of Technology, Poland
Doc. Ing. Pavlína Pellešová, Ph.D., Silesian University in Opava, Czechia
Assoc. Prof. Rita Remeikiene, Mykolas Romeris University, Lithuania
Prof. Claire Seaman, Queen Margaret University, Edinburgh, UK
Prof. Eliane Simões, Centro Paula Souza in São Paulo, Brazil
Assoc. Prof. Dejan Spasić, University of Niš, Serbia
Prof. Jhalukpreya Surujlal, Ph.D., North-West University, South Africa
Prof. dr hab. Ludmiła Szulgina, National Technical University of Ukraine “KPI”, Ukraine
Prof. Josu Takala, University of Vaasa, Finland
Prof. Uwuigbe Uwalomwa, Covenant University, Nigeria
Doc. Sergej Vojtovič, DrSc., Alexander Dubček University of Trenčín, Slovakia
Prof. Dianne Welsh, The University of North Carolina at Greensboro, USA
Prof. Wei-Bin Zhang, Ritsumeikan Asia Pacific University, Japan
Prof. Dr. Zdeněk Zmeškal, VŠB - Technical University of Ostrava, Czechia
Assoc. Prof. Bogusława Ziółkowska, Ph.D., Czestochowa University of Technology, Poland

Organizing Committee of the Conference

Okręglika Małgorzata, Ph.D. – Chairman

Mateusz Bajor, M.Sc.

Eng. Iwona Gorzeń-Mitka, Ph.D.

Eng. Piotr Kuraś, Ph.D.

Eng. Anna Lemańska-Majdzik, Ph.D.

Olga Ławińska, Ph.D.

Eng. Monika Sipa, Ph.D.

Marcin Sitek, Ph.D.

Eng. Andrzej Skibiński, Ph.D.

Eng. Karina Kowalczyk, Ph.D.

Reviewed Committee (in alphabetical order)

Daróń Marta

Gorzeń-Mitka Iwona

Grabiec Olimpia

Korombel Anna

Kowalczyk Karina

Krupka Zoran

Kuraś Piotr

Lemańska-Majdzik Anna

Ławińska Olga

Łazorko Katarzyna

Mesjasz-Lech Agata

Moczyłowska Joanna M.

Mynarzová Monika

Okręglika Małgorzata

Pachura Aneta

Pachura Piotr

Prusak Rafał

Pyłacz Paula

Simões Eliane

Sipa Monika

Sitek Marcin

Skibiński Andrzej

Smolarek Małgorzata

Smoląg Klaudia

Sroka Mariusz

Tomski Piotr

Editors (in alphabetical order)

Assoc. Prof. Korombel Anna, Ph.D.

Eng. Lemańska-Majdzik Anna, Ph.D.

Okręglika Małgorzata, Ph.D.

**PROCEEDINGS OF THE 2nd INTERNATIONAL CONFERENCE CONTEMPORARY
ISSUES IN THEORY AND PRACTICE OF MANAGEMENT
CITPM 2018**

Series: CITPM, No. 2

Edited by:

Małgorzata Okręglika
Anna Korombel
Anna Lemańska-Majdzik

Typesetting and Make-up by

Marcin Pilarski

Cover Design by

Marcin Pilarski

ISBN 978-83-65951-12-0

/hard copy/

ISBN 978-83-65951-18-2

/electronic copy/

ISSN 2544-8579

/hard copy/

ISSN 2544-8587

/electronic copy/

Suggested citation:

Author, A., Title of the paper. In Okręglika, M., Korombel, A., Lemańska-Majdzik, A., (eds.). *Proceedings of the 2nd International Conference Contemporary Issues in Theory and Practice of Management 2018. CITPM 2018*. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej, 2018, pp. xx-xx. ISBN 978-83-65951-12-0, ISSN 2544-8579.

TABLE OF CONTENTS

1.	<i>Alaskarova Yelena, Daróczy Miklós, Illés Bálint Csaba</i> IMPLEMENTING LEAN MANUFACTURING AND MAIN FLOWS IN THIS AREA IN AZERBAIJAN	15
2.	<i>Al-Zaidi Waleed, Al-Zuhairi Ahmed, Salih Shawkat, Dunay Anna</i> ROLE OF SUPPLY CHAIN RELATIONSHIP ON INVENTORY MANAGEMENT POLICIES: A CASE STUDY IN STATE COMPANY FOR DRUG MARKETING AND MEDICAL SUPPLIES-IRAQ	23
3.	<i>Amirkhanova Liliya R., Bikmetov Evgeniy Yu., Bronnikov Maxim A., Zinnurov Ulfat G.</i> DETERMINATION OF PRIORITY STRATEGIC RISKS IN MANAGING START-UPS	31
4.	<i>Artemenko Lina</i> STRATEGIC BENCHMARKING OF UKRAINIAN PUBLIC-PRIVATE PARTNERSHIP IN THE CONDITIONS OF EUROPEAN INTEGRATION	39
5.	<i>Barcik Agnieszka, Borowczyk Oliver</i> QUALITY AND RISK MANAGEMENT IN SMALL COMPANY OF THE MEDICAL SECTOR	47
6.	<i>Barska Anetta, Jędrzejczak-Gas Janina</i> PROMOTIONAL INSTRUMENTS FOR SUPPORTING ENTREPRENEURSHIP BY LOCAL AUTHORITIES ON THE EXAMPLE OF ŻAGAŃ TOWN	55
7.	<i>Cojocariu Gheorghe, Balica Raluca, Nica Elvira, Bratu Sofia, Mohîrță Ionel</i> ORGANIZATIONAL TACTICS AND INDIVIDUAL PROACTIVE BEHAVIORS IN THE NEWCOMER SOCIALIZATION PROCESS	63
8.	<i>Czwajda Liliana, Kostrzewski Mariusz</i> APPLICATION OF FMEA ANALYSIS TO THE RISK ASSESSMENT IN THE AREA OF LIQUID FUEL STORAGE MANAGEMENT	70
9.	<i>De Jongh Jacques</i> FACTORS AFFECTING YOUTH EMPLOYMENT: AN ANALYSIS OF THE EMFULENI AND METSIMAHOLO LOCAL MUNICIPAL AREAS, SOUTH AFRICA	78
10.	<i>De Jongh Jacques, Meyer Natanya</i> PERCEIVED BARRIERS OF EMPLOYMENT AMONG YOUNG LABOUR MARKET PARTICIPANTS: EVIDENCE FROM SELECTED MUNICIPAL AREAS IN SOUTH AFRICA	86
11.	<i>Delgadová Elena, Gullerová Monika</i> RECRUITMENT AND SELECTION METHODS IN AN AMERICAN AND A SLOVAK MANUFACTURING COMPANY	94
12.	<i>Duginets Ganna</i> SCENARIOS OF ENTRY OF UKRAINIAN ENTERPRISES INTO GVCs	102

13.	<i>Grobler Wynand CJ</i> COPING STRATEGIES AND URBAN HOUSEHOLD FOOD INSECURITY	110
14.	<i>Gružasuskas Valentas, Vojtovič Sergej, Navickas Valentinas</i> CYBER-PHYSICAL SYSTEMS IMPACT TO SUPPLY CHAIN COMPETITIVENESS	117
15.	<i>Grzeszczyk Tadeusz A., Pelszyński Jacek</i> BARRIERS TO IMPLEMENTATION OF SOCIAL SECURITY INFORMATION PROJECTS	125
16.	<i>Howaniec Honorata</i> EMPLOYER BRANDING AND RESPONSIBILITY FOR EMPLOYEES IN CSR PRACTICES IN POLAND	133
17.	<i>Hurta Hilda</i> IDENTIFYING THE FACTORS INFLUENCING THE NATIONALITY OF A COMPANY	141
18.	<i>Ingaldi Manuela, Kadlubek Marta, Dziuba Szymon T.</i> KANO MODEL AS AN INSTRUMENT OF TOTAL QUALITY MANAGEMENT	149
19.	<i>Ivanová Eva, Kordoš Marcel</i> INNOVATION PERFORMANCE OF SLOVAK REGIONS WITHIN THE INNOVATION PERFORMANCE OF EU	157
20.	<i>Jakubiec Marcin</i> QUALITY OF MANAGEMENT FROM PATIENT PERSPECTIVE – PILOTAGE RESEARCH BASED ON PROVINCIAL HOSPITAL IN BIELSKO-BIALA	165
21.	<i>Janasová Denisa</i> APPLICATION OF BAYESIAN AND DEMPSTER-SHAFER THEORY FOR ESTIMATION OF THE BUSINESS RISKS PROBABILITY	173
22.	<i>Jędrzejczak-Gas Janina, Barska Anetta</i> STRATEGIC APPROACH TO INVESTMENT ATTRACTIVENESS MANAGEMENT OF A COMMUNE. EMPIRICAL STUDY OF THE ŚWIDNICA COMMUNE, POLAND	181
23.	<i>Kadlubek Marta, Ingaldi Manuela, Dziuba Szymon T.</i> DISTRIBUTION OF PRODUCTS IN THE ENTERPRISE: FLOW MANAGEMENT IN CUSTOMER SERVICE	189
24.	<i>Kaňa Radomír, Kabus Judyta</i> SELECTED ASPECTS OF EUROPEAN UNION MISSIONS AND OPERATIONS MANAGEMENT	197
25.	<i>Kašík Josef</i> IS THE PRICE/EARNINGS TO GROWTH RATIO A GOOD INDICATOR OF A COMPANY’S FUTURE MARKET VALUE? EVIDENCE FROM THE PRAGUE STOCK EXCHANGE AND THE NASDAQ	205

26.	<i>Kazantseva Svetlana</i> LEAN PRODUCTION IN RUSSIA: A TRIBUTE TO FASHION OR A WAY OF DEVELOPMENT	213
27.	<i>Klierová Martina</i> HUMAN RESOURCES MANAGEMENT IN REGIONAL GOVERNMENT	220
28.	<i>Klimecka-Tatar Dorota</i> MANAGEMENT OF VALUE FLOW AND OPERATIONAL STRATEGY IN SMALL ENTERPRISES PROVIDING SPECIALIZED SERVICES	228
29.	<i>Klimecka-Tatar Dorota, Kowalik Kamila, Brožová Silvie</i> SERVICE QUALITY MODEL BASED ON THE 4Q'S MODEL AND THE SYSTEM APPROACH TO SERVICE QUALITY MANAGEMENT	236
30.	<i>Klučka Jozef, Havierniková Katarína</i> BUSINESS PERFORMANCE MANAGEMENT – PROCESS TO IDENTIFY KEY PERFORMANCE INDICATORS IN A COMPANY	244
31.	<i>Kobylińska Urszula</i> FACTORS AFFECTING THE LEVEL OF COOPERATION BETWEEN ENTERPRISES AND PUBLIC ADMINISTRATION INSTITUTIONS ON LOCAL LEVEL BASED ON EXAMPLE OF POLAND	251
32.	<i>Kogut Justyna</i> METHODS OF MEASURING THE INTELLECTUAL CAPITAL IN A COMPANY	259
33.	<i>Koišová Eva, Masárová Jana</i> DISPARITIES IN REGIONAL DEVELOPMENT IN THE SLOVAK REPUBLIC AND POLAND	267
34.	<i>Kolencik Juraj, Pera Aurel, Popescu Gheorghe H., Lăzăroiu George, Neguriță Octav</i> ALTERNATIVE WORK ARRANGEMENTS AND WORK – LIFE BALANCE BEHAVIORS	275
35.	<i>Kolomytseva Olena, Bokovnya Angelica, Shevchenko Natalia</i> DEVELOPMENT OF ORGANIC FOOD MARKET WITH THE USE OF ECOLOGICAL MARKETING TOOLS	282
36.	<i>Korombel Anna</i> BARRIERS TO RISK APPETITE MANAGEMENT IN POLISH SMALL AND MEDIUM-SIZED ENTERPRISES	290
37.	<i>Kostić Martina Dragija</i> MANAGEMENT ACCOUNTING AT CROATIAN PUBLIC HIGHER EDUCATION INSTITUTIONS	297
38.	<i>Kostrzewski Mariusz</i> NUMERICAL MODEL OF LAYOUT PLOT AS SUPPORT TOOL IN HEURISTIC METHOD OF WAREHOUSES DESIGN	305
39.	<i>Kot Sebastian, Meyer Natanya</i> USING SOCIAL MEDIA AS A TOOL IN THE LEARNING PROCESS	313

40.	<i>Krawczyk-Sokołowska Izabela, Łukomska-Szarek Justyna, Caputa Wiesława</i> IDENTIFICATION THE ACTIVITY OF ENTERPRISES IN POLAND FROM THE PERSPECTIVE OF TYPES OF INNOVATIONS	321
41.	<i>Kuraś Piotr, Kuraś Małgorzata</i> THE ANALYSIS OF THE OPERATION OF CLUSTERS IN POLAND	329
42.	<i>Lemańska-Majdzik Anna, Shulgina Liudmila</i> ORGANIZATIONAL FLEXIBILITY IN ENTREPRENEURIAL INTENTIONS – THE POTENTIAL OF FUTURE ENTREPRENEURS	337
43.	<i>Letková Natália, Martošová Adriana, Škrovánková Katarína</i> PERSONNEL MARKETING AS A NEW DEVELOPMENT STAGE OF EMPLOYER BRANDING	345
44.	<i>Lukoszová Xenie</i> THE CONCEPT OF CUSTOMER RELATIONSHIP MANAGEMENT IN SERVICES	353
45.	<i>Ławińska Olga</i> PUBLIC-PRIVATE PARTNERSHIP AS A TREND OF INVESTMENT MANAGEMENT IN EUROPE IN 2007-2016	361
46.	<i>Magda Róbert, Bozsik Norbert</i> ANALYSIS OF THE HUNGARIAN AGRI-FOOD TRADE WITH POLAND AFTER THE EU ACCESSION	369
47.	<i>Manaienko Iryna, Ławińska Olga</i> DEFINITION AND FACTORS OF INFLUENCE ON THE EXPORT POTENTIAL OF THE ENTERPRISE	376
48.	<i>Mansur Hasan, Tangl Anita</i> THE EFFECT OF CORPORATE GOVERNANCE ON EARNINGS MANAGEMENT – COMPARING JORDANIAN CONTEXT WITH OTHER CONTEXTS	384
49.	<i>Marczewska Magdalena, Kostrzewski Mariusz</i> TRAINING ON SOFT SKILLS AND ENTREPRENEURSHIP AS A WAY TO BOOST YOUNG RESEARCHER’S INNOVATIVENESS	392
50.	<i>Masárová Tatiana</i> STATISTICAL RESOURCES OF FOREIGN MIGRATION OF LABOUR FORCE IN THE SLOVAK REPUBLIC AND THEIR MANAGEMENT	400
51.	<i>Meyer Daniel Francois</i> FORMULATION AND APPLICATION OF AN ALTERNATIVE INCLUSIVE GROWTH INDEX: THE CASE OF POLAND AND SOUTH AFRICA	407
52.	<i>Meyer Daniel Francois</i> NON-ECONOMIC INDEXES AND ECONOMIC GROWTH: A COMPARATIVE ECONOMETRIC ANALYSIS OF POLAND AND SOUTH AFRICA	415
53.	<i>Mihaescu Diana</i> MODERN APPROACH IN FORMING CLASS MANAGEMENT SKILLS OF ACADEMIC HUMAN RESOURCES	423

54.	<i>Mihaescu Liviu, Mihaescu Diana</i> COMPARATIVE ANALYSIS OF MANAGERS PROFILE IN NATIONAL AND FOREIGN COMPANIES FROM ROMANIA	430
55.	<i>Moczydłowska Joanna M.</i> SOURCES OF PERSONNEL RISK IN THE OPINIONS OF POLISH MANAGERS. A DIAGNOSTIC TOOL	437
56.	<i>Mynarzová Monika, Okreglicka Malgorzata</i> THE STATE AID FOR SMALL AND MEDIUM-SIZED ENTERPRISES IN EUROPEAN UNION IN THE CONTEXT OF THE REVISED GENERAL BLOCK EXEMPTION REGULATION	443
57.	<i>Navickas Valentinas, Svazas Mantas, Krajnakova Emilia</i> SUPPLY CHAIN AS A FUNDAMENTAL DETERMINANT OF BIOMASS CLUSTER	451
58.	<i>Nedeliaková Eva, Kuka Adrián</i> APPLICATION OF RISK MANAGEMENT METHODS IN TRANSPORT UNDERTAKINGS	459
59.	<i>Noga Agnieszka, Ptak Aleksandra</i> IMPACT OF THE HUMAN FACTOR ON THE EVALUATION OF THE PRODUCTION PROCESS	467
60.	<i>Ogrean Claudia, Herciu Mihaela</i> INNOVATION-DRIVEN COMPETITIVENESS – A MULTILEVEL ANALYSIS OF THE STATE OF THE ART	475
61.	<i>Okano Marcelo T., Simões Eliane, Fernandes Marcelo Eloy</i> THE IMPORTANCE OF SOCIAL INNOVATION IN THE CURRENT CONTEXT: A BIBLIOMETRIC RESEARCH ON THE ACADEMIC PRODUCTION OF THE LAST 20 YEARS	483
62.	<i>Okano Marcelo T., de Souza Edgar, Simões Eliane, Fernandes Marcelo Eloy</i> THE PROPOSAL OF A BUSINESS MODEL BASED ON CANVAS FOR ICT ANALYSIS IN SOCIAL ENTERPRISES: A STUDY IN BVSA – SOCIAL AND ENVIRONMENTAL STOCK EXCHANGE BANK	491
63.	<i>Okreglicka Malgorzata, Dunay Anna</i> POTENTIAL FOR PROACTIVITY AS AN ANTECEDENT OF ENTREPRENEURIAL ORIENTATION	499
64.	<i>Otola Iwona, Simões Eliane, Okano Marcelo T.</i> IDENTIFICATION OF VRIN RESOURCES IN JOINT STOCK COMPANIES	506
65.	<i>Otola Iwona, Tylec Agnieszka</i> RELATION BETWEEN CSR AND CFP IN POLISH STOCK EXCHANGE LISTED COMPANIES	514
66.	<i>Petkova Lesia, Palamarchuk Dmytro, Palamarchuk Nataliia</i> TECHNOLOGICAL EFFECTS OF EUROPEAN INTEGRATION IN THE SUSTAINABLE DEVELOPMENT CONTEXT	522

67.	<i>Pichugina Maryna</i>	STRATEGY OF THE COMPANY BALANCED DEVELOPMENT	530
68.	<i>Rosak-Szyrocka Joanna, Blaskova Martina</i>	EMPLOYEES' INFLUENCE ON THE PERSONNEL MANAGERIAL BEHAVIOR	538
69.	<i>Scherer Magdalena</i>	MANAGEMENT OF THE CORPORATE IMAGE ON THE INTERNET	546
70.	<i>Seaman Claire, Quinn Bernie, Laffin Trevor</i>	SELF-INITIATED EXPATRIATE ENTREPRENEURSHIP IN KATHMANDU FOOD BUSINESSES	554
71.	<i>Serrem Kevin, Illés Bálint Csaba</i>	BUNDLED MENUS – AN IMPEDIMENT TO HEALTHY FOOD CONSUMPTION	560
72.	<i>Shirshikova Liudmila, Lavrova Maria, Lavrov Igor</i>	THE PRODUCTION AND ECONOMIC SYSTEM OF THE ENTERPRISE AND THE OVERALL PLANNING FRAMEWORK	567
73.	<i>Shulgina Liudmila, Lemańska-Majdzik Anna</i>	MARKETING AUDIT AS A BASIS FOR REAL ESTATE PROJECTS BRAND DEVELOPMENT	575
74.	<i>Sitek Marcin</i>	ASSESSMENT OF SUSTAINABLE BUILDING CONNECTED WITH IMPLEMENTATION OF INNOVATIONS IN THE HOUSING MARKET: CASE OF A LOCAL MARKET	583
75.	<i>Skrobich Luiza, Kot Sebastian</i>	MARKETING 3.0 IN CONTEMPORARY MARKETING MANAGEMENT ACTIVITIES OF ENTERPRISES	591
76.	<i>Strelcová Stanislava, Šimák Ladislav</i>	ASSESSING THE ENTERPRISE ECONOMIC SECURITY	598
77.	<i>Strunz Herbert, Jašková Dana</i>	THE POTENTIAL OF SLOVAKIA'S REGIONS FOR THE FORMATION OF A TOURISM CLUSTER	606
78.	<i>Surujlal Jhalukpreya</i>	CORPORATE SOCIAL RESPONSIBILITY OF SPORT ORGANISATIONS: THE INFLUENCE OF SELECTED VARIABLES ON FAN AND SPECTATOR BEHAVIOUR AND PERCEPTIONS	614
79.	<i>Szajt Marek, Hampel Katarzyna</i>	SERVICE EVALUATION OF CUSTOMERS OF VARIOUS SOCIAL GROUPS IN NON-PUBLIC HEALTHCARE INSTITUTIONS	621
80.	<i>Ślusarczyk Beata, Baryń Magdalena</i>	TERMS OF THE DEVELOPMENT OF FAMILY BUSINESSES IN SELECTED COUNTRIES IN EUROPE	629

81.	<i>Štefancová Vladimíra, Nedeliaková Eva, Soušek Radovan</i> CONNECTION OF THEORY OF CONSTRAINTS AND LEAN SIX SIGMA IN RAILWAY TRANSPORT OPERATION	637
82.	<i>Štverková Hana, Mynarzová Monika</i> STARTING A BUSINESS IN THE CZECH REPUBLIC, POLAND AND SLOVAKIA – EMPIRICAL APPROACH	644
83.	<i>Tabor Joanna</i> OCCUPATIONAL RISK MANAGEMENT ASSESSMENT USING THE LINGUISTIC AGGREGATION OPERATOR	652
84.	<i>Tomaszúk Anna</i> COOPERATION BETWEEN BUSINESSES AND BUSINESS ENVIRONMENT INSTITUTIONS BASED ON THE EXAMPLE OF COMPANIES FROM PODLASKIE REGION (THE CONSTRUCTION SECTOR PARTICULAR)	659
85.	<i>Tupá Magdaléna, Strunz Herbert, Kordoš Marcel</i> ECONOMIC FALLOUTS OF ILLEGAL MIGRATION IN SWEDEN	667
86.	<i>Vafaei Seyyed Amir, Azmoon Iman, Fekete Farkas Maria</i> THE RELATIONSHIP BETWEEN ORGANIZATIONAL SIZE AND LEADERSHIP EFFECTIVENESS PERCEPTION IN IRAN	675
87.	<i>Vlasov Maxim, Panikarova Svetlana</i> ASSESSMENT OF EFFICIENCY FOR THE KNOWLEDGE BASED PROJECTS	682
88.	<i>Wasiluk Anna</i> THE INFLUENCE OF TRUST AND PREVIOUS EXPERIENCE ON COOPERATION OF ENTERPRISES – AN EMPIRICAL STUDY IN POLAND AND THE REPUBLIC OF BELARUS	689
89.	<i>Wielgórka Dariusz</i> DEVELOPMENT BARRIERS AND SOURCES OF FINANCING FOR ECO-INNOVATION BY MMSE AGAINST THE BACKGROUND OF ECO-INNOVATION INDICATORS OF THE EUROPEAN UNION COUNTRIES	695
90.	<i>Zhuravlyov Vladimir Vasiliyevich, Varkova Natalia Yurevna</i> STRATEGIC ASPECTS OF SUSTAINABLE DEVELOPMENT OF GOLD MINING ENTERPRISES IN RUSSIA IN CONDITIONS OF OVERCOMING THE CRISIS	703

Yelena Alaskarova^{1*}
Szent István University
Hungary
Miklós Daróczy²
Szent István University
Hungary
Csaba Bálint Illés^{3*}
Szent István University
Hungary

1. IMPLEMENTING LEAN MANUFACTURING AND MAIN FLOWS IN THIS AREA IN AZERBAIJAN

Abstract: Nowadays, eliminating all sort of wastes is extremely important. Lean management is a tool of recognizing the wastes of a process and lean manufacturing is one of the most powerful manufacturing control systems that also can help in environmental pollution control, reducing physical effort and shortening product manufacturing time. The first objective of this paper was to provide a wide literature review, by summarizing the principles of lean concept and methods, and by introducing the main lean tools and dimensions that are fundamental for the improvement of flow in manufacturing system. The second objective of the paper was to give an insight into Azerbaijan's industry, where lean methods are not used at the present, but for further development it is suggested be implemented. The paper is theoretical: by summarizing the literature of lean methodology the theoretical framework of further researches was outlined in order to explore the prospects of implementing lean techniques in Azeri industry. It is necessary for businesses, companies to find and solve the problems in production system and improve the performance. For this reason, lean is best practice manufacturing strategy that improves quality, reduce costs and maximize profit. The paper built the base of the topic of the further research work, which is designed for analyzing the present situation of lean thinking in Azerbaijan and the results summarized by this paper might be incorporated into the proposed research survey.

Keywords: industry, lean manufacturing, production, value stream mapping, waste.

JEL Classification: L23, M11

1. Introduction

Lean manufacturing and lean management is one of the most widely mentioned concepts in well-developed industrial countries, which puts productivity and waste minimization together into the focus of production. Lean thinking and lean methods are about preventing all types of waste, which will result cost reduction, better quality, proper value stream. In sustaining the progress of lean thinking, leaders play a fundamental role, but all members of the organization shall understand and apply lean methods. But what is the situation in countries under transition, where modern management methods are not in use at the present, but modern methods might play an important role in further development?

The authors goal was to summarize the principles of lean thinking and the main dimensions and factors of lean manufacturing and to give an insight into the manufacturing industry of Azerbaijan, a dynamically developing country, where lean methods are not in use at the present. The results and the conceptual framework provided by this paper will serve as the starting point of the planned future survey in which the knowledge about lean methods and the attitudes of managers in Azeri companies are to be examined.

For these purposes the article is descriptive and theoretical, provides a wide literature review and lays down the theoretical background of a further research for evaluating the opportunity of the introduction of lean thinking and lean methods in Azerbaijan. However, due to the psychological and

¹ Yelena Alaskarova Ph.D. Student; H-2100 Gödöllő, Páter K. u. 1. Hungary, yelena.aleskerova@gmail.com

² Assoc. Prof. Dr. Miklós Daróczy Ph.D.; H-2100 Gödöllő, Páter K. u. 1. Hungary, daroczy.miklos@gek.szie.hu

³ Prof. Dr. hab. Csaba Bálint Illés C.Sc.; H-2100 Gödöllő, Páter K. u. 1. Hungary, illes.b.csaba@gtk.szie.hu

* Corresponding authors

technological requirements of the international market (sustainability, social and environmental requirements, industry 4.0, etc.) every companies who wishes to make a mark in the market, has to improve their system to be up-to-date and to make the needed changes, but managers shall have a well based knowledge and know practical examples for making the appropriate steps. The paper discusses the lean methods which help to avoid the wastes, gives a general overview about lean tools and outlines the main dimensions of lean manufacturing by elaborating a simplified conceptual model which will be the basic approach to the forthcoming survey to be conducted in Azerbaijan. As there are limited number of articles and analyses in which the development of the Azeri industry is discussed, a short introduction of the present situation of Azerbaijan's industry is provided.

2. Literature Review

2.1. What is Lean?

The word “Lean” is based on Toyota Production System through which operations improve constantly. Lean is not about the latest and the greatest technology, vehicle, and equipment it is all about operational strategy that enables everything to change for the better.

Lean is a combination of a set of tools, philosophy and a system. The philosophy of lean is to work slowly and steadily instead of quickly. That is why it is considered as continuous improvement philosophy that is synonymous with Kaizen. As Taiichi Ohno, one of the main architects of the Toyota Production system said, all that we are doing is looking at the timeline from the moment customer gives us an order to the point when we collect the cash, and we are reducing that timeline by removing the non-value-added wastes. The goal of lean manufacturing is to achieve the shortest possible cycle time by streamlining the flow of production material throughout the value stream (Ohno, 1988).

In general, lean manufacturing is mostly associated with the elimination of seven important wastes by which the disadvantageous alterations of production, quality and processing time can be eliminated (Shah, Ward, 2007). In international literature, there are different additional definitions for lean thinking and methods, for example, Liker (2004) defined it as a philosophy of manufacturing that focuses on the production of highest quality products in time and at the lowest cost. Worley and Doolen (2006) defined lean manufacturing as a method, by which the wastes are systematically removed from all areas of the value stream by all members of the organization. According to Hayes and Pisano (1994) lean manufacturing means using less, or the minimum of everything (materials, processes, time, money) required for producing a product or performing a service.

Companies of all sizes are applying lean principles realize great improvement in quality, productivity and profitability. Lean helps a manufacturer to produce more with less time, inventory, cost and focuses on total system efficiency. In all industries only, small amount of time is spent to do value added activities in contrast to huge amount of waiting time which did not add value to the product. Lean thinking is the best solution to solve the problem of waste, and this concept can be used with different supply chains (Dunay, Shaban, 2017; Vajna, Tangl, 2017). Tangl and Vajna (2016) highlighted that the concepts and techniques of lean can be applied to all components of supply chain, even in organizational and financial aspects. Nowakowska-Grunt (2008) discussed the role of lean management in logistics infrastructure of enterprises.

In accordance with Shah and Ward (2007), lean manufacturing can be defined as an integrated socio-technical system whose main objective is to eliminate waste by concurrently reducing or minimizing supplier, customer, and internal variability. A majority of articles on the topic of lean production system focus on the relationship between implementation of lean and performance (Womack, Jones, Roos, 1990; Wong, Wong, Ali, 2009), while most of these studies have focused on a single aspect of lean and its performance implications (e.g. Samson, Terziowski, 1999; McKone, Schreder, Cua, 2001).

Womack, Jones and Roos (1990), determine lean manufacturing as a systematic approach to identifying and eliminating waste. When properly implemented, lean manufacturing provides many advantages, you can expect: 1) improved quality, customer service, and productivity; 2) lower levels of inventory, less work in progress and in inventory, reduce space; 3) improved delivery performance and supply relations; 4) reduced waste.

Lean manufacturing approach exclude waste by enhancing the quality of products and bringing down defects. According to lean manufacturing philosophy, production costs decline as quality

approaches perfection. The quality of your goods or services directly influences your opportunity to meet or exceed customer expectations. Lean inventory management is a unique system that allows companies to reduce expenses, time and effort they require to manage it. Rather than create excess inventory lean companies make products to order. This reduces inventory overhead and decrease the need for constant production There is a significant relationship between lean manufacturing practices and inventory turnover: lean companies keep fewer inventories of any type (Demeter, Matyusz, 2011).

Lean manufacturing methods, when implemented successfully, empower employees to involve in incremental quality improvements, to eliminate waste, increase quality and improve efficiency in the production process. The lean manufacturing strategy focuses on the actual needs of the customer, shortens delivery time of the products.

According to Jourabchi et al. (2014), lean manufacturing can contribute to achieve further improvement in terms of reducing wastes. Everything that you do should provide value to the customer, anything else is waste. Waste elimination cut the production cycle time, results in higher quality, short delivery times, and lower costs.

2.2. Seven Types of Waste

The seven wastes (or *Muda* in Japanese) described by Ohno (1988) are 1) Muda in Overproduction, when production is more that customer demand, 2) Muda in Waiting, when operators and machines shall wait for parts of work, 3) Muda in Transportation , when unnecessary transportation of materials is needed due to lack of coordination, 4) Muda in Processing, i.e. over-processing, when needs additional labor is needed, 5) Muda in Inventory , when excess inventory is detected due to large lot sizes or poor forecasts, 6) Muda in Motion or Movement, which means the unnecessary movement of people, and 7) Muda of Correction, when there is a need for rework and use of materials, labor and capacity for repairing scraps and defects). The wastes can be connected to different categories: wastes of labor (people), quality and quantity (Figure 1.)

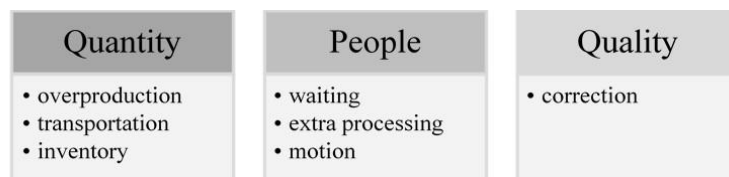


Figure 1. Seven types of waste

Source: Authors' own summary

Osho's seven types of waste is the initial principle of every processes and methods connected to lean management, mean manufacturing and – generally spoken – lean thinking. Later, Liker (2004) added a new element of waste to the original seven, which is known as “unused employee creativity”, which means the underutilization of people's work, knowledge, and time in an organization's processes and workflows.

The waste of transport can be a very high cost to business, it is the movement of materials, people, products and information from one location to another, this is a waste, as it adds zero value to the product. Excessive movement and handling cause damage and are an opportunity for quality to deteriorate. Excess inventory is another problem that creates huge cost and increases lead times. Every company should cut down on unnecessary inventory. Unnecessary motions are those movements of man or machine which are not as small or as easy to achieve as possible they cost companies time, money and cause stress on employees and machines as well. The most serious waste is overproduction. Overproduction leads to high levels of inventory, which create the problems mentioned above. Waiting includes time you wait for information or material from other department. You just idle your time, not doing anything value added action. Over-processing wastes occur when we use inappropriate techniques, equipment and this cost companies money and time. It is clear-cut that waste defects should be prevented where possible because it can lead to lost customers.

The worst of all the seven wastes is overproduction, because it includes in essence all the others and was the main driving force for the Toyota JIT system. It is important to design each workstation or machine to fit within a minimal envelope, in order to reduce unnecessary steps taken by the worker between sub-processes, and provide continuous flow.

In a number of researches, lean generally displayed to be connected with high performance of world-class manufacturing (e.g. Sakakibara, Balajb, Satheesh Kumar, 1997), but it is also reasonable that implementation of lean mostly related to improvements in operational aspects of performance measuring. Studies focusing on the impact of lean implementation on operational performance are constrained to JIT or TQM. Improved operational performance associated with JIT practices (Sakakibara, Balajb, Satheesh Kumar, 1997; White, Pearson, Wilson, 1999) has been shown to weight down the results associated with TQM practices (Samson, Terziovski, 1999). Some studies found a significant direct impact of TQM practices on operational performance as well (Choi, Eboch, 1998; Samson, Terziovski, 1999). In contrast, Adam (1994) found little impact of TQM practices on operational and other measures of performance. Illés, Szuda and Dunay (2017) discussed lean concepts as a part of quality management tools, and highlighted that lean thinking and quality assurance should be applied by all members of the organization, from the top managers to the front line.

Lean thinking and waste elimination is very close to sustainability and green thinking, which is also a tool of reducing waste, which increase the performance of products and reduces costs (Seroka-Stolka, 2016) and provides better service to customers in economic and environmental aspects as well (Skowron-Grabowska, 2009). The first steps of lean and green thinking can be detected even in such countries which shall face serious economic and politic challenges (Al-Zaidi, Dunay, 2016; Al-Zaidi, Shaban, Dunay, 2016). According to Altekar (2005), establishment and mastering of a lean production system would allow companies to achieve benefits in different fields: waste reduction (by 80%), production cost reduction (by 50%), decrease of manufacturing cycles (by 50%) labor use (by 50%), inventory reduction (by 80%). Increasing customer service levels, capacity in current facilities may increase by 50%, and as a result, higher quality, and higher profits, higher system flexibility might be detected.

3. Methodology

In order to achieve the goal of the researchers, a thorough literature survey was carried out on lean manufacturing and lean assessment out, which laid down the theoretical background of the further studies. The collection of literature sources was made using various databases of Scopus, Web of Science, ScienceDirect, Google Scholar and other search tools and using the institutional library, where the most relevant literature sources were found. Keywords like “lean manufacturing”, “lean production”, “lean thinking”, “lean methods” and “lean tools” were used for achieving the relevant literature sources. The second part of the article a brief introduction of Azerbaijan was provided, as topic is to be surveyed in this country. The introduction of the Azeri manufacturing industry is short due to the length and time limitations, but gives an insight into the development tendencies of the country. For the purposes of this introduction, the official materials of the Azeri statistical institute and international databases and institutions were used.

As the work was the first step of the PhD studies of one of the co-authors, the time is a main limitation of this work. Thus, this article is the result of a desk research, where literature survey represents only the basic international literature sources, and serves as the first step of the future research steps.

4. Results

4.1. Lean Dimensions of Production by a System Approach

Womack et al (1990) defined five main principles of lean manufacturing:

1. Define Value as Perceived by the Customer – understand from the customers’ viewpoint what is of value to them (building a relationship, clear communication).
2. Identify the Value Stream – to be able to remove the waste from processes it is essential that all the activities, across all the areas.
3. Create Value Flow – in order to eliminate the waste, processes need to be changed and re-organized so that the product or service flows through all the value adding steps in the most effective and efficient way.

4. Flow at the Pull of the Customer – by understanding the demand that customers put on your processes you can build your processes to meet that demand. Therefore, you shall deliver what your customer needs, when they need it, to the place where they need it.
5. Strive for Perfection – As value is specified, value streams are identified, wasted steps are removed, and flow and pull are introduced, begin the process again and continue it until a state of perfection is reached in which perfect value is created with no waste.

These principles form the backbone of lean manufacturing and are achieved through respecting and involving your workforce in every aspect of your business, these concepts are used across industries and regions to improve performance of the producing units. These principles should be applied in formulating the structure of the interview questions of the future research.

Wahab, Mukhtar and Sulaiman (2013), based on a comprehensive review of literature, defined the seven main dimensions of lean manufacturing: 1) Manufacturing Process & Equipment, 2) Manufacturing Planning & Scheduling, 3) Visual Information System, 4) Product Development & Technology, 5) Workforce Management, 6) Supplier Relationship 7) Customer relationship. These dimensions were chosen for the future research survey's basic dimensions, as all the different parts and fields of the organization are covered by them, where waste might appear. Based on the seven wastes, the main lean principles and the different fields of an organization, using the original concept of Wahab, Mukhtar and Sulaiman (2013, p. 1297), we formulated a simplified version of the lean dimensions in the system of manufacturing (Figure 2), which is to be used in the further steps of research.

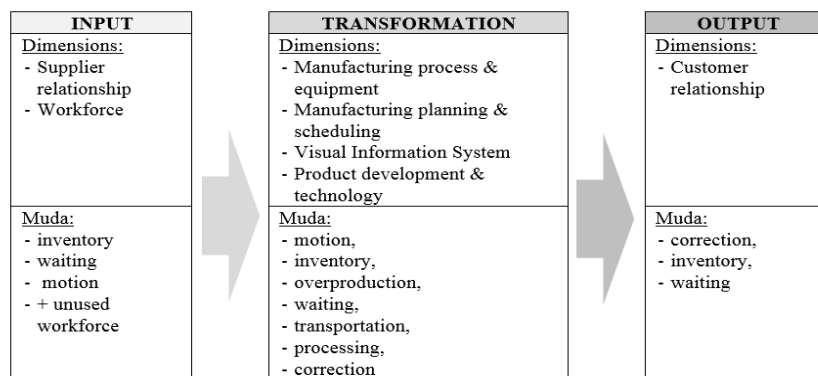


Figure 2. Conceptual model of further research: Lean dimensions in manufacturing by a system approach

Source: Authors' own, simplified adaptation of the model of Wahab, Mukhtar and Sulaiman, 2013

In this conceptual model we focused on the dimensions and the problems of waste by a system approach, i.e. starting with inputs, through the transformation process until reaching outputs.

4.2. Identifying Priorities and Prospects of Implementing Lean Techniques in Azerbaijan

Over the past years country's economy was fully rely on the price of oil and gas in world market and benefitted from vast supply of natural resources. The economic potential of other factors mainly remains unknown, but has recently diversified into transportation, infrastructure, and technology. Nowadays, Azerbaijan's economy struggles to recover after double devaluation in 2015 due to the decline in world oil process. Lack of sustainable equity market, lack of transparency, non-stable flow of income, widespread corruption, bureaucracy are the major challenges to improve the business climate. That is why transformation into lean is not attractive in Azerbaijan and companies do not think about this kind of tools and efficiency. Even big companies are not active in promoting lean in Azerbaijani market. So, implementing Lean is not a technological issue, it is primarily a management and human resource issue at all level. Global competition requires manufacturing companies to increase their proficiency and reduce waste. Unfortunately, so far lean practices do not implement in Azerbaijani industry, and there are no literature sources about the prospects of implementation, so this is why the research is planned.

In the years of independence and now, the oil industry plays a great role in the economic development of the Republic of Azerbaijan. The dynamic development of oil sector will create the opportunities for the accelerated development of non-oil sector as well. Industrial Production in

Azerbaijan averaged 0.85 percent from 1990 until 2016, reaching an all-time high of 36.6% in 2006 and a record low of 30.4% in 1992. According to CESD (2017), the industrial output in Azerbaijan was declined by 5.4% in the year 2017. In Azerbaijan, industrial production measures the output of businesses integrated in industrial sector of the economy. According to the State Statistics Committee, industrial out was 21.8 billion manat (\$ 12.824 billion US) in the indicated period. Mining and quarrying is the most important sector and accounts for around 70 percent of total production, 24.8% - in the processing sector, 4.4% - in the electric power, gas and steam production, distribution and supply and 0.8% - in water supply, cleaning and processing of waste. The oil production in the mining sector has declined by 8.9%, and gas production – by 1.3% in 2016. The biggest segment within mining is crude petroleum and natural gas extraction (CESD, 2017).

The past results (between 2005 and 2016) and future expected trends of Azerbaijan's industrial production are visualized by Figure 3, based on the macro forecast models of Trading Economics. Compared to the growing results of the early 2000s, a decline is represented, but the forecasts suggest a slow growth according to analysts of Trading Economics.

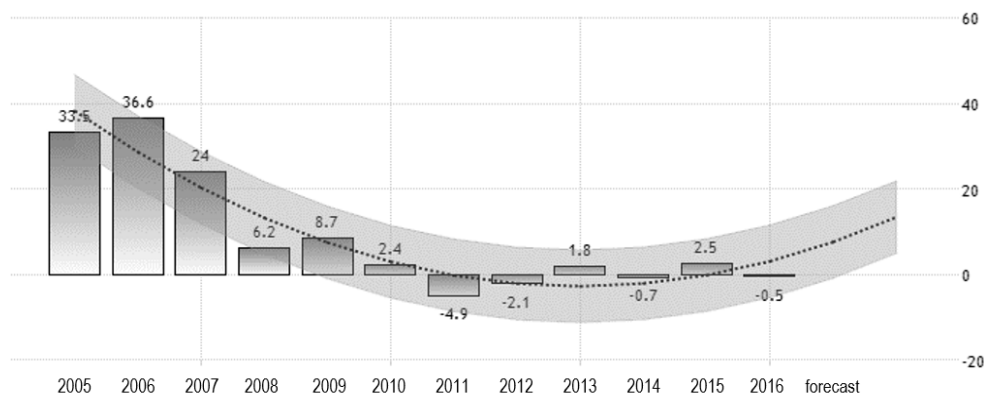


Figure 3. Azerbaijan industrial production (2005-2016 and forecasted trend in %)

Source: Trading economics, 2017

The main activities to ensure steady and rapid production growth will include the modernization and reconstruction of equipment, increasing the competitiveness of national products, the flow and efficiency of investments, intensified development of non-oil sector and encouraging of development processes in the processing industry. For future development it is necessary diversifying the economy of Azerbaijan, make more attention to the role of low-end manufactures. The Azerbaijani industry is a perfect place for introduction lean principles, especially in the manufacturing industry. The reason is the ease of use lean in production processes and the need for maintaining and/or improving efficiency and market competitiveness, but at the present lean methods are not applied.

Regardless of the type of industry lean will be applicable, first thing that companies need to do is understand the value. This is the key element to start to implement lean. Secondly, every organization must recognize their obstacles, struggles on this way. Within industries, especially in Azerbaijan it is vital to looking for the best, most effective and most efficient flow of material, information and people as well as produce product when there is a customer pulling it from you. At every step of production process, manufacturing companies should identify the chances for perfection. By using lean and getting things and processes in the right way, all industries may have good benefits. The important thing here is never give up and do thing in the appropriate way.

Key problem and struggle in implementation lean is management cultural transformation. It is very important to focus on continuous improvement and engaging everybody in company. As Toyota says, the two main pillars of The Toyota Way are respect for people and continuous improvement. In Azerbaijan, many companies just deny the need to invest the time and effort needed to start a Lean transformation. Lean practitioners, underline the added benefits they can still realize through Lean and work diligently to help them see these. As a result, some manufacturing and service companies now are trying to do and engage all departments in implementation these tools. The difficulty is that in order to be successful everybody should understand and adopt lean principles to their work.

As the economic situation of the industry is challenging, the necessity of standardizing industrial culture and approach is essential. Any successful cultural change requires different and more effective forms of encouraging every employee to take more initiative.

5. Conclusion

As a conclusion, it should be underlined, that lean manufacturing, applying lean methods and lean thinking is an important task for manufacturing companies in order to be competitive in the international market competition and to comply with sustainability aspects. Lean thinking is a philosophy which covers all parts of the organization, and it is important to show and share these principles by all internal stakeholders of the organization. Introducing lean thinking starts with its adoption by the top management. It is not easy to start with lean management methods in developing countries, which have to face several economic, financial and social challenges and, but company leaders shall understand that lean methods are very rational, they are not different from general management methods. Basically, they are just focusing better on elimination or prevention of waste and try to help to work in a rational way.

Previous studies have given insights into the introduction process of lean methods in developing countries, and authors concluded that Lean manufacturing is one of the initiatives for manufacturing industry in Asia, which should be adopted in order to remain competitive in the global market (Sundara Balajib, Satheesh Kumar, 2014). Their research findings identified that management support and communications are key issues in a lean manufacturing implementation process, and proved that lean methods may be successfully implemented after a thorough situation analysis and providing enough knowledge for the key stakeholders of the companies.

Yang, Hong and Modi (2011) analyzed the relationship between applying lean manufacturing methods and market performance and between lean manufacturing and financial performance, both of them showed significant relationship. The findings of the abovementioned literature sources and the worldwide experiences of lean methods suggest that it is worth to introduce lean methods into the national economy of developing countries such as Azerbaijan. Our study serves as an introduction of our survey, which will start in the close future in order to explore how lean methods are known by company leaders in Azerbaijan, what are the managers' attitudes toward these methods, which lean methods are in use in Azeri companies. Azerbaijan has a huge potential of economic growth, and by implementing lean techniques, the country can follow its very favorable development trends at a higher quality level.

For making the foundations of the research, a desk research was conducted by which the concept of lean methodology, the seven wastes and the lean tools and dimensions were summarized through a wide review of the international literature. Additionally, a simplified conceptual model of the lean dimensions of manufacturing industry, which will be used in the forthcoming survey to be conducted among Azeri manufacturing companies.

References

- Adam Jr., E.E. (1994). Alternative quality improvement practices and organization performance. *Journal of Operations Management*, vol. 12, iss. 1, pp. 331-347.
- Altekar, R.V. (2005). *Supply chain management: Concepts and cases*. New Delhi: Prentice Hall of India.
- Al-Zaidi, W.A.H., Shaban, F.A., Dunay, A. (2016). The application of the strategic dimensions of recycling in Kashi factory, Iraq. In Okręglicka, M., Gorzeń-Mitka, I., Lemańska-Majdzik, A., Sipa, M., Skibiński, A. (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management 2016*. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej, pp. 19-26.
- Al-Zaidi, W.A.H., Dunay, A. (2016). The role of re-use in reducing industrial costs. A case study in the general company for electrical industries, in Diyala, Iraq. *Hungarian Agricultural Engineering*, vol. 29, pp. 36-39.
- CESD (2017). *Azerbaijan Economy in the first seven months of 2017; Brief overview*, [online]. Available: http://cesd.az/new/wp-content/uploads/2017/09/Azerbaijan_Economy_in_the_first_seven_months_2017.pdf. [2017, September 8].

- Choi, T., Eboch, K. (1998). The TQM paradox: relations among TQM practices, plant performance, and customer satisfaction. *Journal of Operations Management*, vol. 17, iss. 1. pp. 59-75.
- Demeter, K., Matyusz, Zs. (2011). The impact of lean practices on inventory turnover, *International Journal of Production Economics*, vol. 133, iss. 1, pp. 154-163.
- Dunay, A., Shaban, F.A. (2017). Diagnose the practices of lean supply chain management in mineral water factories. *SYNERGY - Engineering, Agriculture and Green Industry Innovation: Papers of the V. International Conference of CIGR Hungarian National Committee and the Szent István University*, p. 6. Faculty of Mechanical Engineering Gödöllő. Paper N01-3-136.
- Hayes, R.H., Pisano, G.P. (1994). Beyond world class: the new manufacturing strategy, *Harvard Business Review*, vol. 72, iss. 1, pp. 77-86.
- Illés, B.Cs., Szuda, Cs., Dunay, A. (2017). Quality and management – tools for continuous and systematic improvement of processes. In B.Cs. Illés, M. Nowicka-Skowron, E. Horská, A. Dunay (Eds.), *Management and Organization: Concepts, Tools and Applications* (pp. 99-108.) Pearson, Harlow.
- Jourabchi, S.M.M., Arabian, T., Leman, Z., Ismail, M.Y. (2014). Contribution of lean and Six Sigma to effective cost of quality management, *International Journal of Productivity and Quality Management*, vol. 14, iss. 2. pp. 149-165.
- Liker, J.K. (2004). *The Toyota Way: 14 Management Principles from The World's Greatest Manufacturer*, New York: McGraw-Hill.
- McKone, K.E., Schroeder, R.G., Cua, K.O. (2001). The impact of total productive maintenance on manufacturing performance. *Journal of Operations Management*, vol. 19, iss. 1. pp. 39-58.
- Nowakowska-Grunt, J. (2008). Impact of Lean Management on Logistics Infrastructure in Enterprises. *Advanced Logistic Systems*, vol. 2, iss. 1. pp. 71-74.
- Ohno, T. (1988). *Toyota Production System: Beyond Large Scale production*, New York: Productivity Press.
- Sakakibara, S., Flynn, B.B., Schroeder, R.G., Morris, W.T. (1997). The impact of just-in-time manufacturing and its infrastructure on manufacturing performance. *Management Science*, vol. 43, iss. 9. pp. 1246-1257.
- Samson, D., Terziowski, M. (1999). The relationship between total quality management practices and operational performance. *Journal of Operations Management*, vol. 17, iss. 5. pp. 393-409.
- Seroka-Stolka, O. (2016). Green Initiatives in Environmental Management of Logistics Companies. *Transportation Research Procedia*, vol. 16, pp. 483-489.
- Shah, R., Ward, P.T. (2007). Defining and developing measures of lean production, *Journal of Operations Management*, vol. 25, iss. 4, pp. 785-805.
- Skowron-Grabowska, B. (2009). Performance measurement in logistics centers, *Advanced Logistic Systems*, vol. 3, iss. 1, pp. 213-218.
- Sundara, R., Balajib, A.N., Satheesh Kumar, R.M. (2014). A Review on Lean Manufacturing Implementation Techniques, *Procedia Engineering*, vol. 97, pp. 1875-1885.
- Statistical committee of the Republic of Azerbaijan. (2017). *Industry of Azerbaijan*, [online]. Available: http://www.stat.gov.az/menu/6/statistical_yearbooks/source/industry_2017.zip. [2017, November 10].
- Tangl, A., Vajna, I. (2016). Lean-Kaizen Tools for the Accounting System and the Decision Making Process. In F. Bylok and A. Tangl (Eds.), *The role of management functions in successful enterprise performance*. Agroinform, Budapest, pp. 159-170.
- Trading economics (2017). *Azerbaijan Industrial Production forecast*, [online]. Available: <https://tradingeconomics.com/azerbaijan/industrial-production/>. [2017, November 10].
- Vajna, I., Tangl, A. (2017). The Lean effect of the 5S and standard work development in different automated machine process standardization. pp. 67-74. In B.Cs. Illés et al. (Eds), *Management and Organization: Concepts, Tools and Applications*. Pearson, Harlow.
- Wahab A.N.A., Mukhtar, M., Sulaiman, R. (2013). A conceptual model of lean manufacturing dimensions, *Procedia Technology*, vol. 11, pp. 1292-1298.
- White, R.E., Pearson, J.N., Wilson, J.R. (1999). JIT Manufacturing: a survey of implementation in small and large US manufacturers. *Management Science* vol. 45, no. 1, pp. 1-15.
- Womack, J.P., Jones, D.T., Roos, D. (1990). *The Machine that Changed the World*, New York: Rawson Associates.
- Wong, Y.C., Wong, K.Y., Ali, A. (2009). A Study on Lean Manufacturing Implementation in the Malaysian Electrical and Electronics Industry, *European Journal of Scientific Research*, vol. 38, iss. 4, pp 521-535.
- Worley, J.M., Doolen, T.L. (2006). The role of communication and management support in a lean manufacturing implementation, *Management Decision*, vol. 44, iss. 2, pp. 228-245.

Yang, M.G., Hong, P., Modi, S.B. (2011). Impact of lean manufacturing and environmental management on business performance: An empirical study of manufacturing firms. *International Journal of Production Economics*, vol. 129, iss. 2. pp. 251-261.

Waleed Al-Zaidi^{1*}

Szent István University
Hungary

Ahmed Al-Zuhairi²

Middle Technical University
Iraq

Shawkat Salih³

Middle Technical University
Iraq

Anna Dunay⁴

Szent István University
Hungary

2. ROLE OF SUPPLY CHAIN RELATIONSHIP ON INVENTORY MANAGEMENT POLICIES: A CASE STUDY IN STATE COMPANY FOR DRUG MARKETING AND MEDICAL SUPPLIES-IRAQ

Abstract: Nowadays keeping low level of inventory is the main aim for companies because it poses high rate of cost in supply chain. To achieve this aim there should be a close relationship between supply chain members. The aim of this article was to analyze the present situation on the Iraqi pharmaceutical supply chain and to identify the main problems of the system and formulating suggestions for the future improvement. This study clarified the role of supply chain relationships in determining inventory management policy which plays an essential role in the efficiency of pharmaceutical supply chain, and illustrated the main reasons behind the long lead-time in Iraqi pharmaceutical supply chain. The actuality of the topic lies in the importance of pharmaceutical supply chain for health institution and its role for the society, i.e. providing medical service for patients at a suitable time and suitable cost. The survey was conducted in Iraq, to explore the present conditions of the pharmaceutical supply chain, by the example of a company for drug marketing and medical supplies, which is the main company that provides pharmaceutical materials for all Iraqi provinces and the Ministry of Defense. The research was conducted by in-depth interviews with the main directors at different levels in a pharmaceutical supply chain from the company, and at the other end of the supply chain represented by hospitals and primary health care centers in Iraqi health institutions. The main results of the study were that there is no close relationship between the company and its suppliers, as annual contracts are prepared each year and conduct new tenders with different suppliers. Thus, they used annual replenishment for inventory which could affect the efficiency of the pharmaceutical supply chain such as surplus or shortage in medicines and pharmaceutical materials.

Keywords: cooperation, information sharing, inventory management, pharmaceutical industry.

JEL Classification: M19, L65, I11

1. Introduction

Supply chain management describes the coordination of all supply chain activities, starting with raw materials and ending with a satisfied customer. Thus, a supply chain includes suppliers; manufacturers and/or service providers; and distributors, wholesalers, and/or retailers who deliver the product and/or service to the final customer (Heizer, Render, Munson, 2017). Relationships play a significant role in supply chains and if companies do not have a good relationships with the supply chain parties, they will be confused all the way from suppliers to customers (The role of relationships in supply chain management, n. d.). Supply chain relationship covers the supply chain including all members of supply chain from the suppliers to customers. Most company relationships focus on first tier suppliers and first tier customers. There are two types of relationships, namely arm's length relationship and

¹ Waleed Al-Zaidi Ph.D. Student; H-2100 Gödöllő, Páter K. u. 1., Hungary, waleedah1983@yahoo.com

² Ahmed Al-Zuhairi Lecturer Assist.; Muasker Al Rashid Street, Baghdad, Iraq, ahmed.k.hussein@mtu.edu.iq

³ Shawkat Salih Lecturer Assist.; Muasker Al Rashid Street, Baghdad, Iraq, shawkt1982@yahoo.com

⁴ Assoc. Prof. Dr. hab. Anna Dunay Ph.D.; H-2100 Gödöllő, Páter K. u. 1., Hungary, dunay.anna@gtk.szie.hu

* Corresponding author

close partnership. The arm's length relationship is clarified when the supply chain members focus only on the volume and price of the transaction; whereas, the close partnership relationship is illustrated when the parties exchanged their vision, investment planning, new product introduction (NPI) process and detailed financial information. The decision on supply chain relationship is represented at two levels, strategic and operational levels (Lu, 2011, p. 14).

The interaction among parties includes short-term exchanges and long-term relationship behaviors. The supply chain relationships tend to be considered as a long-term relationship which insures long-term cooperation (Razavi et al., 2016). According to (Saad, Jones, James, 2001; Keller, 2002; Fynes, de Burca, Marshall, 2004; Lages, Lages, Lages, 2004) that the long-term relationship is the soul of relationship quality. The long-term relationship helps to reduce behavioral uncertainty, which includes opportunism and bounded rationality. As well as, the close long-term relationships among parties are a powerful barrier to the entry of another company (Fynes de Burca, Marshall, 2004).

Building close relationships in supply chain between suppliers and customers can enhance inventory management, especially, the companies which try to reduce inventory levels as low as possible which apply lean system. The close relationship in supply chain can be a win-win situation for everyone which help to reduce costs for suppliers and customers finally improving the profit margin, and increasing the efficiency of supply chain. At the same, the relationship should be with few suppliers and make sure that the geographical place of supplier located proximity to promote strong partnerships and better synchronize product flows (Krajewski, Malhotra Manoj, Ritzman, 2016). To build a successful relationship in supply chain, there should be mutual trust, long-term commitment, information sharing, and cooperation (Al-Ani, Al-Omari, 2016; Al-Zaidi, Shaban, Naif, 2017).

Although many articles are available in this topic, the authors of this article were motivated to know how supply chain works in Iraqi pharmaceutical supply chain, how the state company of drug marketing and medical supplies manages the relationship with the suppliers and which model of inventory management they use to adapt with their policy. The aim of the paper was exploring the following questions: (1) What is the nature of relationship between the company and suppliers? (2) Which kind of inventory management system is used by the examined company? (3) Which kind of problem they face in pharmaceutical supply chain?

By answering these questions, the main problems of the Iraqi pharmaceutical supply chain may be identified, and some critical remarks can be formulated which may accelerate and strengthen the future development of this highly important sector.

2. Literature Review: Inventory Management

According to (Dias, 2012) inventory management is an extremely important in pharmaceutical supply system so that without healthy inventory system, the pharmaceutical supply system will not be viable. In fact, the task of inventory management is rather hard, and poor management of inventory in pharmaceutical supply system for example order frequency and quantity, inaccurate stock records and a lack of systematic performance monitoring can cause waste of financial resources, lack of important medicines or surplus of others leading to expiration and poor quality of patient care. These problems because of lack of knowledge and appreciation of what inventory management means; and in many cases, there are no systematic procedures and roles to guide staff (Szegedi, Illés, 2007). The problem will be exacerbated if the managers have a lack of understanding of the basic issues of proper inventory management (Williams, Tokar, 2008).

There are several advantages and disadvantages of maintaining inventory as shown in Table (1).

Table 1. Advantages and disadvantages of maintaining inventory

Advantages	Disadvantages
<ul style="list-style-type: none"> – Minimize life-threatening shortages – Facilitate bulk purchasing – Increase transportation efficiency – Protect against seasonal fluctuations 	<ul style="list-style-type: none"> – Capital cost – Expiration – Spoilage – Obsolescence – Storage costs – Pilferage costs

Source: Dias, 2012

Inventory management focuses primarily on activities related to planning and control stocks to ensure achieving a set of objectives to meet the needs of companies and customers as efficiently as possible for improving revenues, reducing degradation and obsolescence, improving warehouse utilization and reducing utility, labor and capital costs. Therefore, it is tied both directly and indirectly to huge financial gains (Amjed, Harrison, 2012). Thus, from the perspective of materials management, an appropriate definition of inventory can be a usable but idle resource having some economic value. Physical inventory is essential for the continuity of production and services provided. However, keeping stocks is not free because there are opportunity costs of holding in companies. Accordingly, the paradox is that inventory is needed, but it is not desired which makes inventory management a complicated area in materials management. It also makes a high inventory turnover ratio as a good performance indicator (Amjed, Harrison, 2012).

There are several kinds of inventory including raw materials, bought-out-parts (BOP) which go to the product assembly directly as it is, work-in-progress (WIP) or pipeline inventory, finished goods inventory to support the distribution to the customers and maintenance, repair, and operating (MRO) supplies (Vrat, 2014).

Inventory is one of the most important cost elements and must be managed well to minimize costs. Therefore, because of the high cost of keeping inventory, the companies try to reduce inventory levels which can be achieved by focusing on raising supply chain efficiency, quality management and reducing uncertainty at various points along the supply chain (Szegeđi, Illés, 2006). In fact, uncertainty is created by low-quality weather from the part of the company or its suppliers or both. This can be represented by variations in delivery times, large fluctuations in customer demand, or poor forecasts of customer demand. Therefore, much of inventory management involves lot sizing to determine how frequently and in what quantity the inventory should be ordered (Russell, Taylor, 2011).

There are several tools used to control inventory, the following plays the most important role in pharmaceutical supply chain in maximizing the inventory efficiency.

Economic order quantity (EOQ)

It is one of the most important models to manage inventory under certainty situations. It is used to determine the quantity required to minimize total cost and balance between procurement and holding costs. The economic order quantity is called economic lot size as well (McLaughlin, Hays 2008; Kumar, Suresh, 2009; Brindha, 2014).

Continuous review (Q)

Continuous review or perpetual inventory one of the most common in pharmaceutical supply chain designed to track stock units continuously to determine the quantity, at which an order must be placed, and time of reorder. Sometimes, it is called reorder point system or fixed quantity system. Depending on continuous review models, it is possible to place order at any time when the inventory reach at the minimum level (Buffa, Sarin 1990; Dias, 2012). The Continuous review is more sophisticated and efficient than periodic review when precise information is available at real-time and use computer systems or detailed records are maintain (Çakıcı, Groenevelt, Seidmann, 2011; Accounting tools, 2013).

Periodic review (P)

In pharmaceutical supply chain, there are two models as a periodic review model. The first model is annual purchasing model used to purchase items at once a year. Annual purchasing can be suitable for countries which new programs, which have no system for inventory management. Annual purchasing might be compulsory in countries that have limited local sources and lead times of importing from foreign suppliers needs months for arriving. Although using schedules or continue purchasing by some systems, some items might be purchased annually. There are several disadvantages related to this model like surpluses, shortages and expensive emergency orders, high stock levels and cost of inventory-holding, providing a huge single delivery is hard, large storage space, difficulties to pay funds and workload in the main receiving points and procurement office.

The second model is schedule purchasing in which orders are placed at a selected time such as (weekly, monthly, quarterly, biannually). Orders are placed at the scheduled order date for suitable quantity to meet average needs until the next order. Schedule purchasing have to take into account stock needed during the lead time for that order (plus replenishment of safety stock, if needed). In most supply systems, new orders are placed only after receiving the previous one. However, there are some systems use tandem ordering, with overlapping orders and various expected times of arrival, if the reliability of estimated lead time is high.

In scheduled purchasing, supply contracts can be renewed at each interval or can be negotiated at the beginning of the year, with the condition that orders will be placed when needed at the identified ordering intervals.

Although there are several benefits for the schedule purchasing model like bullwhip effect is less than annual purchasing model, bullwhip effect can still occur with scheduled review periods in three to six months, as shown in Fig. 1, and the cost of inventory-holding is directly proportional to the interval of material supply (Sucky, 2009; Dias, 2012; Buchmeister, Friscic, Palcic, 2013; Chen, Lee, 2012).

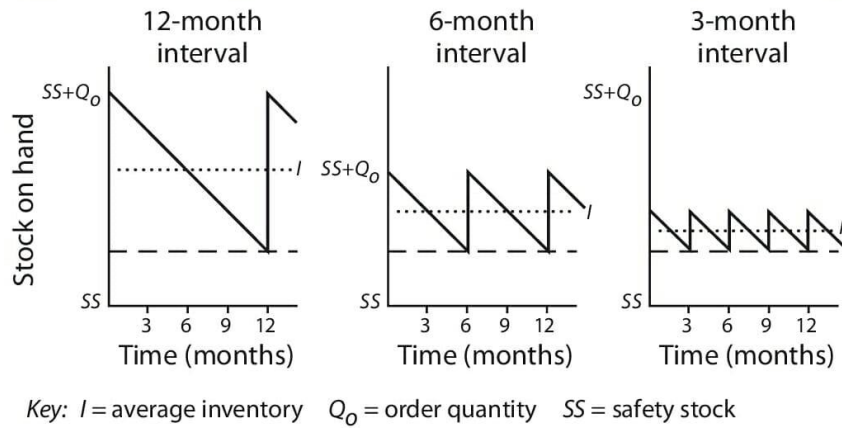


Figure 1. Impact of reorder interval on average inventory

Source: Dias, 2012, p. 460

According to Accounting tools definition (2013), continuous review of the system is more appropriate than the periodic review system. The case, in which periodic system is better to use, is when the inventory amount is very small, and it is easy to review it visually without any specific need for more detailed inventory records. The periodic system can be also used better when the workers of warehouse are weakly trained in the use of continuous review system (Nepal et al, 2012).

Hybrid system

The hybrid inventory control systems combine some but not all the features of the periodic (P) and continuous (Q) systems. This system can be based on the importance of medicine by using suitable classification such as (ABC) or others (Dias, 2012; Krajewski, Malhotra Manoj, Ritzman, 2016).

3. Methodology

In order to analyze the Iraqi system of the pharmaceutical supply chain, a research survey was started and is still conducted by using depth unstructured interview method with the main directors and managers of companies situated in the different levels of the Iraqi pharmaceutical supply chain (i.e. the state company for marketing drugs and medical supplies, the main stores, the hospitals and the primary health centers). The survey was conducted in different provinces of Iraq. The sample is summarized by Table 2.

Table 2. The research sample: number of interviewers and institutions

Name of institute	The state company for drug marketing and medical supplies	Main store of pharmaceutical dept. in health sector bureau	Hospital	Primary health care center
Number of interviews	2	2	4	6

Source: Own research

The table above shows the institutions in which the interview was made and the number of interviewed managers. The state company for drug marketing and medical supplies is the main supplier of health institutions in Iraqi provinces, which are represented by the main stores of the pharmaceutical departments in health bureaus. The main stores of the pharmaceutical department provide the hospitals health centers with medicines and pharmaceutical supplies. All interviewed

respondents are working as directors in pharmaceutical warehouses and stores. The personal interviews were conducted in September and October of 2017. The whole interview contained different additional questions regarding the supply chain processes and methods, this paper focused on the following four questions:

1. What is the procurement procedures with your suppliers?
2. Do you have coordination with suppliers such as stock and consumption data exchange?
3. Do you have a long-term commitment with suppliers?
4. What is the approved inventory management system i.e. what is the mechanism of replenishment of inventory?

The interviews were conducted in accordance with the different layers and levels of the Iraqi pharmaceutical supply chain (introduced by Figure 2.). The interviews covered all kinds of health institutions to understand how the pharmaceutical system works. The data were cross-checked again with all the participants, who involved in interviews, to ensure reliability, validity and dependability. Unstructured interviews are one of the main data collecting methods which help a researcher to understand the system nature in study field deeply and collect a huge amount of data about study field (Sekaran, 2003), this type of interviews were taken by the representatives of the supply chain.

The results presented by this paper are limited to the findings of the first round of interviews, and the four abovementioned questions, but in the presently conducted and further steps of the research, the authors will use the same methodology for data collection. In the next steps of the survey, the full statistical analysis will be accomplished.

4. Results

The paper presents only the preliminary results of the research as it is still under survey. In this article, authors focused on summarizing the players and the relations of the Iraqi pharmaceutical supply chain and described the system of the supply chain by a system approach (Figure 2).

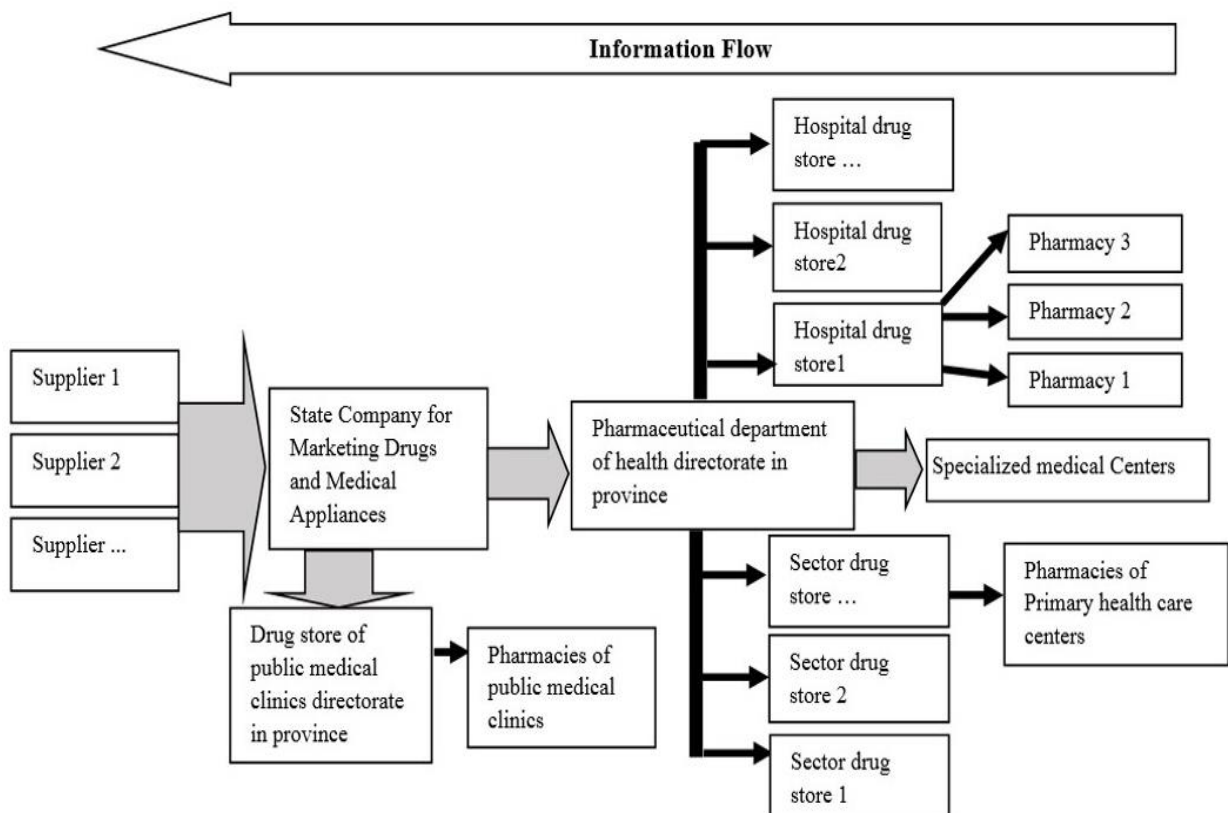


Figure 2. The pharmaceutical supply chain of Iraq

Source: Authors' own

Before introducing the operation and the different processes of the examined company, it is important to describe it briefly. The state company for drug marketing and medical supplies was established in 1964. The company is directly connected to the Iraqi health ministry. It provides all Iraqi health institutions both state sector and private sector by medicines and pharmaceutical materials which are imported and distributed to health institutions, as illustrated in Figure 2.

The nature of the company's relationship with the suppliers is short-term and does not depend on the principle of partnership. It is possible to change the supplier after each transaction. In addition, there is no exchange of data regarding inventory and demand forecasting only formally for contracting and transactions. The transactions can happen every year by announcing the deal to suppliers after that the suppliers submit their bids to the company and then the bids are opened by a special committee which is studied carefully to choose the appropriate tender for the company. After selecting the appropriate tender for the company, the committee will examine the samples of the transaction which will be chosen if it meets the specifications. All these procedures need very long time which might need more than one year. So, the company asks the health institutions, which committed with the company under study according to government legislations, to send their needs before two years, for instance, the health institutions have to send their needs for 2019 beginning of 2017. In addition, there is no software system can connect all members of pharmaceutical supply chain in Iraq.

Using the findings of former literature sources it was found that the arm's length strategy is used this system, i.e. the supply chain members focus only on the volume and price of the transaction instead of building closer relationships with each other. According to the system of the state company for drug marketing and medical supplies, they use annual purchasing model used to purchase medical materials and medicines once a year. The model has some disadvantages which were mentioned in the literature review. So, the problems in the Iraqi pharmaceutical supply chain are highlighted in this study.

The inventory replenishment in the State Company of Drug Marketing and Medical Appliances can be happened annually because they cannot demand small lot-size batch because they do not have coordination and commitment with the suppliers, so, they use annual replenishment. Whereas, the inventory replenishment in the Main store of pharmaceutical department in health sector bureau, hospitals, and primary health care centers are monthly because they are committed and coordinate with the equipped company but they are affected by the equipped company problems since the State Company for Drug Marketing and Medical Appliances use annual replenishment with the suppliers.

After making interviews with the directors of health institutions, they mentioned some problems can happen due to this kind of system. The first problem, there is no flexibility to replenishment inventory and there are surplus and shortage in medicines and pharmaceutical materials which lead to extra processes to redistribute the surplus; and waiting and extra processes to make up the shortfall. As well as, there is no visibility due to the lack of an electronic system connecting the members of the pharmaceutical supply chain.

As the survey is still conducted in other players of the pharmaceutical supply chain in Iraq, the statistical analyses have not been conducted until present, which is a main limitation of finalizing the research results. Based on the experiences of the interviews and the opinion of the different level managers, authors could formulate the preliminary results and the preliminary conclusions and suggestions for the future. In the present state of the research, and only the some players were interviewed the research serves as a pilot survey. Based on the findings of the conducted interviews the survey questions are to be finalized or reconsidered when needed.

5. Conclusion and Recommendations

The main results of this study have been selected after conducting interviews with different levels in the pharmaceutical supply chain Iraq. The examined state-owned company manages its relationships with suppliers as an arm's length strategy. This strategy means that they make their deals with the supplier according to price and taking into account quality and some other considerations i.e. there is no long-term relationship between the company and other parties of the supply chain.

They have to check the medicines and pharmaceutical supplies every time they make a transaction with suppliers that need a long time to finish all the procedures which cause delay and shortage in some pharmaceutical materials which affect service quality of health care in the health institutions. In addition, big amount of surplus can be happened due to long lead time and there is no possibility to

estimate exact need before two years. Because of this strategy, the company shall manage the relationships with the suppliers in such way, that they do not have any choice to manage their inventory just using annual purchasing method to adapt to the suppliers, because of the uncertain period of a relationship.

The Iraqi pharmaceutical supply chain – under present circumstances – is very special and the results of this survey are hardly compared to the results of other international research results. The political problems of the past years in Iraq caused a situation near to collapsing in every economic sector of the country. During the war period, the normal processes of work and management have been simplified, and at the present, many operations are under change and are to be normalized. It is very hard to compare the present state of the pharmaceutical supply chain to foreign practices and the results of previous researches. The Iraqi system is a special, centralized one, where decisions presently are made in accordance with the complicated present circumstances and the selection of the players of the chain is made by an ad-hoc procedure in many cases.

Due to the fact that the survey is still under elaboration, authors of the paper some preliminary recommendations for the company under study. It is very important to build a permanent or longer partnership with few numbers of suppliers which can help to reduce the cost for both partners. New suppliers are required to open new branches for their factories in Iraq, which could strengthen the supply chain. Because of the special features of the Iraqi macro-environment, the international experiences and good practices should be adapted to the circumstances and could be implemented after a reconsidering and through a step-by-step process. A continuous review method should be used to manage inventory of Iraqi health institutions, and finally, modern information technology system should be adopted and implemented to support continuous review method and enhancing the visibility in supply chain.

The limitations of the study are derived from the fact that the survey is under process. The paper presented by the authors summarizes the preliminary results of the research which is still conducted at the present. The first stage of the survey was closed in one location of the sample, but the results showed that the preliminary concept about the special features and low intensity of the Iraqi pharmaceutical supply chain was proven. Although the sample is small and cannot be used for drawing significant conclusions, but it is worth to highlight that the gap between the inventory management methods in Iraq and the widely used methods published by different literature sources. The further results and deeper analysis of the research results will be presented after the completion of the survey.

References

- Accounting tools (2017). *The difference between the periodic and perpetual inventory systems*, [online]. Available: <https://www.accountingtools.com/articles/what-is-the-difference-between-the-periodic-and-perpetual-in.html> [2017, November 12].
- Al-Ani, M.A., Al-Omari, D.G.I. (2016). The Quality of Relationships of Supply Chain and Its Impact on Supply Chain Performance, *AL-Anbar University Journal of Economic and Administration Sciences*, vol. 8, iss. 16, pp. 21-49.
- Al-Zaidi, W., Shaban, F., Naif, N. (2017). The role of supply chain relationship quality on customer service quality. *Proceedings of IAC 2017 in Budapest*, pp. 194-206. Prague: Czech Institute of Academic Education z.s.
- Amjed, T.W., Harrison, N.J. (2013). A Model for Sustainable Warehousing: From Theory to Best Practices, *International DSI and Asia Pacific DSI Conference proceedings*, pp. 1892-1919, USA: Decision Sciences Institute.
- Brindha, G. (2014). Inventory Management, *International Journal of Innovative Research in Science, Engineering and Technology*, vol. 3, iss. 1, pp. 8163-8176.
- Buchmeister, B., Friscic, D., Palcic, I. (2013). Impact of demand changes and supply chain's level constraints on bullwhip effect. *Advances in Production Engineering & Management*, vol. 8, iss. 4, pp 199-208.
- Buffa, E.S., Sarin, R.K. (1990). *Modern Production / Operations Management 8th Edition*, New York: John Wiley & Sons.
- Çakici, Ö.E., Groenevelt, H., Seidmann, A. (2011). Using RFID for the management of pharmaceutical inventory-system optimization and shrinkage control, *Decision Support Systems*, vol. 51, iss. 4, pp. 842-852.
- Chen, L., Lee, H.L. (2012). Bullwhip effect measurement and its implications, *Operations Research*, vol. 60, iss. 4, pp. 771-784.
- Dias, V. (2012). *MDS-3: Managing Access to Medicines and Health Technologies, Management Sciences for Health*, USA: Inc. Arlington.

- Fynes, B., de Burca, S., Marshall, D. (2004). Environmental uncertainty, supply chain relationship quality and performance. *Journal of Purchasing & Supply Management*, vol. 10, pp. 179-190.
- Heizer, J., Render, B., Munson, C. (2017). *Operations Management: Sustainability and Supply Chain Management*. Harlow, UK: Pearson Education Limited.
- Keller, S.B. (2002). Internal relationship marketing: a key to enhanced supply chain relations. *International Journal of Physical Distribution & Logistics Management*, vol. 32, iss. 8, pp. 649-668.
- Krajewski, L.J., Malhotra Manoj, K., Ritzman, L.P. (2016). *Operations management: processes and Supply chains*. Harlow, UK: Pearson Education Limited.
- Kumar, S.A., Suresh, N. (2009). *Production and operation management*. New Age International Publishers.
- Lages, C., Lages, C.R., Lages, L.F. (2004). The REQUAL scale: a measure of relationship quality in export market ventures. *Journal of Business Research*, vol. 58, iss. 2005, pp. 1040–1048. [online]. Available: http://www.ijlages.com/papers/JBR_Relqual.pdf [2017, November 12].
- Lu, D. (2011). *Fundamentals of supply chain management*, Ventus publishing Aps, Frederikesberg, Denmark, [online]. Available: <http://library.ku.ac.ke/wp-content/downloads/2011/08/Bookboon/Magement%20andOrganisation/fundamentals-of-supply-chain-management.pdf> [2017, November 12].
- McLaughlin, D.B., Hays, J.M. (2008). *Healthcare Operations Management*, Chicago: AUPHA Health Administration Press.
- Nepal, B., Murat, A., Chinnam, R.B. (2012). The bullwhip effect in capacitated supply chains with consideration for product life-cycle aspects, *International Journal of Production Economics*, vol. 136, iss. 2, pp. 318-331.
- Razavi, S.M., Abdi, M., Amirnequice, S., Ghasemi, R. (2016) ‘The Impact of Supply Chain Relationship Quality and Cooperative Strategy on Strategic Purchasing’, *Journal of Logistics Management*, vol. 5, iss. 1, pp. 6-15.
- Russell, R.S., Taylor III, B.W. (2011). *Operations Management: Creating Value Along The supply chain*. New Jersey: Prentice-Hall Inc.
- Saad, M., Jones, M., James, P. (2001). A review of the progress towards the adoption of supply chain management (SCM) relationships in construction. *European Journal of Purchasing & Supply Management*, vol. 8, pp. 173-183, [online]. Available: <https://pdfs.semanticscholar.org/9e23/a5c211321a367cac6d2c8db3ce4ca10d047c.pdf> [2017, November 12].
- Sekaran, U. (2003). *Research Methods for Business: A Skill-Building Approach*. John Wiley & Sons, Inc.
- Sucky, E. (2009). The bullwhip effect in supply chains – An overestimated problem? *International Journal of Production Economics*, vol. 118, iss. 1, pp. 311-322.
- Szegedi, Z., Illés, B.Cs. (2006). Logistics Management Awareness of Hungarian Small and Mid-Size Companies, *Proceedings of International Scientific Days 2006: “Competitiveness in the EU - Challenge for the V4 Countries”*, pp. 165-172. Nitra: Slovak University of Agriculture.
- Szegedi, Z., Illés, B.Cs. (2007). Logistics and Supply Chain Management for Hungarian Mid-Size Companies: Effect on Competitiveness. *Creativity and Innovation: Imperatives for Global Business and Development: Proceedings of the 10th International Conference of the SGBED*. Kyoto: Center for International Business
- The role of relationships in supply chain management* (no date). [online]. Available: <http://www.achilles.com/en/about-achilles/industry-insights/1299-the-role-of-relationships-in-supply-chain-management> [2017, December 03].
- Vrat, P. (2014). *Materials Management: An Integrated Systems Approach*, Springer Texts in Business and Economics, New Delhi: Springer India.
- Williams, B.D., Tokar, T. (2008). A review of inventory management research in major logistics journals: Themes and future directions, *The International Journal of Logistics Management*, vol. 19, iss. 2, pp. 212-232.

Liliya R. Amirkhanova^{1*}

Ufa State Aviation Technical University
Russia

Evgeniy Yu. Bikmetov²

Ufa State Aviation Technical University
Russia

Maxim A. Bronnikov³

Ufa State Aviation Technical University
Russia

Ulfat G. Zinnurov⁴

Ufa State Aviation Technical University
Russia

3. DETERMINATION OF PRIORITY STRATEGIC RISKS IN MANAGING START-UPS

Abstract: In order to identify, evaluate and manage risks of a start-up at all stages, it is necessary to solve isolating and measuring tasks of existing risks. Start-ups are lack of a metrics and tools to manage a project risk. For this purpose, it was undertaken to identify types of risks that are invariant for all start-ups and to identify directions for determining priority strategic risks, which can allow any start-up enterprise managing its own risks. The classification, that was proposed, takes into account the source of a risk and its category associated with the essence of the risk. The concept of "resource barriers between layers of the industry" was analyzed. To overcome the barriers of the industry, the enterprise must choose an appropriate form of incorporating enterprises. It was proposed to measure the enterprise potential for the speed of updating the model range of its products. To reduce the impact of risk situations on a start-up enterprise the authors have worked out a special technique.

Keywords: identification of priority risks, management of strategic risks, start-ups.

JEL Classification: L26, M13

1. Introduction

In modern conditions of economic development, start-up enterprises can be considered as a critically important factor in the economic well-being of a nation. Start-ups should be understood as newly founded enterprises being in the phase of development and growth. The purpose of foundation and development of a start-up is the transformation of a business idea, the result of research or a product prototype into a real product, ready for reproduction and distribution at the market, with the purpose of product launch, generating demand for it and then achieving sustainable sales of the product at the market. The subsequent stages of the start-up development are its transformation into a stable functioning traditional business or forced capitalization of the enterprise with the purpose of its subsequent sale. Start-ups face challenges that are vital to them. The emergence of a challenge means the implementation of a certain risk category of the start-up. In any case, during the development of the start-up, the task of identifying the risks of the start-up at all stages of its existence and development appears as decisive conditions and limitations in making managerial decisions. To manage a start-up successfully, it is necessary to identify risk management strategies that can provide the start-up with growth and survival. Risk is defined as a situation that prevents the successful operation of a start-up. Start-up survival strategies are aimed at identification, prediction and transformation of such situations. Therefore, the problem arises when describing such strategies

¹ Doctor of Economics Prof. Liliya R. Amirkhanova; 12, K. Marks Street, Ufa, Russia, nfs_kamil@mail.ru

² Doctor of Sociological Sciences Prof. Evgeniy Yu. Bikmetov; 12, K. Marks Street, Ufa, Russia, bicprof@mail.ru

³ Candidate of Economics Assoc. Prof. Maxim A. Bronnikov; 12, K. Marks Street, Ufa, Russia, Inhbus4089@yandex.ru

⁴ Doctor of Economics Prof. Ulfat G. Zinnurov; 12, K. Marks Street, Ufa, Russia, ulfatzinnurov@gmail.com

* Corresponding author

therefore initially it is necessary to take into account risks associated with start-ups. It is necessary to have such a description as invariant with respect to different types of start-ups, regardless of their industry and markets. The requirement of invariance determines the problem of finding a general criterion for allocating risk situations. The formulation of an indicator of a risk situation can be considered as an indicator of the potential risk presence. It is necessary to identify priority risks or risks of the first rank, which cause the formation of other types of risk which will allow the start-up enterprise to achieve the goal successfully. In this regard, it is necessary to consider a methodology for reducing the impact of risks on a start-up enterprise.

2. Literature Review

Rasmussen and Tanev identify a number of factors of risk formation during the step-by-step transition: the availability of the correct solution of an important problem related to the needs of the target customer; understanding the demographic and behavioral characteristics of target customers; the possibility of a cost-effective offer of this solution to target customers; the generated model of the income, including estimations of the market size, production costs and expenses of acquisition of the customer (Rasmussen, Tanev, 2016). Dibrova examines risks of a start-up, based on the typological categories of its participants, among which business investors and start-up enterprise managers are especially distinguished (Dibrova, 2015). Basu and co-authors emphasize the increased risk of bankruptcy in the activities of start-ups and offer factors, actualization of which may lead to bankruptcy of the start-up (Basu, Nair, 2015), as a criterion of risk factors. The approach of the authors in this regard can be considered simplistic, since they consider the criterion of consequences as a general criterion of risk factors: risk factors include those features of the situation and those managerial decisions that reduce or make negative the cash flow entering the enterprise. Nanda and Rhodes-Kropf note that the current phase of the market investment cycle significantly impacts on the success of start-ups (Nanda, Rhodes-Kropf, 2013). The results of these researchers show that the success of a start-up is significantly affected not by the correct allocation of investment between projects, but by the total amount of experimental investment made by capital investors. There is also a significant risk factor - the current stage of the investment market cycle, demonstrated by the revival or weakening of the overall investment activity. Jorgensen emphasizes the importance of choosing the project counterpart developers involved in the start-up business on an outsourcing basis (Jorgensen, 2014). In this direction, he identified factors that allow predicting the risk of design failure, which include the criteria for selecting such counterparties, based on the terms of transactions with them. Bocken identifies the following risk factors: the business model used, including the degree of its novelty; relationships in the start-up team; factor of short-term thinking of management and investors; understanding of the existing and future market; "Patience of the investor" as an orientation in choosing preferences between acquiring long-term advantages and immediate profit; the viability of the proposed innovation; dynamism of the management style of the start-up; information asymmetry of a young enterprise in comparison with established enterprises; individual qualifications and competences of members of the start-up team (unlike long-established enterprises, more focused on the unity of the team); availability of risk capital offer; (Bocken, 2015). Ruhnka and Young recommend paying special attention to risk factors such as the organization of the start-up management itself, especially with regard to planning and decision-making (Ruhnka, Young, 1987).

The complex factor of risk formation, from their point of view, is the organization of the start-up management in conjunction with the planned successful completion of each stage of the start-up development. Important levels of this factor are the level of development and implementation of business plans used in managing the start-up, the availability of prototypes that form the start-up product at the market, the degree of novelty of the start-up offer, the availability of market research procedures results, inadequate marketing at the appropriate stages of the start-up development and the wrong organization of distribution. Bruno and co-authors note the importance of marketing factors for the formation of start-up risks, which include confidence in sales relative to one customer; unsuccessful timing of penetration to the market; the need to change or upgrade the product before the start of main sales (Bruno, Mcquarrie, Torgrimson, 1992). The need to take financial risks into account has been noted by many authors, and Shepherd (Shepherd, Douglas, Shanley, 2000) has considered this problem with sufficient completeness. As a criterion for the implementation of financial risks, they consider the situation when the fall in the incomes of an enterprise and/or the

unexpected increase in its costs make the enterprise insolvent, unable to attract new investments or sell its shares and thus cannot continue working. The absorption capacity of the enterprise as its ability to recognize the value of new, external information and to apply it to the development and implementation of business solutions are determined as factors of the formation of such a situation; degree of uncertainty of customers in the new enterprise; the experience and knowledge of the start-up team in the field of applied production technology; confidence of investors in the competence of the management team. Informational value has an applied reduction strategy, the existence of marketing agreements with existing enterprises that can provide the opportunity to use their brand or would allow a new enterprise operating under a “corporate umbrella”. The ability of a corporate identity to provide an “umbrella brand” for the new product development is widely recognized (Aaker, Yokhimshtayler, 2003; Wansink, 1989). Rea points out that the state of the surrounding business environment of a start-up (called business factors) is extremely important (Rea, 1989). Researches carried out by Duchesneau and Gartner show that key factors that determine the success of a start-up are as follows: the characteristics of the entrepreneur who launched the start-up; processes of initial establishment undertaken during the launch of the start-up, and the stability of business behavior after the launch of the start-up (Duchesneau, Gartner, 1990). Smith emphasizes the importance of factors such as the formation of competitive benefits of customer service (Smith, 2000). A significant factor in the field of start-ups is the impact of competitors on the start-up team. An important factor is the speed of change in the company’s business strategy, including the reaction to changes in the business environment and implementation in its own business. Chorev and Anderson note the following critical factors in the formation of risks: inappropriate business models used; inadequate organization of sales; ability to protect key benefits in technology; the ability to reduce customer costs and use the network effect when the value of a product or service for that user increases with the number of other users of that product or service (Chorev, Anderson, 2006). Among risk factors for the start-up Crow emphasizes the presence risk of those associated with the actual organization of the start-up team (Crow, 2005). Janney and Dess consider specialized knowledge among the entrepreneurs, which forms competitive advantage (Janney, Dess, 2006), as an exceptionally important factor determining the success of a start-up and, accordingly, the risk assessment of its existence. There are two definite types of risk for the entrepreneur of a start-up: the risk of specialized knowledge protection and the risk of competing knowledge (or loss of its carriers). Both risks increase with the growth of specialized knowledge.

3. Research Model

Using the principle of distinguishing basic types of technological, operational, technical, market and management risks, a classification that takes into account the source of risk and its category associated with the essence of risk is proposed.

Table 1. Classification of risks types

Source of the risk	Classification of risks types	Most common types of risks
external environment	organization of interaction with the customer	Technological risks: too much confidence about orders of one customer, the size and rate of change at the potential market, the availability of knowledge about the target customers and their behavior, the possibility of using a large buyer-counterparty (as an R&D partner or customer), the ability to spread information to potential customers, information openness for target audiences, the availability of information for customers, product samples and advice. Market risks: the possibility of unique value identification (values) in target groups of customers, the possibility of obtaining implementation of values of target groups of customers in a unique trade offer (product), the possibility of obtaining identical customer responses on brand and product values when the product is bringing to the market, the size of differences between the identities of the start-up product response by customers and start-up managers, the ability to stimulate the activity of primary and potential customers to interact with the start-up, the presence/absence of trustworthy ties between innovative customers and potential customers (due to the personification of these ties).
external environment	organization of interaction with the counterparty	Technological and operational risks: good suppliers attitude, relation break with suppliers (supplier change), availability of unique competencies and advantages among suppliers, speed of supply, compliance of suppliers with needs of a start-up, good financial condition of the supplier, supplier’s readiness for adaptation, the optimal culture of relations with the supplier, the

		<p>suitability of the supplier team for the start-up, possible mass production, the availability of technical and technological documentation.</p> <p>Counterparty risks: existing banking history of the enterprise, loyalty of owners (shareholders) to business, goodwill at the market, participation in professional ratings, positive opinions of authoritative research centers about the enterprise/products, judicial or administrative proceedings involving the seller, the trend to the seller's financial condition change, inappropriate use of credit funds, postponing payments and negotiations, supplier's guarantees to meet special demands of a start-up, ways of dispute settlement (relating to payments and quality of work), the possibility of choosing a supplier with an average price or lower than the average offer, the possibility to eliminate suppliers from geographical regions with high rate of supply refuses, start-up's technological experience, the possibility of attracting consultants, opportunities for cooperation in R&D, the possibilities of cooperation in marketing, the rate of technological obsolescence in the industry, the ability of start-ups to differentiate themselves among competing start-ups, the possibility of attracting new forms of financing (such as crowdfunding), excluding the barriers to use the product, change in the number of strategic partners, the ability to self-finance a new venture.</p>
external environment	competitive advantages	<p>Technical risks: the suitability of product characteristics for serial production, the successful conduct of tests under extreme conditions, the rate of innovation development (from idea to serial model).</p>
external environment	business development strategy	<p>Market risks: the probability of income beyond the normal, the presence of a unique advantage of the start-up over competitors, the stability of existence as a legal entity, the existence of long-term partners (more than 2 years), the nature of partner's feedback with the seller, the stability of the postal address of residence, the stability of top management, the stability of the founders, the adequacy of the adopted financial strategy for the situation, the activity of the current investment period and investment opportunities depending on the current "hot" and "cold" period, investors' participation in the management, the possibility of forming a coalition of founders of the start-up with major investors; the availability of suitable investors in risky enterprises and knowledge, the acceptance by the start-up of debts and liabilities, the willingness of investors to "patience", the possibility of obtaining support without commitment (for example, government assistance), the start-up enterprise readiness to take a part of the investment risk (start-up assets as deposit safety investors).</p>
internal environment	interaction of participants	<p>Market risks: owners' intellectual property rights (IP), the attitude of IP owners to the start-up.</p>
internal environment	entrepreneur and team competence	<p>Technical risks: physical properties of the product, technical reliability of the product.</p> <p>Market risks: intellectual property/patents, structure of financing sources, financial literacy of start-up managers.</p>
internal environment	business resource base	<p>Technological risks: equipment availability</p> <p>Market risks: empty market niches, market trends, the possibility of creating an umbrella project under a well-known brand, a marketing agreement with an existing enterprise that would sell the product either under the brand name of the established enterprise or would allow a new enterprise to work under a corporate umbrella of a certain enterprise, stable capital flow.</p>
internal environment	business management model	<p>Technological risks: availability of samples for initial testing, availability of samples for testing the consumer</p> <p>Managerial risks: the concept of the process of manufacturing innovation and its critical stages, attracting counterparties in business, the concept of forming a start-up team, the degree of adequacy and novelty of the business model, the income model being implemented, individual qualifications of team members, the methods used to achieve team unity, the availability of information asymmetry in providing decision-making, the type of managerial thinking ("technicians" vs "managers"), the availability of a business-friendly idea for the team and contact audiences of a start-up and methods of motivation for employees and recruited personnel, the level of intensity of knowledge accumulation in the enterprise, the speed of development of the enterprise strategy, the ability to identify and predict external changes, the use of insurance and available reserves, the ability to create a differentiated trademark.</p>

Source: Classification is based on the results of the investigation conducted by the authors of the article Bronnikov and Zinnurov

We will consider a methodology for reducing the impact of risk situations on a start-up enterprise.

It is necessary to prioritize those factors that lead the enterprise into a risky situation. The key factor that influences the success of the innovative activity of a start-up enterprise is management. Effective management allows you making adequate decisions: organization of interaction with the customer and the counterparty; formation of competitive advantages; development of a business strategy; organization of interaction between participants; selection of competent employees to work in the team; preparation of the resource base for the business; formation of a business management model. The next important factor is the resource support of the start-up enterprise: labor, material and non-material assets, finance. It is a sufficient amount of resources for their effective use that allows the start-up company conducting successful innovation activity.

The management of a start-up enterprise with available resources determines its potential. This potential must be compared with the potential of related enterprises already working in innovative sectors. One of the signs of a start-up enterprise potential is the speed at which innovations are brought to the market or the rate at which a product line is changing. At the speed of changing the model range of products is understood as the emergence of a key event (a new product or service) per unit of time, for example, per year. The intervals for the development of new models are uneven, so it is proposed to determine the average value of the rate of change in the model range:

$$V_{av} = \sum_{i=1}^n \frac{M_i}{(t_i - t_{i-1})}, \quad (1)$$

where M_i is the number of new models appeared by the end of the i -year; n is the number of recent years when calculating V_{av} ; t_i is the moment of last development of the new model (the reporting period); t_{i-1} is the moment of the first (penultimate) development of the new model (the base period).

If a start-up enterprise wants to achieve the value of the indicator (1), to reach the level of the industry leader, it compares its indicator with the leader's one:

$$\Delta V_{av} = V_{av1} - V_{av2}, \quad (2)$$

where ΔV_{av} is the advantage of the leader over the start-up company by this indicator (1); V_{av1} is the average value of the speed of changes in the model range of the leader; V_{av2} is the average value of the speed of changes in the model range of the start-up enterprise.

A start-up enterprise can find out how much resources it will need to reach the leader's level V_{av1} .

The greater is the difference ΔV_{av} , the more resources are required to reach this level. The company may face a resource barrier. The impact of the resource barrier is further enhanced if competitors use a strategy based on low costs. The value of the resource barrier for different companies will depend on the cost of their IR. This is the net present value of non-material funds (C_{NMF}), which is defined as the amount that characterizes the company's ability to use non-material funds so as to stay ahead of competitors. After determining C_{NMF} leader, you also need to evaluate C_{NMF} of the start-up enterprise. Then, in order to determine the size of the resource barrier for intellectual capital, it is necessary to find the difference (3):

$$R_{int} = C_{NMLF} - C_{NMSF}, \quad (3)$$

where R_{int} is the value of the resource barrier (rubles), due to the presence of intellectual capital of the leader company. These are the financial resources that a start-up enterprise needs to reach the same level of development as a leader enterprise; C_{NMLF} is the cost of IC for the leader enterprise, \$; C_{NMSF} is the cost of IC for a start-up enterprise, \$.

The resource barrier is determined not only by non-material assets, but also by material ones. If a leading company uses a new technology when developing and manufacturing that allows the rapid and cost-effective implementation of new projects, the cost of technology will also represent a

resource barrier R_{tech} . This is the price to pay for the possession of technology in order to reach the level of the leader enterprise.

When choosing the structural organization of an enterprise, it is necessary to use the time indicator of the implementation of a new model T_j in the j -type enterprise to the market (4)

$$T_j = t_{jp} + t_{jnn}, \quad (4)$$

where t_{jp} is time of conducting R&D, months; t_{jnn} is preparation of production and the process of products production before its distribution, months.

It is necessary to take into account the presence of transaction costs, which are understood as any costs associated with the implementation of transactions through the market.

The more consumers the enterprise attracts, the more consumer capital it has. The work (Bendikov, Jamai, 2001) describes a technique for determining its cost. To understand the nature of barriers, it is possible to imagine the industry in which enterprises operate in the form of layers that are hierarchically located: in the lower layer of the industry there are single enterprises that have a low rate of bringing an innovative product to the market; in the middle layer of the industry there are enterprises of a holding type that have overcome resource barriers and have a fairly high speed of bringing new products to the market; in the uppermost layer there are transnational strategic alliances and world systems of metacorporations that have overcome resource barriers and due to this they have a high speed of bringing new products to the market and even creating demand for them. So, it is proposed to introduce not only barriers to entry into the industry and exit from the industry but also resource barriers between the layers of the industry. The resource barrier determines the amount of financial investments necessary to ensure a high rate of change in the product lineup. To reach the highest level (or to enter this industry), the enterprise needs to ensure a high rate of change in the models of manufactured products. This is possible with substantial investment into fixed assets, technology, personnel. To reduce the level of barriers, it is necessary to use and distribute the company's resources so that the costs for achieving goals are minimal. The allocation and use of resources is the structural organization in the association of enterprises. If the resources are insufficient, the enterprise has to stay at the same level and fight for its market share. However, if you want to overcome the resource barrier to occupy a higher level of hierarchy in the industry, the enterprise can enter the integrated group. Besides, it must model and examine the function $\Delta V_{av}(R_{int}, R_{tech}, T_j, Z_{trans}, P_j)$ by the following criteria: the cost of market capitalization, sales volume, profitability, market share, return on equity, etc. When investigating, it is necessary to take into account the mutual interest of enterprises. First, the enterprise must evaluate the resources that it possesses. Then, find a partner to correct shortcomings of each other. This is a complementary strategy resource through organizational implementation: available resources of the i -type of one enterprise are supplemented with the required resources of j -type of another company and vice versa. It is necessary to link the structural organization of companies with their resource components.

Thus, it is possible to single out the priority risk of a start-up - managerial risk, that is, weak management leading to an inefficient implementation of a new idea. A start-up enterprise usually works out a new idea and does not realize the obstacles that can be encountered at all stages of its implementation. Usually, the owner of an idea does not have a scientifically sound tool for making managerial decisions. Overcoming this real risk leading to the appearance of other risks (Table 1) requires careful consideration of the start-up idea: predicting the behavior of consumers in relation to the new product; economic payback calculations; industry analysis (competitors, suppliers etc.), the formation of a team that can achieve its goals etc. Team is a key resource, which should be formed not by the principle of family ties, but by roles that are oriented toward the project's objectives, implementation of which requires competence. When a group of implementers is formed according to the principle of family ties, the owner of the idea may feel pressure from them and, as a result, take irrational decisions that lead to an increased expenditure of investor funds.

It is necessary to determine the position of the start-up in the industry. If there is a leader, it is necessary to determine the resource barrier that divides the leader and the start-up enterprise, and then estimate the amount of necessary financial investments according to formulas (1) - (4). With

a shortage of financial resources, a start-up company has to turn to investors or use various forms of association with other enterprises through organizational implementation: available resources of i-type of one enterprise are supplemented with the required j-type resources of another enterprise and vice versa. It is necessary to link the structural organization of companies with their resource components and, in parallel with all calculations, to model and explore the function $\Delta V_{av}(R_{int}, R_{tech}, T_j, Z_{tranz}, P_j)$ by different criteria for choosing a rational managerial decision. However, the start-up enterprise presents only a business plan for investors, which in modern conditions is the result of a superficial analysis of the real situation. It takes a lot of preparatory work to present a new idea to investors. In accordance with the well-known V. Pareto principle, 80% of the time should be spent on proving and preparing a new project and only after that it is necessary to negotiate with investors. Then the remaining 20% of the time should be spent on the project. Project implementation includes the following stages: conducting R&D; preparation of production and the process of production; product launch; providing services. In this case, every stage should be considered as an object of management, which is influenced by perturbing factors of different nature and can lead to a risky situation. To prevent risky situations, it is necessary to create a feedback mechanism at each stage that helps to catch weak signals or deviations of actual values of the state of the management object (operation process) from the planned values of the indicators. Analysis of deviations in the state of the management object allows developing preventive measures (management actions) to eliminate conditions of risk appearance.

4. Conclusion

The authors tried to identify and classify the types of risks typical for enterprises and businesses classified as "start-ups" for subsequent use in the process of taking managerial decisions. The authors highlighted the priority risk of a start-up - managerial risk, that is, weak management leading to an inefficient implementation of a new idea. In order to overcome this real risk the authors offered the methodology of a start-up management under risky conditions. The first stage of the methodology should include: a thorough analysis of the external and internal environment of the start-up enterprise; determination of the amount of financial investments for the implementation of a new idea, taking into account resource barriers in the industry. The second stage is connected with the search for investors and obtaining financial resources. The third stage of the project implementation includes: conducting R&D; preparation of production and the process of production; product launch; providing services. In this case, every stage should be considered as an object of management, which is influenced by perturbing factors of different nature. To prevent risky situations, it is necessary to create a feedback mechanism at each stage that helps to catch weak signals or deviations of actual values of the state of the management object (operation process) from the planned values of indicators. Analysis of deviations in the state of the management object allows developing preventive measures (management actions) to eliminate conditions of risk appearance.

The methodology developed by the authors is useful for assessing both the current position of the start-up enterprise at a particular stage of its existence and for evaluating the strategies used by the enterprise.

References

- Aaker, D., Yokhimshtayler, E. (2003). *Brend-liderstvo: Novaya kontsepsiya brendinga [Brand-leadership: A new branding theory]*. Moscow: ID Grebenshchikova.
- Basu, P., Nair, S.K. (2015). Analyzing Operational Risk-Reward Trade-offs for Start-ups. *European Journal of Operational Research*, vol. 247, iss. 2, pp. 596-609.
- Bendikov, M.A., Jamai, E.V. (2001). Intellektualnyy kapital razvivayushcheysya firmy: problem identifikatsii i izmereniya [The intellectual capital of developing firms: problems of identification and measurement]. *Menedzhment v Rossiizharubezhom*, vol. 4, pp. 3-24.
- Bocken, N.M.P. (2015). Sustainable venture capital – catalyst for sustainable start-up success? *Journal of Cleaner Production*, vol. 108, part A, pp. 647-658.
- Bruno, A.V., Mcquarrie, E.F., Torgrimson, C.G. (1992). The evolution of new technology ventures over 20 years: Patterns of failure, merger, and survival. *Journal of Business Venturing*, vol. 7, iss. 4, pp. 291-302.

- Chorev, S., Anderson, A.R. (2006). Success in Israeli High-tech Start-ups: Critical factors and process. *Technovation*, vol. 26, no. 2, pp. 162-174.
- Crow, D. (2005). Valuing Usability for Startups. In R.G. Bias, D.J. Mayhew (Eds.). *Cost-Justifying Usability. An Update for an Internet Age* (pp. 165-184). San Francisco: Morgan Kaufmann Publishers.
- Dibrova, A. (2015). Business Angel Investments: Risks and Opportunities. *Procedia-Social and Behavioral Sciences*, vol. 207, pp. 280-289.
- Duchesneau, D.A., Gartner, W.B. (1990). A profile of new venture success and failure in an emerging industry. *Journal of Business Venturing*, vol. 5, iss. 5, pp. 297-312.
- Janney, J.J., Dess, G.G. (2006). The risk concept for entrepreneurs reconsidered: New challenges to the conventional wisdom. *Journal of Business Venturing*, vol. 21, iss. 3, pp. 385-400.
- Jorgensen, M. (2014). Failure factors of small software projects at a global outsourcing marketplace. *The Journal of Systems and Software*, vol. 92, pp. 157-169.
- Nanda, R., Rhodes-Kropf, M. (2013). Investment cycles and startup innovation. *Journal of Financial Economics*, vol. 110, pp. 403-418.
- Rasmussen, E.S., Tanev, S. (2016). Lean start-up: Making the start-up more successful. In *Start-Up Creation. The Smart Eco-Efficient Built Environment* (pp. 39-56). Kidlington: Woodhead Publishing.
- Rea, R.H. (1989). Factors affecting success and failure of seed capital/start-up negotiations executive. *Journal of Business Venturing*, vol. 4, pp. 149-158.
- Ruhnka, J.C., Young, J.E. (1987). A Venture Capital Model of the Development Process for New Ventures. *Journal of Business Venturing*, vol. 2, no. 2, pp. 167-184.
- Shepherd, D.A., Douglas, E.J., Shanley, M. (2000). New venture survival: Ignorance, external shocks, and risk reduction strategies. *Journal of Business Venturing*, vol. 15, iss. 5-6, pp. 393-410.
- Smith, D. (2000). E-business Strategy Risk Management. *Computer Law & Security Report*, vol. 16, no. 6, pp.394-396.
- Wansink, B. (1989). The Impact of Source Reputation on Inferences About Unadvertised Attributes. *Advances in Consumer Research*, vol. 16, pp. 399-406.

4. STRATEGIC BENCHMARKING OF UKRAINIAN PUBLIC-PRIVATE PARTNERSHIP IN THE CONDITIONS OF EUROPEAN INTEGRATION

Abstract: The purpose of the article was to study the experience of PPP (public-private partnership institution) on the basis of strategic benchmarking in the context of European integration and on example of Ukrainian defence sector. The research design included: world and national experience of strategic benchmarking; problems and benefits of implementing benchmarking in Ukraine; development of the strategic benchmarking process of PPP; modernization public procurement for PPP; PPP of defence industry in Poland; strategic priorities of defence industry PPP in Ukraine. The author conducted the strategic benchmarking procedure of PPP in Ukrainian defence sector on the base of modernization public procurement for PPP. On the base of economic-mathematical modeling, a scenario for supply to public procurement in the area of machine building products was investigated. The multiplicative effect of industrial development as a result of interaction between the sectors of goods and services would accelerate the GDP growth rate and reduce the unemployment rate. The PPP of defence industry in Poland was investigated. European integration influence and the barriers of PPP private defence enterprises of Ukraine were highlighted on an expert study base. Strategic priorities of defence industry PPP in Ukraine had developed.

Keywords: defence industry, public-private partnership, strategic benchmarking.

JEL Classification: M16, L32

1. Introduction

In recent years, the issue of establishing a public-private partnership institution (PPP) has become one of the main priorities of government strategic development programs, an indicator of the successful interaction between business and government structures, an alternative way of restoring and modernizing the national economy. The PPP in Ukraine has every chance to become an institutional tool for updating joint production based on the pooling of state assets with investment, management and other private sector resources. The technical backward and worn-out infrastructure is required significant financial investments and the use of new technologies that the state cannot independently provide in the conditions of the financial and economic crisis. Accordingly, the main motivation of the state for the implementation of projects under the PPP is the restriction of budgetary resources, as well as the lack of sufficient experience of the state management in field of public infrastructure objects in market conditions.

An important guarantee of the effective functioning of the enterprise is a constant search for strategic development, aimed at increasing the profitability and competitiveness. One of the most up-to-date and advanced tools for improving the strategic development of enterprise management is benchmarking, which is successfully used in the leading countries. The goal of the article is to study the foreign experience of PPP on the basis of strategic benchmarking in the context of European integration on example of Ukrainian defence sector. The research design of this article includes: world and national experience of strategic benchmarking; problems and benefits of implementing benchmarking in Ukraine; development of the strategic benchmarking process of PPP; modernization public procurement for PPP; PPP of defence industry in Poland; strategic priorities of defence industry PPP in Ukraine. Beginning in 2014, the government is actively pursuing reforms in the area of defence industry. However, there are certain problems that require more complex, new and radical approaches

¹ Assist. Prof. Lina Artemenko Ph.D.; Balzak 58,145 Kyiv 02232, Ukraine, tarlin@ukr.net

* Corresponding author

to the organization of defence activities. There is a need for modernization of obsolete equipment; the introduction of new technologies for the production; the need for qualified scientific personnel; efficient use of production capacity.

2. Literature Review

One of the most modern and advanced development tools, which use the most successful companies is benchmarking. According to Camp (Camp, 1989), benchmarking is simply “finding and implementing the best business practices”. The modern approach for the benchmarking (Anand, Kodali, 2008) is a continuous analysis of strategies, functions, processes, products or services, performances, compared within or between best-in-class organisations by obtaining information through appropriate data collection method, with the intention of assessing an organisation’s current standards and thereby carry out self-improvement by implementing changes to scale or exceed those standards. Benchmarking is a process of versatile comparisons and evaluations of one company with others that have achieved more significant success or have taken leadership positions in the same industry or beyond (Meheda, 2013). The consequence is the implementation of measures aimed at leveling the gap between the enterprise and leader.

Many foreign companies, including Japanese and European, consider benchmarking of the American company Xerox as a global standard (Spendolini, 1992), it includes the following steps: to determine which benchmarking of the process should be conducted; to select companies for match; to determine the method of data collection and collect them; to determine current quality levels of work; to give a forecast of future levels of work quality; to prepare a report on benchmarking results, to receive approval; to put tasks for functional spheres; to develop action plans; to carry out concrete actions and monitor the results; to overestimate the standards. Modern economic processes force foreign companies to integrate the client internally, to provide real individual service. Barriers to internal benchmarking initiatives were researched (Amaral, Sousa, 2009).

Thus benchmarking was traditionally used as problem solving technique (problem based benchmarking), revolutionary perspective (Bhutta, Huq, 1999) in benchmarking is process based benchmarking for greater payback. The purpose benchmarking is to help the management of a decision making unit to improve performance and productivity, that is why new approach (Xiaofeng, Timo, 2014) to benchmarking with clustering methods was proposed in Finland. This tool does not come up with expectations, if benchmarking is employed by organization, which is stick to conservatism, formalism and avoidance of risk. A special culture, stimulating changes, proactiveness is necessary for the successful results of the benchmarking use. In other words in an organization using benchmarking, entrepreneurial contemplation is necessary (Petuskiene, Glinskiene, 2011). However, not only benchmarking requires entrepreneurial culture in the company, so the entrepreneur activity requires benchmarking activity.

Scientists distinguish several types of benchmarking, one of them is strategic benchmarking – the process of ensuring that the company's strategy is key to success in the industry and the competition (Yashkina, 2010). This process often involves looking beyond the firm's core industry to firms that are known for their success with a particular function or process. Strategic benchmarking (Reh, 2017), is used to describe when a firm is interested in comparing its performance versus the best-in-class or what as deemed as world-class performance. Managers use strategic benchmarking to identify the best way to compete in the market. During the process, the companies identify the winning strategies that successful companies use and apply them to their own strategic process (Bogan, English, 1994). It is also common to compare the strategic goals in order to spot new strategic choices.

PPP can be the key to solving problems. PPP has been well practiced in many developed countries in Europe, America, China and Australia (Cheung, Chan, Kajewski, 2012; Xu, Chang, 2017). PPP is a strategic tool to improve social responsibility of business (Bikmetov, Zinnurov, 2016).

3. Methodology of Research

After analyzing the works of domestic and foreign scientists, it is possible to state that the main attention was paid to the essence, features, possibilities, approaches and conditions of accelerated economic development on the basis of leader enterprises. The theoretical basis of the research is the works devoted to the issues of developing and implementing strategic benchmarking of PPP in the context of European integration. In international practice, including Europe, a multi-factorial

evaluation of tenders for public procurement is widespread. On the base of economic-mathematical modeling using the system of economic analysis of the Global Trade Analysis Project (GTAP), a scenario for supply to public procurement in the area of machine building products was investigated. Based on an expert study conducted in 2017 by private defense enterprises of Ukraine (15 enterprises), the influence from European integration can be distinguished. Also there were highlighted the barriers of PPP. The results of the questionnaire were processed by the method of weighted average values and rankings.

4. Results

4.1. Problems of Benchmarking Application in Ukraine

In globalization of economic processes, enterprises must have information about successful competitors in order to achieve optimal performance. It is important to eliminate barriers and problems for effective benchmarking.

The main problems of introducing benchmarking in Ukraine are the following. It is difficult to compare Ukrainian enterprises with foreign ones, as different managerial approaches and case management do not allow forming adequate comparative indicators. Incorrect awareness of tools and the purpose of benchmarking. The consequence of the biased attitude towards the modern methodology is the inadequate understanding of the company's management the functions of introducing benchmarking and the tools used in its implementation. Thus, benchmarking is understood as a production (commercial) fraud, or a phenomenon of unfair competition. Inaccuracy in financial reporting data. All quantitative analyzes have an error of 15-20%. Taking into account the gaps in the Ukrainian reporting system and existing schemes for minimizing taxes on income and other payments to the budget, the authenticity of information is highly questioned. Lack of effective management practices. Top management of an organization that does not apply managerial approaches to key business processes is incapable of realizing the importance of rooting the experience of leading companies through the exchange of information on a voluntary basis.

4.2. Benefits of Implementing Benchmarking in Ukraine

Benchmarking is particular value for companies as it enables the company to put the complex and at the same time realistic goals, provides the scientific basis for predicting development trends; enables companies to adopt best practices and to become more competitive; allows to search for weaknesses in the operation and determine potential (Pichugina, Artemenko, 2017). Today in Ukraine, benchmarking has not reached the scale that it occupies in European practice of managing. The elements of benchmarking are found in many projects to improve the working methods of Ukrainian enterprises. For today, in Ukraine certification of the entire business organization is rare, that is, the ISO system is used to identify "critical places", in which partial improvements are introduced (Tkachenko, Artemenko, 2014). Benchmarking has a special marketing value for Ukrainian companies as: giving the company the opportunity to set complex and realistic goals at the same time; providing a scientific basis for forecasting future development trends; gives the company the opportunity to take the best practices, learn from the best companies to become more competitive; provides information on how to become better; allows to search weaknesses and determine own potential; provide comparisons of production processes with the best similar processes in the industry and other industries, as well as comparison of products and services, equipment; offers ways to introduce the best methods; contributes to the fulfillment and exceed the expectations of customers and consumers (Slinko, Artemenko, 2017).

For Ukrainian enterprises, benchmarking is generally associated with industrial intelligence. There are traditional ways of exchanging information between competing companies, for example, within special organizations and associations, but in domestic practice this happens very rarely, due to the lack of a well-developed network of necessary associations. Mass media, consulting companies, educational establishments and training centers, which should help spread knowledge about this method, play an important role in distributing benchmarking in Ukraine (Artemenko, Demchenko, 2016). The effective development of benchmarking should also be promoted by state institutions responsible for the tax system and financial accounting, providing information on the functioning of organizations, since benchmarking is based on real data and accurate analysis.

An analysis of foreign experience shows that the benchmarking process can increase the efficiency of activities by more than 60% and in less than 12 months. The authors (Pichugina, Artemenko, 2017)

empirically examine the potential business performance benefits available from benchmarking the capabilities of top-performing firms. The results suggest that benchmarking has the potential to become a key learning mechanism for identifying, building, and enhancing capabilities to deliver sustainable competitive advantage. Benchmarking can be a very effective tool trying to improve business and create innovations. It helps to avoid the waste of time creating the improvements, which have already been made–up by other enterprises. However, the advantages of the benchmarking can be achieved not by all enterprises, because the special features are necessary in this process. The organization, which endeavours to apply benchmarking, has to be very perceptive, flexible, venturesome and creative. Benchmarking is formed on mutually beneficial cooperation and interest of the participants. Moreover, Ukrainian companies should be aimed at world standards and actively interact with foreign partners, while at the same time taking into account the interests and peculiarities of national business. Qualified use of benchmarking, as well as the presence of highly trained professionals, will lead to the following positive aspects: improvement of the results of work; reducing the cost of development (strategies and processes) by applying and improving others; continuous improvement of the organization's functioning by regularly comparing elements of activity with the same approaches of much more successful activity at micro and macro levels.

4.3. Development of the Strategic Benchmarking Process of Public-Private Partnership

On the base of modern researches the author has improved the strategic benchmarking process for PPP which consists of the next stages:

1. Identification of the strategic priorities, business problems and choose benchmarking partners that had similar. Rapid informal benchmarking does not lead to organizations being able to adapt to experiences from benchmarking partners. When conducting benchmarking, enterprises should have access and establish trusting relationships with their partners (Searles, Mann, Kohl, 2013). It was recommended (Richard et al. 2009) that prospective partners be assessed on multiple dimensions including strategic, cultural, operational, and brand fit. Strategic fit, including having a common vision, values, principles, and goals are of particular importance, while differences in culture can be leveraged and embraced if properly addressed. Once PPP opportunity and partner have been identified, the resulting collaboration plan must reflect a win-win arrangement where the benefits to both parties are identified. For the agreement to be successful, a very clear set of objectives consistent with the overall strategy should be specified and assessed periodically. The deal can be strengthened significantly by inviting the partner to jointly develop the collaboration plan.
2. Researching the best strategic practices, which allowed achieving strategic goals and solving identified problems. The matrix of prioritization illustrates relationship between strategic goals and benchmarking initiatives.
3. Analysis and formation benchmarking documentation in a repository, determination the current performance gap, and strategic future performance level (Zairi, 1996). Most organizations use mix of internal experts and external consultants to identify gaps and assess opportunities to achieve the most informed and objective outcome. A common strategic vision and definition for success is critical. Partners should agree on the scope and time horizon; align strategic objectives, risk, rewards, and incentives; and discuss termination.
4. Evaluation of the benchmarking strategy and ensuring benchmarking improvements. The annual planning process must also include a gap analysis of core capabilities/core competencies to provide the basis for identifying and evaluating potential PPP and new products or research deliverables. The benchmarking results conclude that the synergetic effect of PPP in the development of innovation activity is expressed in the following components: the scientific and technological effect; the production effect; the economic effect; the effect of internationalization; the budget effect (Bikmetov, Zinnurov, 2016). In this stage there are recalibrate and reset benchmarks.
5. Implementation of the benchmarking strategy with benchmarking training (facilitation, assistance, guidance, coordination, promoting awareness) and communicate benchmarking finding. The monitoring progress may to reveal the barriers to the implementation of benchmarking initiatives types (Amaral, Sousa, 2009): organizational barriers (people, culture, context), benchmarking project management barriers (planning and implementation, leadership, business pressures), benchmarking data barriers (difficulty to access, compare data).

4.4. Modernization Public Procurement for PPP in Conditions European Integration

According to the European Commission, in France, only 4% of public procurement is carried out solely on price terms, in the UK - 7%, in the Netherlands - 10%, in Spain - 24%. In Germany, Austria and Italy - only every second government procurement is solely for the price criterion. In developed countries, public procurement on a multi-factor model (at a given price) takes place ten times more often than purchases with a single price factor alone. However, over 99% of public procurement in Ukraine is exclusively priced.

Changes in public procurement are related to the EU 2020 strategy. Such changes include facilitating SMEs' access to public procurement, promoting public procurement innovations and other areas of the EU through public procurement, such as social protection and the environment. The main changes concern the following: the possibilities of awarding a contract, based only on the lowest price offer, are cancelled. This will reduce the supply chain in the future, along with lower incentives for improving quality and innovation, as well as the difficulty of obtaining an optimal price / quality ratio in the long run. Price may still be one of the criteria, but should be supplemented by quality. The use of criteria for determining winners covering the whole life cycle of a product is facilitated by calculation rules, for example, waste management costs associated with product disposals.

On the base of GTAP innew function "Public Procurement Analysis", a scenario for supply to public procurement in the area of machine building products, which involves providing 20% price advantage to domestic producers of goods and services, was investigated. The implementation of such scenario will reduce import by 4.4 percent point (pp.). The corresponding increase in demand from the state for domestic production will increase the volumes of industrial production in Ukraine by 3.0 pp., machinery and equipment - by 1.8 pp., electric equipment - by 2.7 pp., finished products - by 5.1 pp. The multiplicative effect of industrial development as a result of interaction between the sectors of goods and services will accelerate the GDP growth rate of Ukraine by 1.1 pp. and reduce the unemployment rate by 0.4 pp. According to ProZorro, more than 99% of participants and winners in public procurement are Ukrainian companies, and less than 1% is foreign. However, according to experts from the CMD-Ukraine center, about 38% of public procurement goods and services are imported or contain a significant import component. In the US and Japan, this figure is less than 5%, and in the EU – 7.9% (Galasyuk, 2017). The annual volume of Ukrainian public procurement reaches 275 billion UAH per year; this is a potential import component of more than 100 billion UAH in the trade balance and in GDP. The weight of the price factor in the new system of public procurement is offered similarly - at least 70%. Maximum weight of non-price criteria (for example, payment terms, guarantee, and local component) is 30%. The main innovation is the introduction of mandatory inclusion of the criterion of a local component with a weight of at least 20% in the structure of the reduced price for specialized procurement items. The local component is calculated on the basis of the level of resource allocation of the procurement subject to the transparent formula established by law. DC "Ukroboronprom" became the first in Ukraine to take part in electronic purchases. In 2016, the number of procurement amounted to 27321 transactions, which is 37% more than in the previous year, the number of new registered suppliers increased to 17,297 enterprises, which is by 118% more, saving 476.6 million UAH, which is by 56% more to the previous year.

Based on an expert study in 2017 by private defence enterprises of Ukraine, the following influence from European integration can be distinguished. Private defence companies distinguish the following threats from European integration in a rank of the most important: costs for transition to international standards, the need for modernization of equipment, political instability in the country, increased competition in the domestic market, complex and costly documentary processing of export of products. Strategic advantages for private defence companies include: improving the competitiveness of the bottom of the world markets, access to EU markets, harmonization of domestic and international standards of production and product quality, increasing international investment, lowering customs tariffs and duty free quotas, increasing cooperation with foreign partners, improving the business climate and ease of doing business (Artemenko, 2017).

4.5. The Public-Private Partnership of Defence Industry in Poland

The PPP in Poland is regulated by the Public-Private Partnership Act of December 19, 2008. The idea of the PPP is that a public entity and a private partner join forces together in order to pursue a project based on division of tasks and risks between them (Żyglicka, 2015). The Polish public procurement market in 2014 was worth circa 133.2 billion PLN, which constitutes about 7.72% of Poland's GDP for the year 2014 (according to the PPO President's annual report on the public procurement system in 2014). PPP is in the defence sector in Poland, where private firms play an important role. At present,

there are several large enterprises and several dozen small firms operating in the private sector, which primarily deal with the production of spare parts and components. Although the Polish private sector is not easy to compete with state-owned firms, private firms consistently hold positions as contractors for companies that are part of the Polish Group of Armaments. It makes them key partners without which it is difficult to rely on the stable development of the state defence industry (Matterniak, 2016).

The potential of private firms uses an innovative approach to activities, due to difficult operating conditions in the market, in particular, in the domestic, where the state economic sector, which receives subsidies from the state, is traditionally very strong. In this situation, private firms can only benefit from the high quality of the offered products. WB Electronics is the largest and most well-known private-sector enterprise in the Polish defence industry. This is a group of companies, which primarily deals with the design and production of unmanned aerial vehicles (UAVs, “drones”). It also produces communication systems and fire control systems. The firm is part of the concern Flytronic Research Center, which, among other things, manufactures reconnaissance UAV Flyeye, adopted by the Polish Armed Forces. The firm also conducts training courses for drone’s operators. The nodes manufactured by WB Electronics are also used for the upgraded version of the W-3 “Sokil” helicopter and rocket-artillery complexes ZSU-23 (Matterniak, 2016). At the moment, the company is working on the next models of reconnaissance drones, which can be adopted by the Polish Army in the near future. At the same time, private owned firms in the military sector, such as TELDAT and KenBIT, are engaged in the production of communication systems, control, data exchange. This is due to the increasing digitalization, raising the level of “intellectualization” of combat units of all levels - including a single soldier. Companies are actively working in within the concept of “soldier of the future”. This will be a set of equipment, which will include new uniforms, weapons, and communication systems. The first complexes are to be put into service by the Polish Army in 2018.

4.6. Strategic Priorities of Defence Industry Public-Private Partnership in Ukraine

Over the past decades, the global defence industry has been struggling to increase the share of the private sector. This means that the centralized management of defence enterprises is being gradually replaced by a network that combines both state and private enterprises. At present, NATO and Allied partners are actively engaging the private sector within the DAC through PPPs, an effective tool for attracting private sector investment into military projects (Solovyan, 2016). For Ukraine, it is important to involve the private sector, as an equal partner, in solving military-technical and defence-industrial problems. At the same time, the formation of relations on the principles of PPP in the defence sphere is not limited to financial resources attraction, but also the introduction of effective organizational, managerial and production technologies (Shimov, 2015).

Today, the number of private defence enterprises is over 150, which far exceeds the number of state-owned enterprises, which is more than 2/3 of total production. According to the results of 2016, 38% of the State Defence Order comes to the SC “Ukroboronprom”, whereas in 2015 this figure was more than 60%. That is, the private sector has grown substantially, without taking into account repair work on armaments and military equipment, which are financed separately (Stanislavsky, Artemenko, 2017). The main purpose of private enterprises is to generate profits. Unlike state-owned enterprises, owners of private enterprises are in a competitive environment and interested in the efficient production of new military equipment. Innovative ideas in the private sector are implemented more dynamically than in the public sector. The problems of PPP in the defence industry are related to the lack of real state support, legislative principles for the interaction of private and state enterprises, ignoring the tried and tested approaches of the best world practice of PPP. At the modern defence industry market, there is a large number of legal barriers, and the price coordination with the SC “Ukrobonoprom” eliminates competition and prevents the private sector from gaining profit as there is no sufficient return on foreign technology, the need to switch to import substitution. Royalties in the defence sector are ignored, that is, private companies do not receive anything when the products they have developed are serially produced by state-owned enterprises within the framework of the state order. The developer without these deductions cannot either test new products (armoured vehicles, unmanned systems, radar systems, air defence systems, electronics products), or take on new projects.

Private defence enterprises are taking the active role or planning projects in PPP. In a rank of the most important PPP barriers are: complex tendering procedures, untransparent assessment determining

the winners of tenders, regulatory problems, and political risks. PPP barriers for state defence enterprises are: insufficient financing of projects, regulatory problems, law problems.

Strategic priorities of defense industry PPP in Ukraine are: improvement of the system for the formation and execution of the State Defense Order (SDO), pricing for products of defense purposes. In addition, in order to ensure equal rights of defense enterprises of all forms of ownership, it is necessary to provide state funding for the preparation of serial production of defense products if it is included in the SDO, taking into account monetary rewards in the implementation of development, technologies for mass production (payment of royalties) to the developers of armaments and military equipment; improvement of the decision-making system when providing state guarantees, creation of mechanisms for competitive conditions for all enterprises of the defense industry; corporatization, restructuring and preparation for the privatization of state defense enterprises; creation of the Ukrainian prototype of the Department of Advanced Research Projects of the US Department of Defense; development of the principles of the national system for the certification of weapons and military equipment according to the standards of the North Atlantic Alliance and the ways of education a network of laboratories for testing weapons and military equipment of national production according to NATO standards; to ensure that amendments to existing regulations are established that will determine the equal access of business entities of all types of ownership to the possibility of military-technical cooperation, including export-import operations.

5. Conclusion

The main results of the study were: development of the strategic benchmarking process of PPP, which consist 5 stages and approbation it on defence sector; modernization public procurement for PPP made multiplicative effect of industrial development; definition the strategic advantages and threats of Euro-integration, strategic priorities and barriers of defence industry PPP in Ukraine. The established differences from previous studies of the strategic benchmarking process were: identification of the strategic priorities, using win-win arrangement, formation the matrix of prioritization illustrates relationship between strategic goals and benchmarking initiatives, recalibrate and reset benchmarks, synergetic effect of PPP, benchmarking training and communicate benchmarking finding.

The establishment of an effective mechanism of PPP in the field of defense industry should be based on the determination of the criteria for the selection of suppliers, manufacturers of weapons, military and special equipment and services, and the affiliation of the company to Ukraine; solution of questions of pricing of military and dual-purpose products; creation of competitive conditions for enterprises of all forms of ownership and establishment of the priority of the state defense order of military and dual-purpose products for domestic enterprises; simplification of the procedure for obtaining the right to carry out export operations for military goods; improvement of defense products marketing of private enterprises in the domestic and world markets. The main obstacles to military-technical cooperation between defence companies in Europe and Ukraine are: the process of standardizing military products in accordance with NATO requirements and ensuring a secure logistics system; legislative restrictions of European countries on the export of weapons and military technology to countries in a state of war or armed conflict. PPP barriers for state and private defence enterprises are different. Therefore, taking into account the current state of the defense industry of Ukraine, the economic and geopolitical situation, PPP can bring to a new level of competitiveness.

Acknowledgements

The realization of the paper is supported by Jean Monnet Module «European business models: transformation, harmonization and implementation in Ukraine» № 587138-EPP-1-2017-1-UA-EPPJMO-MODULE (the joint project of National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Erasmus+ Jean Monnet Fund and Education, Audiovisual and Culture Executive Agency, supported by the EC).

References

- Amaral, P., Sousa, R. (2009). Barriers to internal benchmarking initiatives: empirical investigation. *Benchmarking: An International Journal*, vol. 16, iss. 4, pp. 523-542.
- Anand, G., Rambabu, Kodali, (2008). Benchmarking the benchmarking models. *Benchmarking: An International Journal*, vol. 15, iss. 3, pp. 257-291. [online]. Available: <https://doi.org/10.1108/14635770810876593> [2017, November 08].

- Artemenko, L.P. (2017). Rozvytok oboronnykh pidpryyemstv v umovakh vymushenoyi remilitaryzatsiyi ukrayins'koyi ekonomiky. *Stratehichni priorytety*, t. 3 (44), pp. 140-149.
- Artemenko, L.P., Demchenko, P.O. (2016). Problemy zastosuvannya benchmarkingu v Ukraini. *Pratsi VII Vseukrayins'koyi naukovo-praktychnoyi konferentsiyi. Suchasni pidkhody do upravlinnya pidpryyemstvom, 2016*, 20-21 kvitnya, stor. 69, Kharkiv, Ukraina.
- Bikmetov, E.Y., Zinnurov, U. G. (2016). Methodical principles of the synergetic effect in the implementation of innovation public-private partnership projects. In Okreglicka, M., Gorzeń-Mitka, I., Lemańska-Majdzik, A., Sipa, M., Skibiński, A. (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management 2016*. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej, pp. 35-41.
- Bhutta, K.S., Huq, F. (1999). Benchmarking – best practices: an integrated approach. *Benchmarking: An International Journal*, vol. 6, iss. 3, pp. 254-269.
- Bogan, C.E., English, M.J. (1994). *Benchmarking for best practices: Winning through innovative adaptation*. McGraw-Hill.
- Camp, R.C. (1989). *Benchmarking. The search for industry best practices that lead to superior performance*. ASQC Quality.
- Cheung, E., Chan, A.P.C., Kajewski, St. (2012). Factors contributing to successful public private partnership projects: Comparing Hong Kong with Australia and the United Kingdom. *Journal of Facilities Management*, vol. 10, pp. 45-58.
- Galasyuk, V. (2017). Kupuyte ukrayintsi, ukrayintsi platyvat'. *Vyklyky ta ryzyky*, t. 23, vyp.86, 15.12, pp. 32-42.
- John Reh, F. (2017). *Benchmarking overview, practices and approaches in business*, [online]. Available: <https://www.thebalance.com/overview-and-examples-of-benchmarking-in-business-2275114>. [2017, November 08].
- Matterniak, D. (2016). Pryvatnyy sektor pol's'koyi "oborony": potentsial ta perspektyvy. *Vyklyky ta ryzyky*, t.23, pp. 25-28.
- Meheda, N.H. (2013). *Zastosuvannya benchmarkynha ta problemy yoho rozvytku v Ukraini*, [online]. Available: http://www.rusnauka.com/6_PNI_2013/Economics/6_129925.doc.htm. [2017, November 08].
- Petuskienė, E., Glinskiene, R. (2011). Entrepreneurship as the Basic Element for the Successful Employment of Benchmarking and Business Innovations. *Inzinerine Ekonomika-Engineering Economics*, vol. 22, iss.1, pp. 69-77.
- Pichugina, M.A., Artemenko O.T. (2017). Benchmarking as attribute of Entrepreneurship. *Pratsi Suchasni pidkhody do upravlinnya pidpryyemstvom: VIII Vseukrayins'ka naukovo-praktychna konferentsiya 2017*, p. 5. Kharkiv, Ukraina.
- Richard, E.E., Gonzalez, S.A., Davis J.R., Leestm D.C. (2009). *Strategic Alliances Strategies and Processes Benchmarking Study*. NASA Johnson Space Center.
- Searles, B., Mann, R., Kohl, H. (2013). *Benchmarking 2030. Global Benchmarking Network*, pp. 3-36.
- Shimov Y. (2015). Derzhavno-pryvatne partnerstvo v oboronniy promyslovosti Ukrainy. *Stratehichni priorytety*, t. 2 (35). [online]. Available: <http://sp.niss.gov.ua/content/articles/files/3-14d2b.pdf>. [2017, November 08].
- Slinko, V.S., Artemenko, L.P. (2017). Stratehichne benchmarking: svitovyy ta vitchyznyanyy dosvid. *Materialy Mizhnarodnoyi naukovo-praktychnoyi konferentsiyi "Ekonomika, finansy, bukhholders'kyy oblik: suchasnyy stan ta perspektyvy rozvytku"*, pp. 65-67.
- Solovyan, V.A. (2016). Pryvatne pryvatne partnerstvo yak faktor likvidatsiyi nedolikh derzhavnoho spivrobitnytstva z pryvatnyy pidpryyemstvamy oborony. *Zahrozy ta ryzyky*, t. 2 (65), pp. 21-25.
- Spendolini, M. (1992). *The Benchmarking Book*. American Management Association.
- Stanislavs'kyy, O.V., Artemenko, L.P. (2017). Suchasnyy stan derzhavno-pryvatnoho partnerstva v oboronnomu sektori Ukrainy. *Pratsi Mizhnarodna naukovo-praktychna konferentsiya "Ekonomika, finansy, bukhholders'kyy oblik ta upravlinnya: otsinka ta perspektyvy rozvytku v Ukraini ta sviti"*. [online]. Available: <https://m.science-community.org/ru/node/185706>.
- Tkachenko, K.H., Artemenko, L.P. (2014). Kontseptsiya benchmarkingu v pidvyshchenni konkurentospromozhnosti produktsiyi. *Pratsi Vseukrayins'ka naukovo-praktychna konferentsiya "Suchasni pidkhody do upravlinnya pidpryyemstvom" z mizhnarodnoyu uchastyu 2014*, pp. 495-498. Cherkasy: vydavets' Chabanenko.
- Xiaofeng, D., Timo, K. (2014). Best-practice benchmarking using clustering methods: Application to energy regulation. *Omega*, vol. 42, iss. 1, pp. 179-188.
- Yashkina, N.V. (2010). Ob'yektyvna neobkhidnist' zastosuvannya benchmarkingu. *Ekonomika ahrarno-promyslovoho kompleksu*, t. 8, pp. 46-49. [online]. Available: http://www.agrosvit.info/pdf/8_2010/11.pdf 2. [2017, November 08].
- Xu, Y., Chang, W. (2017). Analysis and Countermeasures of PPP Project Implementation Difficulties. *Proceedings of the MATEC Web of Conferences*. [online]. Available: https://www.mateconferences.org/articles/mateconf/pdf/2017/14/mateconf_g_cmm2017_05039.pdf. [2017, November 08].
- Zairi, M. (1996). *Effective Benchmarking*. Springer Science & Business Media.
- Żyglicka, I. (2015). *Public procurement and public-private partnership law in Poland for foreign investors*. [online]. Available: https://ally-law.com/wp-content/uploads/2015/11/Poland_Public-Procurement_2015-DBG-Izabella-Ally.pdf. [2017, November 08].

Agnieszka Barcik^{1*}
University of Bielsko-Biala
Poland
Oliver Borowczyk²
Neogenetica BBS
Poland

5. QUALITY AND RISK MANAGEMENT IN SMALL COMPANY OF THE MEDICAL SECTOR

Abstract: The implementation of a risk and quality management system can significantly change the way a company operates and organizes its processes. The change of daily activities and permanent systematic adaptations requires a lot of effort by the employees and managers. On the other hand, establishing such a system may increase the value of a company. This would lead not only to a better marketing, because a company working with ISO principles can be better trusted than one without but it also leads to a more independent position on the market. The issue which relates to quality management is risk management. Although risk management is not a particular tool of quality management, it is a crucial element in quality management systems, especially in sectors like medical devices. Dealing with risk management includes the recognition, the analysis, the evaluation, the supervision and the control of risks. In order to implement appropriate tools of risk management, the goals of strategies and politics of the company must be determined. The objective of the paper is to present the process of a first-time implementation of a quality management system into a small company taking into account risk management issues. The research method used here is a case-study of Neogenetica BBS which is a small company settled in southern Poland and working in the area of orthopedics with medical devices. The paper presents the evaluation of the quality management system implementation and discusses its major benefits for the mentioned company.

Keywords: ISO 13485, medical device sector, quality management system, risk management.

JEL Classification: M10, L15, G32

1. Introduction

The more the economy of each scale develops and becomes more and more complex, the more it is necessary to have a clear overview of the own business activities. Because technology, communication and the digital progress merge and form a more complex world, every company being active on the economic market and willing to be successful has to adapt all of its business activities to the uprising requirements that follow such vast changes (Okręglicka, 2016; Mynarzová, Kaňa, Okręglicka, 2016; Jakubiec, 2017). One of these changes concerns the quality of products and of processes that create those products as well as risk management which is an essential element in quality management systems, especially in sectors like medical devices. The quality and risk management play an important role for companies to be able to keep up with the described changes and requirements (Barcik, 2017; Dziwiński, 2016). In order to give a detailed introduction into the topic of quality and risk management, several aspects concerning quality and risk are to be looked upon. It is absolutely obvious, that the quality of the product (and of all processes linked with the production) is one of the main factors of being successful on the market (Blecharz, Štverková, 2017). Although there are examples of companies which are successful with products (or services) of a lower quality, it is clear that every company should nevertheless try to have products of good or improving quality in order to generate attractive profits as well as to deal with risk issues effectively (Barcik, Dziwiński, Jakubiec 2015; Jakubiec, 2013; Mac Donald, 2003). From this perspective the major goal of the paper is to identify the essential elements of quality and risk policy and its implementation in a small company with regard to the specifics of the branch.

¹ Agnieszka Barcik Ph.D.; ul. Willowa 2, 43-309 Bielsko-Biala, Poland, abarcik@ath.bielsko.pl

² M.Sc Oliver Borowczyk; ul. Willowa 2, 43-309 Bielsko-Biala, Poland, oliver.borowczyk@outlook.de

* Corresponding author

6. Selected Aspects of Implementation of the Quality Management System and Risk Management in Medical Devices Sector

2.1. Methodology and Research Description

The study starts with the documents and literature review to highlight the framework for implementation of quality and risk management systems in the company. The research identifies the areas in which the exemplary company Neogenetica BBS introduced both quality and risk policy. For this research the authors used the basic methods of the scientific research to obtain information necessary for the complex and systemic explanation of the issue. The paper was developed on the basis of the work carried out by Borowczyk which was elaborated under guidelines and supervision provided by Barcik (Borowczyk, 2017). The research methods include mainly the analysis of documents applicable here, the observation as well as the case – study method.

2.2. Theoretical Background

The company Neogenetica BBS is settled in the medical device sector. A medical device can be any kind of instrument, appliance, software or material that is used in order to analyze, diagnose compensate, alleviate or treat the health (mainly) of human beings. A medical device is not to be confused with a pharmaceutical, often called as “medicine” (Schmuland, 2005; Carroll, 2011). A pharmaceutical is a cure-product; its intention is to restore the health of the patient by using methods of changing or adapting the metabolism or the immunology or by using pharmacological methods. Compared with medical devices, pharmaceuticals do not use physical or physio-chemical methods. The distinction between those two different kinds of types of products is very important in the case of legalization and registration of the products. Normally pharmaceuticals require much higher standards to fulfil, e.g. it is necessary to create pharmaceutical studies for each newly invented medicine, and the institutional regulations like production, pricing etc. are much more regulated by national regulations. Before introduction, medical devices are tested under various conditions too, but the regulations for registration are normally lower, and it is often sufficient to analyze attributes of a group of medical devices instead of analyzing each one of those individually (Van Matre, Koch, 2009). This simplifies the registration for medical device products, which are very similar to products that are already on the market and that can be counted to the same group of similar products. For example it requires no further studies to legalize a medical device product which is identical to an already existing product on the market, except as an example for its quantity or concentration (Hegendörfer, 2013; Oakland, 2000).

All of Neogenetica's products (currently seven different products) are classified according to the section 93/42/EEC Article 9 of the guideline for medical devices in the European Economic Community as Medical devices Class III (Council Directive 93/42/EEC of 14 June 1993 concerning medical devices).

The main products, with which Neogenetica generates the vast majority of its profit, are based on hyaluronic acid (HA). Furthermore, all of Neogenetica's products are settled in the business area of orthopedics. The two categories of use are injections of synovial fluid into the cavity of any synovial joint (main products), as well as bone replacement materials that are injected into the inflamed, broken or otherwise impaired bone in order to regain its structure (side products).

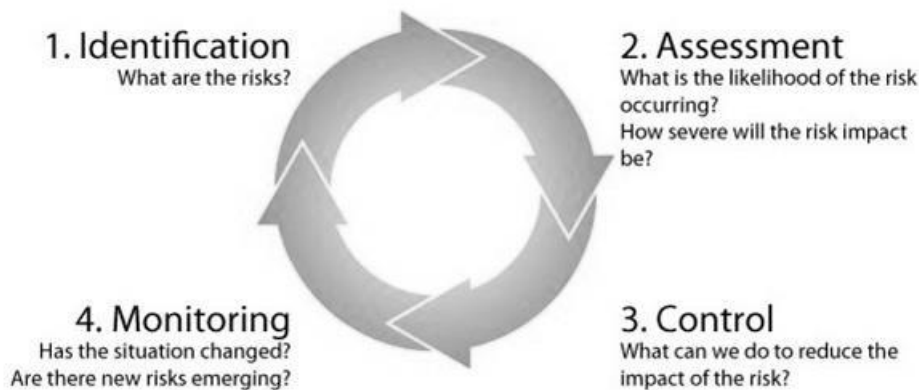
The medical devices sector apart from standard ISO norms is a subject to specific regulations. One of the most important norms which is applicable here is the ISO 13485 norm. The EN ISO 13485 is therefore a unique document, but it is almost identical to the norm ISO 9001, due to the fact, that the requirements for medical devices are not too specialized. Regarding the fact, that the purpose is to introduce a new quality management system to the company Neogenetica BBS and regarding that Neogenetica BBS is a pharmaceutical company that is certified for medical devices only, the EN ISO 13485 must be taken into account. In order to successfully implement a quality management system, the EN ISO 13485 is to be taken as a reference (Brown et al., 2008). The EN ISO 13485 contains 9 chapters in total, those chapters are listed in Table 1.

Table 1. Content of the norm EN ISO 13485

Section 0 – Introduction
Section 1 - Scope
Section 2 - Normative References
Section 3 - Terms and Definitions
Section 4 - Quality Management System
Section 5 - Management Responsibility
Section 6 - Resource Management
Section 7 - Product realization
Section 8 - Measurement, Analysis and Improvement

Source: PN – EN ISO 13485: 2016-04, 2016, p. 2

Risk management in turn describes how to deal with risks in general. Risk management is not a particular tool of quality management though, but it is a crucial part in quality management systems, especially in sectors like medical devices. Dealing with risk management includes the recognition, the analysis, the evaluation, the supervision and the control of risks (Soebbing, 2007). In order to implement appropriate tools of risk management, the goals of strategies and politics of the company must be determined. Due to the specificity of the industry in which Neogenetica operates, risk management is a determinant of the quality of business management. The risks occurring in the company's activity relate to product temperature, humidity and exposure to solar radiation. Therefore, risk management is closely related to the quality management process in Neogenetica. The above results from the assumptions adopted by the company's management and general company policy. Neogenetica is in the process of developing a formal strategy. The idea is to implement a system which functions in a cycle that means a never ending process of continuous improvement. That is why the Deming-cycle can be used here to implement such a system to a company (Hartung, Walther, 2014). The Deming-cycle can be thus interpreted as followed for risk management:

**Figure 1. Deming – cycle in risk management**

Source: Hammer, 2015

Not every risk management system works the same way, because the processes and products a company has and the business areas it works in differ, but on the other hand the most common approach can be used in almost any case. The following approach is supposed to be an example of how risk management can be effectively implemented.

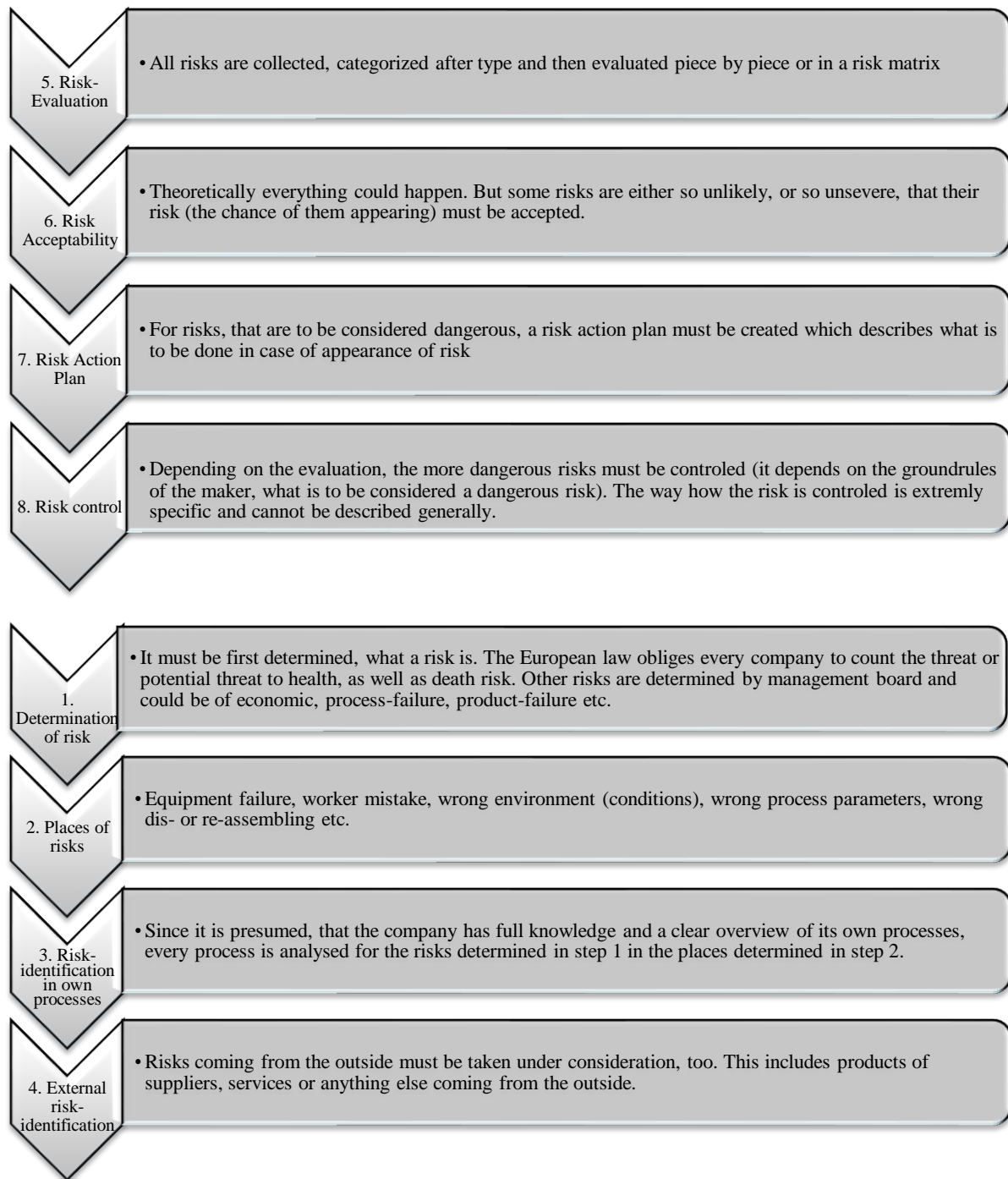


Figure 2. Possible approach to risks

Source: Own work

The shown steps are only one example of how to deal with risks. The modified risk-cycle in figure 3 completes this risk approach, in the way that for each risk determined in step 8 solutions is looked for. These solutions are then implemented in the process-structure and monitored, what completes the risk-cycle (Gleißner, 2011; Bank, 2000).

2.3. Neogenetica BBS Company's Presentation

Neogenetica BBS is a small company operating in the market of orthopedics. Neogenetica has 12 full-time employees, as well as 4 part-time employees, who only work in case of a delivery that has to be packed or in case of the need for a cleaning worker. The company itself has no manufactory or production of its products, thus it has the legal ownership of its products. Neogenetica sells its

products to around 40 different countries worldwide, depending on which customers are continuous buyers and which customers look for different business opportunities. In general, Neogenetica only makes Sole Distributor contracts, that means there is only one distributor for each country due to avoiding internal competition. Although the number of customers differ because of losing and gaining customers, the trend is clearly and increase of customer numbers.

Neogenetica BBS is not a regular distributor (as for example a company purchasing foreign products and selling them in their shops), but instead it owns its products, that are developed by the help of a company specialized in the business field of hyaluronic acids. The production of those products is outsourced to a contract manufacturer that is settled in Sweden and that has experience of manufacturing hyaluronic-based products for over 25 years. The so called “side products” on the other hand are foreign products, which are normally distributed, but since they play a minor role in the generation of profit, the focus is not set on them. Neogenetica purchases raw material from a supplier in Germany, which purchases the raw material from a company from France. The German supplier sends the raw material to the manufacturer in Sweden, which produces the product while also receiving syringes from another supplier in Germany. The raw material is processed and sterilized, then it is filled into the syringes under sterile conditions. The syringes themselves are cleaned but not sterilized and then they are put into blisters which are sealed. The sealed blisters are shipped to Neogenetica where they are packed and made ready for further shipment (Neogenetica BBS).

2.4. Implementation of QMS and Risk Management in Neogenetica BBS

Due to the requirements of the norm ISO 13485, core processes and supporting processes were to be analyzed and/or defined. The following process matrix is a commonly used instrument to visualize those core and supporting processes. Neogenetica’s matrix came out as follows, whereas red defines the core processes and blue defines the supporting processes (or dealing with those).

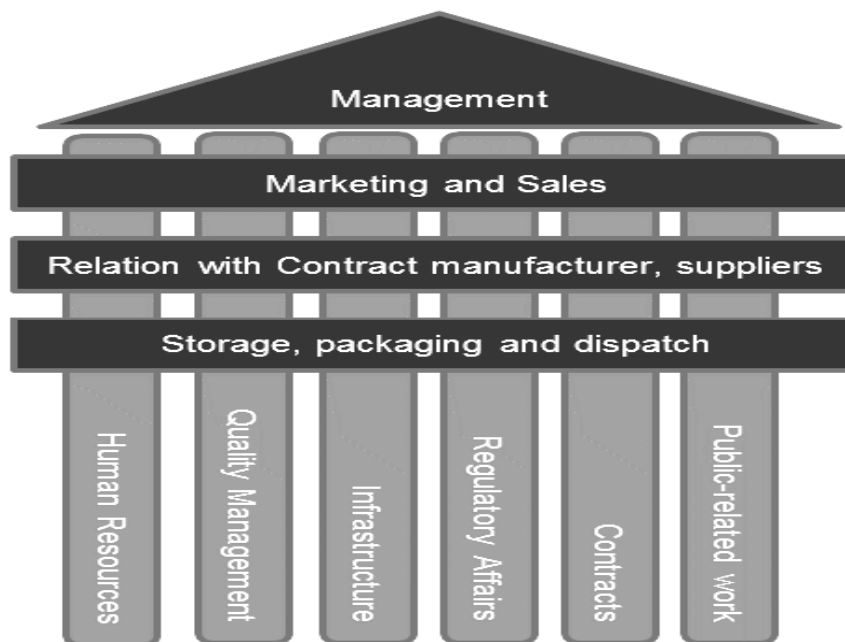


Figure 3. Supporting and core processes of Neogenetica

Source: Own work

On the basis of this process matrix, a process map has been created to visualize the companies’ processes as well. Blue bubbles have been marked as well at those places, where it is seen, that the quality management system will have the deepest effect (or is very important).

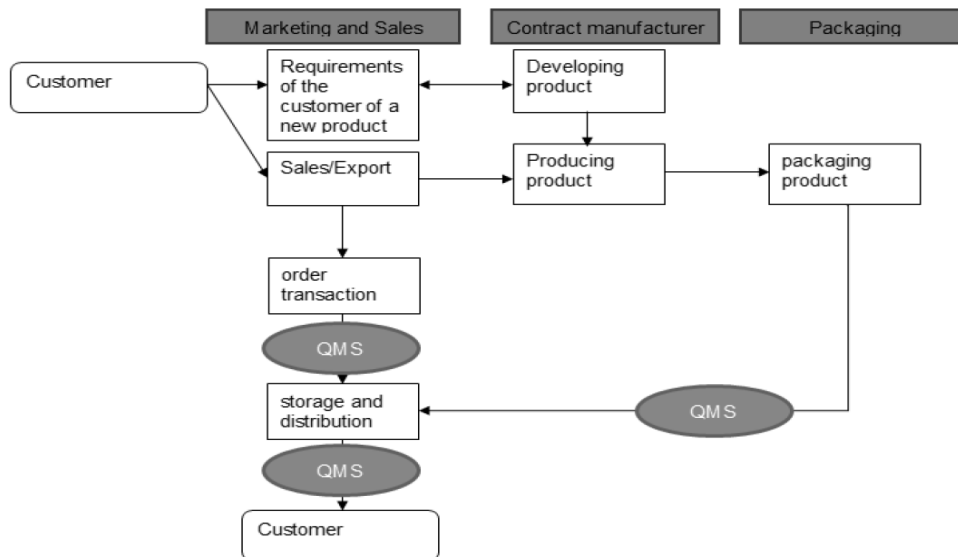


Figure 4. Process map according to ISO 13485 for Neogenetica

Source: Own work

The process map created not only indicates, which process belongs to which core process, but it also fulfils the requirement of a closed quality cycle, since the customer gives the essential input and receives the output, too.

It has to be remembered, that all processes that are connected with development of products, the production of products or sterilization are outsourced to our contract manufacturer. Furthermore, all regulatory issues related with registration of a product in a country outside the European Union are all dealt with by the appropriate Customer. Because of that, the chapter 7.5. of the ISO norm 13485 (which deals with the creation of the product) is excluded from this quality management documentation. Production including sterilization will be executed by contract manufacturers. The activities of Neogenetica BBS are limited to storage, packaging and dispatch of the products. Since these might influence the product quality, these processes are within the scope of the quality management system.

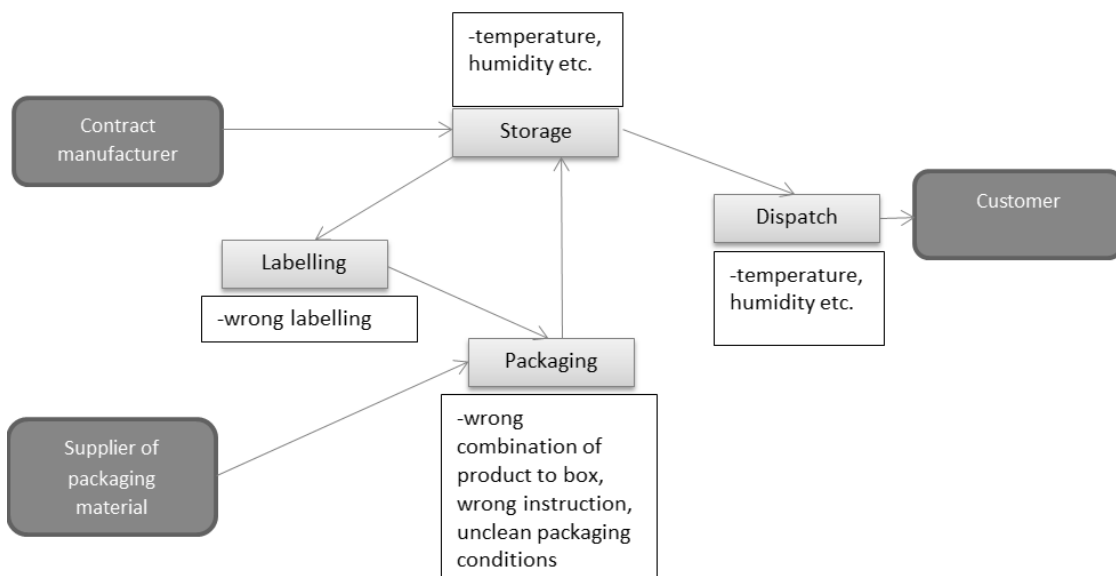


Figure 5. Process map for Neogenetica's risk management

Source: Own work

The company-owned risk management documents all processes that are done by Neogenetica BBS and that could be critical for patient's health, always refer to ISO 14971. The ISO norm 14971 is a general risk management norm for all kinds of companies, not only those dealing with medical

devices. Nether the less, the ISO norm 13485 is requesting to establish a risk management system which is based on the ISO 14971. The following process flow chart shows all of these processes and possible dangers that can occur when dealing with that process. The risk management is established throughout all of the processes, forms, records and especially throughout the work instructions. These documents reassure that the work done at Neogenetica BBS fulfils the requirements set by the standard ISO 14971.

7. Conclusion

The situation in Neogenetica before the active implementation of the quality and risk management systems was far more un-organized and confusing than after the adaptation of core and supporting processes according to ISO 13485 and ISO 14971. Thanks to the fact, that ISO 13485 norm requires to have controls for incoming and outgoing goods and for products that are in process in-house, there is now a much better permanent overview available for general management regarding the stock situation for example. But also thanks to the fact, that Neogenetica is safer now from the legal perspective, makes future planning, especially with authorities, much easier. During implementation of the quality and risk management system it could be noticed, that the fact, that Neogenetica has only few employees, has simple products and easy to understand processes, made implementation a fast-selling item. After final certification, which is expected in the mid of 2018, the company will be able to act on its own behalf much more actively than before. This includes for example a more independent position regarding the co-operation with contract partners, because the company is not dependent anymore on their certifications. Furthermore it makes the development of new products easier, since Neogenetica has now more possibilities to act on its own. But in order to get to this point it is not enough to just implement the quality management system according to ISO norm 13485, what matters when dealing with authorities and in marketing is the certification itself.

According to Neogenetica management the major advantages of quality and risk management implementation are the improving the readability of the firm's structure, increasing the efficiency of work, organizing the scope of competence and standardizing the documentation. The main advantage of the implementation of the standardized quality and risk management system in small and medium firm in medical devices branch is the increase in the level of enterprise management. The major limitations which are pointed out are the costs and bureaucracy resulting from the standards implementation.

The management expects that the application of the implemented system would have positive impact on relations with clients, better cooperation with suppliers, improvement of quality of products, establishing transparent goals and quality and risk policy in future. Further study on this process in Neogenetica is expected to continue in near future.

References

- Bank, J. (2000). *The Essence of Total Quality management*, 2nd ed., Harlow: Financial Times Prentice Hall.
- Barcik, A. (2017). Compliance management system in ethical codes of socially responsible enterprises in Poland. In Štefan Majtán a kolektív. *Aktuálne problémy podnikovej sféry 2017. Zborník vedeckých prác*, (pp. 34-41). Bratislava: Vydavateľstvo EKONÓM,
- Barcik, A., Dziwiński, P., Jakubiec, M. (2015). *Management of enterprise in the 21st century. Condition and perspective of growth*. Warszawa: Difin.
- Blecharz, P., Štverková, H. (2017). Consumer preferences due to the quality and price. In Štefan Majtán a kolektív. *Aktuálne problémy podnikovej sféry 2017. Zborník vedeckých prác*, pp.105-111. Bratislava: Vydavateľstvo EKONÓM.
- Borowczyk, O. (2017). *Analysis, preparation and implementation of a Quality Management System according to ISO 13485 in the company Neogenetica BBS*, Department of Management, Bielsko-Biala: University of Bielsko Biala.
- Brown, A., Eatock, J., Dorian, D., Meenan, B.J., Anderson, J. (2008). Quality and continuous improvement in medical device manufacturing, *The TQM Journal*, vol. 20, iss. 6, pp. 541-555.
- Carroll, R. (2011), (Special editor). *Risk management. Handbook for Healthcare Organizations*, American Society for Healthcare Risk Management (ASHRM).
- Council Directive 93/42/EEC of 14 June 1993 concerning medical devices, *Official Journal L 169*, 12/07/1993 P. 0001 – 0043, [online]. Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31993L0042> [2017, November 21].

- Dziwiński, P. (2016). Restructuring of small and medium-sized enterprises - the European perspective. In Kovářová E., Melecký L., Staničková M. (Eds.). *Proceedings of the 3rd International Conference on European Integration 2016: ICEI 2016*, pp. 190-196. Ostrava: VŠB - Technical University, 2016.
- Gleißner, W. (2011). *Grundlagen des Risikomanagements*. 2. Auflage, Bonn: Vahlen-Verlag.
- Hammer, M. (2015). *What is Business Process Management?*. In vom Brocke J., Rosemann M. (Eds). *Handbook on Business Process Management I. International Handbooks on Information Systems* (pp. 3-16). Berlin, Heidelberg: Springer.
- Hartung, K., Walther, F. (2014). Realitaetsgesinnung, *Business Intelligence Magazine*, vol. 3, pp. 7-18.
- Hegendörfer, G (2013). Der aktuelle Stand der Reform des EU-Medizinprodukterechtes. *Medizin Produkte Recht*. vol. 6, pp. 181-188.
- Jakubiec, M. (2013). Model zarządzania jakością wyrobów medycznych – wyniki badań, *Zeszyty Naukowe Organizacja i Zarządzanie*, Wydawnictwo Politechniki Łódzka, vol. 54, pp. 45-56.
- Jakubiec, M. (2017). *Projakościowe zarządzanie przedsiębiorstwem*. Warszawa: Difin.
- Mac Donald, J. (2003). *Total Quality Management in a Week*, ed. 3, London: Hodder & Stoughton.
- Mynarzová, M., Kaňa, R., Okręglicka, M. (2016). Selected aspect of public support for small and medium-sized enterprises in European Union through the prism of block exemption regulation. In Okręglicka, M., Gorzeń-Mitka, I., Lemańska-Majdzik, A., Sipa, M., Skibiński, A. (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management 2016*, pp. 294-301. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Neogenetica BBS. [online]. Available: <http://www.biomedical-baumann.com>. [2017, November 21].
- Oakland, J.S. (2000). *Total Quality Management*, London: Butterworth-Heinemann.
- Okręglicka, M. (2016). Financing of current activity and economic condition of Polish enterprises. In Okręglicka, M., Gorzeń-Mitka, I., Lemańska-Majdzik, A., Sipa, M., Skibiński, A. (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management 2016*, pp. 336-341. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Polska norma PN-EN ISO 13485:2016-04, 2016. *Wyroby medyczne- systemy zarządzania jakością. Wymagania do celów przepisów prawnych*. Warszawa: PKN.
- Polska norma PN-EN ISO 14971:2012, 2012. *Wyroby medyczne - zastosowanie zarządzania ryzykiem do wyrobów medycznych*. Warszawa: PKN.
- Polska norma PN-EN ISO 9001:2015-10, 2015. *Systemy zarządzania jakością – wymagania*. Warszawa: PKN.
- Schmuland, C. (2005). Value – added medical – device risk management, *IEEE Transaction on Device and Materials Reliability*, vol. 5, iss., 3, pp. 488-493.
- Soebbing, T. (2007). *6 Schritte im Risikomanagement, Eine Ableitung zum Risikomanagement nach ISO 31000:2009*, CF Duesseldorf: Mueller Verlag.
- Van Matre, J.G., Koch, K.E. (2009). Understanding Healthcare Clinical Process and Outcome Measures and their use in the Baldrige Award Application Process. *Quality Management Journal*, vol 16, iss. 1, pp. 18-28.

Anetta Barska^{1*}
University of Zielona Góra
Poland
Janina Jędrzejczak-Gas²
University of Zielona Góra
Poland

6. PROMOTIONAL INSTRUMENTS FOR SUPPORTING ENTREPRENEURSHIP BY LOCAL AUTHORITIES ON THE EXAMPLE OF ŻAGAŃ TOWN

Abstract: The main objective of the article was to evaluate promotional instruments for supporting entrepreneurship by local authorities on the example of Żagań town. The research method used in this paper is case study, aimed at a comprehensive - using both secondary and primary data - description of the local government unit of the community based on a number of variables related to entrepreneurship support instruments. The urban community (town) of Żagań located in Lubuskie Province was chosen as the research subject. The conducted research showed that local government authorities at municipal level can create conditions conducive to revealing entrepreneurial initiatives of residents through multidirectional activities, stimulate the development of micro, small and medium-sized enterprises, as well as attract investors. The instruments used can be classified into three groups, i.e.: technical instruments, promotional instruments, and legal and organizational instruments. For reasons of space, this study will focus only on the promotional instruments that are part of a broader communication system of the local government unit with the environment. *Entrepreneurship Support Program of the Town of Żagań for 2016-2020* contains various instruments whose implementation is to strengthen entrepreneurship in the studied area. Due to dynamic changes in the environment, it will need to be modified based on evaluation studies.

Keywords: entrepreneurship support, instruments for supporting entrepreneurship, municipal local government, promotion.

JEL Classification: L26, L53, M38, R11, R58

1. Introduction

In Poland, local governments at municipal level play an important role in creating and developing entrepreneurship. Managing the development of local entrepreneurship is not the municipality's task resulting explicitly from the law. However, municipal authorities can, through multidirectional activities, create conditions conducive to revealing entrepreneurial initiatives of residents, stimulate the development of micro, small and medium-sized enterprises, as well as attract investors.

In many communities, the influence of the authorities on the environment of local entrepreneurs is nevertheless marked by a lack of coherence and comprehensiveness, both in terms of the instruments used and the nature and quality of pursued policy. It is therefore often necessary to assess and verify the activities carried out so far and to implement appropriate and effective instruments in that regard.

The necessity to transform the existing forms of supporting local entrepreneurship was also noticed by the authorities of Żagań Town, who took measures that led to the development of *Entrepreneurship Support Program of the Town of Żagań for 2016-2020* (2016)³. The main argument for the development of the Program was the possibility of the planned implementation of measures, or activities, aimed at creating favorable conditions for the development of enterprises and achieving social and economic benefits. The implementation of the program made it possible to coordinate all the entrepreneurship support instruments available at local level, which in turn helped increase the efficiency of tasks carried out by the local government of Żagań Town. It should be noted that investors are driven by the actual benefits offered by local authorities in choosing locations for their investments, the reason for which specific investment incentives should form the basis of the entire marketing process of the town and, along with it, all its promotional activities (Loewendahl, 2001).

¹ Ing. Anetta Barska Ph.D.; Podgórna 50, 65-246 Zielona Góra, Poland, A.Barska@wez.uz.zgora.pl

² Janina Jędrzejczak-Gas Ph.D.; Podgórna 50, 65-246 Zielona Góra, Poland, j.jedrzejczak-gas@wez.uz.zgora.pl

* Corresponding author

³ Żagań - a town located in western Poland, in Lubuskie Province. The town is located 45 km from the Polish-German border and about 80 km from the Polish-Czech border. The authors participated in the work of the team that developed the Program.

The literature contains a number of classifications of instruments used by local authorities to support entrepreneurship (Wojciechowski, 2003; Strużycki, 2006; Kudłacz, 2008). For reasons of space, this study focuses only on promotional instruments supporting entrepreneurship that are part of a broader communication system of the local government unit with the environment. The main objective of the article was to evaluate promotional instruments for supporting entrepreneurship by local authorities on the example of Żagań town. This paper was divided into two sections. The first section reviews the literature, whereas the second section presents an empirical study of Żagań Town.

2. Supporting Entrepreneurship by Local Governments – Legal and Economic Conditions

The actual economic position of all economies (especially transition ones) creates an opportunity for the development of entrepreneurship. The key link of development and economic growth is small and medium-sized enterprises. Due to their size and financial capabilities, these entities require equal support at national, regional and local level (Debus, Tosun, Maxeiner, 2017). Supporting SMEs proves crucial to increasing investment and employment (Mazllami, 2016). The development of entrepreneurship is particularly important for regional policy in less competitive regions, where business development can help improve regional competitiveness. Decentralization, globalization and EU cohesion and competitiveness programs have shifted the focus on development policy from the national to the regional and local level. The task of regional and local governments is now to select and implement measures and instruments that support business startup and growth (Vecchi, Brusoni, Borgonovi, 2014). Local governments are becoming increasingly involved in innovative ways of governing (Smedby, Quitzau, 2016) involving various instruments of entrepreneurship support. Measuring the results of activities undertaken at local and regional level, the focus should be long-term rather than short-term results, which is rarely the case given that local authorities tend to act under strong pressure (Huggins, Williams 2011). The issue of entrepreneurship support is also the area of research for other researchers in Poland (Skica, Rodzinka, Harasym, 2017; Adamczyk, Wiażewicz, 2014; Wołowicz, Skica, 2013; Dziemianowicz et al., 2000) and abroad (Gafurova, Fookina, Notfullina, 2016; Mazllami, 2016; Smedby, Quitzau, 2016; Sautet, 2013; Huggins, Williams, 2011).

The most important legal act in Poland, i.e. the Constitution of the Republic of Poland (Journal of Laws of 1997 No. 78, item 483, as amended) does not directly refer to the subject of supporting entrepreneurship by local governments at municipality level. However, the Constitution recognizes the principle of freedom of economic activity and private property as the basis of the economic system of the Republic of Poland (Article 20 of the Constitution of the Republic of Poland). In addition, according to the Constitution, “[public authorities shall pursue policies aiming at full, productive employment by implementing programmes to combat unemployment, including the organization of and support for occupational advice and training, as well as public works and economic intervention” (Article 65, paragraph 5 of the Constitution of the Republic of Poland). This means that, in taking measures to combat unemployment, municipal authorities may simultaneously support entrepreneurship and influence the development of economic activity. The legal act enabling local authorities to support entrepreneurship is the Polish Act on the Freedom of Economic Activity (Journal of Laws of 2016, item 1829, as amended), whose art. 8 states that “public administration authorities shall support the development of entrepreneurship by creating favourable conditions for entrepreneurs to undertake and conduct economic activities, and in particular they shall support micro, small and medium-sized enterprises (SMEs)”. Another legal basis authorizing the local government to undertake activities to support entrepreneurship is art. 7, par. 1 of the Act on Municipal Local Government (Journal of Laws of 2016, item 446, as amended), which includes the following in the local government’s tasks: 1) promotion of the municipality, 2) cooperation and activities for non-governmental organizations and entities that carry out public benefit activities and voluntary work, 3) cooperation with local and regional communities of other countries. One can also cite a number of legal acts – including the Act on Taxes and Local Fees (Journal of Laws of 2016, item 716, as amended), the Act on Agricultural Tax (Journal of Laws of 2016 item 617, as amended), the Public Finance Act (Journal of Laws of 2016, item 1870, as amended), the Tax Ordinance Act (Journal of Laws of 2017, item 201, as amended) - that grant municipalities the right to introduce measures aimed at creating favorable financial conditions for all local economic operators to undertake and expand economic activity (e.g. tax reliefs and exemptions, setting the level of local fees). Other legal acts (Act on Municipal Management, Journal of Laws of 2017, item 827, article 9) give municipalities the right to establish institutions supporting business startup and running, such as: regional development agencies, business support centers or business incubators.

In summary, many statutory legal ranks can be indicated, whose provisions relate – either directly or indirectly – to supporting entrepreneurship and the development of economic activity by local governments. Municipalities have at their disposal a wide range of instruments for supporting entrepreneurship. Each municipality, however, has limited resources and organizational possibilities, which is why the main focus of the activities should be primarily on those instruments that are most beneficial.

3. Promotional Instruments for Supporting Entrepreneurship by Local Governments

Effective and integrated marketing communication is important in achieving the goals and tasks of local government authorities at municipality level; it is an expression of a holistic approach to territorial marketing, reinforced by conducting interactive dialogue with beneficiaries of the effects of territorial unit activities (Rumpel, Siwek, 2006). Territorial marketing allows the use of new and useful methods, tools and applications, plus it contributes to improving attractiveness or recognition of a given territory (Kotler, Gertner, 2002; Adamowicz, 2006; Skinner, 2008; Gertner, 2011; Zenker, Martin, 2011; Szromnik, 2012; Eshuis, Braun, Klijn, 2013; Basile, Miano, Scozzese, 2014; Ventura, 2014). Translated into practice, this includes marketing activities undertaken by territorial communities and environmental organizations within the framework of the strategic planning process (Girard, 1997). Analyzing the possibilities of using marketing tools in managing a local government unit, it is assumed that a territorial marketing mix should include (Szromnik, 2006): 1) territorial offer, characterized by constant and changing territorial features, expressing its territorial capital (history, culture, internal organization, economic, geographical and symbolic resources); 2) conditions for making offers available to interested groups of persons and institutions, which for them are specific costs of using, participating, visiting or consuming a territorial product; 3) methods and circumstances of the transfer of a territorial product, specifying the place, time, procedures and technical conditions for servicing investors or providing tangible resources and 4) forms, means and techniques of communication of the territorial unit with the environment, related to shaping its marketing image.

This article focuses on the marketing instrument of promotion, and in particular economic promotion. Promotion is the main tool used to promote the potential of the local government unit among interested parties. Local governments at all levels can implement a number of instruments, primarily promotional instruments concerning business-related institutions and broadly understood human resources development. The most important issue is the development of a sustainable and coherent policy of supporting entrepreneurship (Skica, Bem, Zygodlo, 2013). The very term *promotion* comes from the Latin *promovere* and *promotio* meaning “support” or “stimulation”, and it corresponds to the concepts of activation or market influencing (Wiktor, 2001). Promotion aims to build the identity of the region, which, like corporate identity, can be defined as the sum of its characteristics and activities that distinguish it from similar territories (Klage, 1991). Elements that can be used by regions (regional authorities) in this area are behaviors (actions taken by authorities and residents), region design (visual presentation and identification method) and regional communication (form of communication between the region and the environment). Traditional tools such as advertising, public relations, sponsoring, sales promotion, personal sales and direct marketing are used in the communication process, while their composition forms the so-called promotion mix (Kotler, 2005).

The key measures for local governments concern advertising and public relations, both of which should be focused on intensifying projects in the area of:

- informing about the social and economic environment of the local government unit and its resources,
- forging the relationship between the authorities and residents,
- intensifying cooperation with business-related institutions (including supporting the production and sale of local and regional products, building science parks and business incubators (Yu, Stough Nijkamp, 2009),
- identifying the unique features and values of the local government unit,
- gaining public support for political projects and proposed development strategies,
- raising awareness of the place of residence and work, and building local patriotism,
- building an atmosphere of trust in the authorities by informing about the measures and their results and by conducting social dialogue,
- informing about investment conditions, development plans and pursued social and economic initiatives.

4. Methodology

In the course of developing *Entrepreneurship Support Program of the Town of Żagań for 2016-2020*, secondary and primary sources of information were used. The secondary data was obtained from the Local Data Bank of the Polish Central Statistical Office, source documentation of the urban community (town) of Żagań and the literature, while the primary data was obtained using the method of non-directive interview conducted with the municipal authorities, a survey conducted among entrepreneurs running business in the municipality and an expert panel. In the research proceedings, a thorough analysis of source documents was carried out, among which *Development Strategy of the Town of Żagań for 2015-2020* (2015) was of key importance.

The main research objective was to analyze the conditions for the development of entrepreneurship. Polish National Business Registry Number [REGON] was chosen for the conducted survey of enterprises. Based on it, the total sample of 310 business entities in the studied area was obtained. The sample was layered, and size was taken as a criterion for division. The respondents were either company owners or top-tier managers. In the document *Development Strategy of the Town of Żagań for 2015-2020*, “the development of local entrepreneurship and creating favorable conditions for economic growth” was considered the main objective of supporting the town's economic development. Operational goals were outlined to achieve these objectives. A derivative of the adopted objectives of the Strategy are the instruments and directions of measures as specified in *Entrepreneurship Support Program of the Town of Żagań for 2016-2020* (2016). The basis for the determination of activities and types of projects in the framework of each instrument were tests carried out using the above-mentioned methods. The Program contains various instruments whose implementation is to strengthen entrepreneurship in the studied area. Due to dynamic changes in the environment, it will need to be modified based on evaluation studies.

5. Promotional Instruments for Supporting Entrepreneurship – Empirical Study of Żagań Town

The analyses carried out allowed to identify the alarming phenomenon of a systematic decrease in the number of entities newly registered in REGON per 10,000 people. Only last year, compared with the year before, it decreased by 3.4% in Żagań, with entirely different trends being observed for Lubuskie Province and Poland. In addition, the studied area is marked by an above-average rate of unemployment. On the other hand, the town has significant resources in the field of real-estate remains, i.e. former military zones, which can provide good facilities for newly established business entities. A properly conducted policy of the municipality is of key importance for the development of entrepreneurship in Żagań. Economic development at local level will refer to an increase in resources and capabilities that will in turn allow the local authorities and the residents to better meet a greater number of needs.

The research results showed that instruments such as tax breaks and exemptions in real estate and transport taxes, as well as infrastructure investments, are of particular importance to enterprises. These results confirm that instruments that influence the financial results of companies are of particular importance to business people. This is also indicated by other researchers, e.g. Skica, Rodzinka and Harasym (2017). Also important is the shaping of the institutional environment in which decisions about entrepreneurship are made (this is also suggested by Minniti, 2008). One of such instruments serving the development of modern economy, including that of local communities, are science parks and industrial parks. They provide an opportunity to increase the innovativeness of small and medium-sized enterprises, and to modernize production and develop other entities (Armanios et al., 2017). Non-financial instruments include the openness of mutual contacts, the promotion of the Town, the possibility of local entrepreneurs participating in outlining directions of development and paving *fast tracks* for investment projects. The research conducted by the authors as part of the work of the team for the development of *Entrepreneurship Support Program of the Town of Żagań for 2016-2020* demonstrates that entrepreneurship support instruments used by local governments can be classified into three groups: technical instruments, promotional instruments and legal and organizational instruments. The Program envisages the implementation of all types of instruments that are to improve the conditions of business operations and increase the investment attractiveness of Town. The effective impact of the town on the development of entrepreneurship consists in the use of a whole set of instruments that support each other on the basis of synergy. The expected development of local entrepreneurship, due to the successful implementation of the prepared Program, will have a significant impact on improving the quality of life

of the residents, reducing unemployment, increasing the product and service offer, as well as integrating local business. It will also help improve the competitiveness of the economy and stimulate its growth, boosting local development and positively affecting the environment. For reasons of space, this study will focus only on the promotional instruments that are part of a broader communication system of the local government unit with the environment. This was due to the fact the barriers to the development of entrepreneurship in Żagań Town included:

- shortage of activities supporting the development of entrepreneurship, including promotional activities (34% of the respondents),
- shortage of economic information, e.g. on external financing sources for companies (29% of the respondents).

The results indicate, among other data, that 41% of the surveyed entrepreneurs rate the economic promotion of the municipality as “well” and “very well”. Unfortunately, every third respondent expressed a very critical opinion in this regard, which justifies undertaking measures with a view to strengthening economic promotion.

Żagań’s marketing communication strategy should be associated with the general development strategy and also form part of broader marketing activities related to the analysis of the environment and the development of other marketing-mix instruments. It is necessary to distinguish three groups of entities that are both participants in the promotion of Żagań as well as its addressees and contractors: local authorities, residents, and enterprises. Implementation of the promotion instruments indicated in the Program is to create such conditions for running a business so that entrepreneurs have reasonable grounds to feel that Żagań Town is helping them conduct their daily business activities. Economic promotion is, above all, an opportunity for Żagań to present its investment offer to domestic and foreign entrepreneurs, thereby encouraging them to invest in particular investment areas. Economic promotion should be aimed at current and potential investors, with its specific goal to prompt new and support the existing economic initiatives and strengthen local business-related institutions, including the development of the investment offer and improvement of investor service standards. Key projects in this respect are listed in Table 1 and Table 2. Unfortunately, the limited scope of this study does not allow for an in-depth presentation of all of them, which is why the focus will be to discuss selected marketing communication instruments and present the remaining ones in Tables. An important element of the communication process with local entrepreneurs and potential investors is the municipal website (Table 1). It is not only an online showpiece, but more importantly it should contain the most crucial and useful information that will help interested parties pre-evaluate the offer of the municipality and contact the relevant people for more details. From the investor's perspective, a website should be clear enough to easily find the content intended for them, especially so that this user group needs specific information presented in a clear and transparent manner, often without all the visual extras. It should include: presentation of the values of the region, information on institutions supporting investors, current information on economic zones, assistance offered in the area of paperwork, investment areas, different ways of supporting entrepreneurs. It would be necessary to make available and regularly update the database of all Żagań real estates that are owned by the Town and the state. As part of entrepreneurship promotion, it is recommended to design a separate website tab with a database of active local entrepreneurs. The website could also be used to promote enterprises that are successful, obtain certifications, or implement new technologies. In addition, it would be valuable to hire someone who would handle investors’ inquiries as a sign that the town wants to, and can, play an important role in providing good conditions for investors. This would enable professional investor service at every stage of the investment process. Equally beneficial would be to compile promotional materials about Żagań for potential investors, including information about local businesses, which will allow to assess the investment attractiveness of the town also in the context of the possibility of cooperation in the international marketplace. The town should also have a presence in social media, in particular a Facebook profile, a Twitter account or a YouTube channel. These sites help gather local communities of residents (permanent or visiting) who take an active part in the local life by commenting, voting, discussing new ideas, with the representatives of Żagań Town actively participating in these discussions as well. These online sites present an opportunity for the town to establish a relationship with users by including them in town management, which is the implementation of the idea of self-governance, but also a response to the expectations of a new generation of residents raised in the age of new technologies and mobile devices, with whom

communication through traditional media and reliance on basic marketing communication tools would not bring any result.

Table 1. Types of projects indicated in Measure 1 in the framework of promotional instruments

Operational goal: Strengthening and promoting entrepreneurship among residents
Measure 1: Promoting the development of entrepreneurship and economic innovation
Types of projects:
<ul style="list-style-type: none"> – Modification of the Town Hall's website towards implementing the postulates included in this program, also in German and English. Strengthening the Town's presence in social media. – Expanding promotional materials about Żagań, for potential investors including information about local companies, which will allow to assess the investment attractiveness of the Town also in the context of the possibility of cooperation in the international marketplace. The materials should be prepared not only in Polish but also in German and English. – Town presentation on CDs, in promotional materials - maps, catalogs, information leaflets. Send offers by post and e-mail. Articles in trade magazines and newspapers. – Participation in fairs and business missions, together with the representation of local entrepreneurs and a professional promotional offer of the Town and its business entities. – Organization of competitions promoting local entrepreneurship, e.g. by organizing a competition for the "Best Young Entrepreneur" (e.g. running business for not less than 1 year and not longer than 3 years), "Innovative Enterprise". – Town's patronage over selected events promoting local enterprises. – Publication of the „Economic Information Bulletin of the Town of Żagań". – Organization of the Żagań Forum of Local Economy. – Promotion of the Town's tourist values. Promotion and creation of new tourist products. – Developing a support program for local products. – Improvement of cooperation with the Polish Information and Foreign Investment Agency, Agency for Restructuring and Modernization of Agriculture, Guild of Various Crafts and Entrepreneurship in Żagań. – Dissemination of good practices or model solutions among business-related institutions. – Joint activities in the field of investment promotion implemented by neighboring municipalities. – Greater and more active participation of the local government in developing innovations of SMEs operating in Żagań, as well as encouraging entrepreneurs to cooperate with the scientific community by creating a platform for such cooperation, e.g. workshops, training, etc. – An information campaign promoting the resolutions of the Town Council regarding forms of investor support. – Monitoring the Town's investment potential.

Source: Own study based on *Entrepreneurship Support Program of the Town of Żagań for 2016-2020*

The conducted research also indicates that one of the main determinants of the development of enterprises are properly trained employees, hence it is reasonable to undertake various educational initiatives whose aim will be to disseminate the idea of entrepreneurship, create an atmosphere conducive to business activities and deepen the knowledge about starting and running a business. The initiatives planned under the Program include, above all, broadly understood education in the field of entrepreneurship, including information and training activities (Table 2).

Table 2. Types of projects indicated in Measure 2 in the framework of promotional instruments

Operational goal: Strengthening and promoting entrepreneurship among residents
Measure 2: Shaping entrepreneurial and creative attitudes among Żagań residents
Types of projects:
<ul style="list-style-type: none"> – Organization of training courses within "Entrepreneurship Vade Mecum" for people interested in running a business or acquiring funds from available funds. – Implementation and annual organization - with the participation of industry business organizations – of "Open doors in enterprises" for young people. – Partnership projects aimed at teaching entrepreneurial traits to young people, cooperation between schools and the economic sector through the organization of educational fairs, launching vocational training classes for better adjustment of education to the needs of the labor market; – Run, in cooperation with schools, a wide promotional and information campaign for young people regarding the possibility of setting up businesses in Żagań. – Pursuit and full implementation of the transnational project "Young in Europe", in which students of Żagań schools will be trained in the use of their strengths, setting up and running a business and using the Internet in the job search process. – Implementation of projects financed from the ESF funds in primary schools that develop key skills for children to choose and shape the right professional career. – Monitoring the local labor and education market.

Source: Own study based on *Entrepreneurship Support Program of the Town of Żagań for 2016-2020*

The opportunities for the development of entrepreneurship in the urban municipality of Żagań, and for the creation of regional development based on this entrepreneurship, should be sought in a policy properly implemented by the local authorities, especially in relation to small and medium-sized enterprises and emerging investors. One of the desired areas is the economic promotion discussed above.

6. Conclusion

The town has limited financial resources and organizational possibilities, which is why the selection of appropriate instruments is crucial for efficient development. The effective impact of local authorities on the development of entrepreneurship consists in the use of a series of synergic instruments. The main argument for the development of the Program (despite the fact it has not been imposed by the legislator) is the possibility of the planned implementation of measures, or activities, aimed at creating favorable conditions for the development of enterprises and achieving social and economic benefits, given that many of the routinely adopted entrepreneurship policies do not favor the development of entrepreneurship (Naudé, 2013). *Entrepreneurship Support Program of the Town of Żagań for 2016-20* contains legal instruments of the local government's influence on the increase of the town's economic activity. The Program provides for the implementation of three types of such tools, although this study presents the activities and types of projects that will be implemented as part of promotional instruments. As part of the research carried out for the purpose of developing the Program, an attempt was made to assess the development of entrepreneurship in Żagań Town. The conducted research (including the survey conducted among the entrepreneurs in the urban community of Żagań, except the expert panel) showed that the key in economic promotion is the use of the Internet (a website, social media) and the traditional tools such as advertising (leaflets, advertising brochures). The choice of specific measures depends on the investment product and potential recipients (domestic or foreign investors, associated with one industry or various, coming from a specific area of the country, etc.). An important role should also be played by personal networks established through building relationships with investors or participation in economic missions. It is important to promote entrepreneurial attitudes among the residents of Żagań, in particular the younger generation. However, it should be noted that the implementation of the Program requires the mobilization of the financial resources and the provision of human resources, as well as taking relevant actions within the framework of partnerships. The most significant barrier for the local government remains the budget, which does not allow for the implementation of extensive promotional activities. Therefore, it is all the more important to implement a well-thought-out action program providing for promotional instruments that do not incur high costs (such as those presented within the Program), but allow to reach selected recipients with a specific offer.

Acknowledgements

The results of the research carried out as part of the work of the team for developing *Entrepreneurship Support Program of the Town of Żagań for 2016-20* (adopted for implementation under Resolution No. XXVIII/93/2016 of the Town Council of Żagań of 28 October 2016) were used in this article. This paper was commissioned by the local government of the Town of Żagań.

References

- Adamczyk, J., Wiażewicz, J. (2014). Działania promocyjne gmin adresowane do inwestorów (na przykładzie gmin w województwie podkarpackim). *Marketing i Rynek*, (8 (CD)), pp. 307-312.
- Adamowicz, M. (2006). *Rozwój marketingu gmin – formowanie się czy ekspansja marketingu terytorialnego w Polsce*. In *Ekspansja czy regres marketingu?*, E. Duliniec, L. Garbarski, J. Mazur, M. Strzyżewska, W. Wrzosek (Eds.). Warszawa: PWE.
- Armanios, D.E., Eesley, C.E., Li, J., Eisenhardt, K.M. (2017). How entrepreneurs leverage institutional intermediaries in emerging economies to acquire public resources. *Strategic Management Journal*, vol. 38, iss. 7, pp. 1373-1390.
- Basile, G., Miano, F., Scozzese, G. (2014). Sustainable Place Marketing and Management: an holistic approach. Two Italian Casus. *International Journal of Management Cases*, vol. 16, iss. 3, pp.59-85.
- Debus, M., Tosun, J., Maxeiner, M. (2017). Support for Policies on Entrepreneurship and Self Employment among Parties and Coalition Governments. *Politics & Policy*, vol. 45, iss 3, pp. 338-371.
- Dziemianowicz, W., Mackiewicz, M., Malinowska, E., Misiąg, W., Tomalak, M. (2000). *Wspieranie przedsiębiorczości przez samorząd terytorialny*. Warszawa: PFPiRMiSP.

- Eshuis, J., Braun, E., Klijn, E.H. (2013). Place Marketing as Governance Strategy: An Assessment of Obstacles in Place Marketing and Their Effects on Attracting Target Groups. *Public Administration Review*, vol. 73, iss. 3, pp. 507-516.
- Gafurova, G., Fookina, S., Notfullina, G. (2016). Public Procurement as an Instrument for the Development of Small and Medium-Sized Business in Russia. *Economy of region*, vol. 1, iss. 4, pp. 1233-1243.
- Gertner, D. (2011). Unfolding and configuring two decades of research and publications on place marketing and place branding. *Place Branding & Public Diplomacy*, vol. 7, iss. 2, pp. 91-106.
- Girard, V. (1997). *Territorial marketing and Strategic Planning*. In *Marketing Terytorialny – Strategiczne wyzwania dla miast i regionów*. Łódź: Wydawnictwo Uniwersytetu Łódzkiego.
- Huggins, R., Williams, N. (2011). Entrepreneurship and regional competitiveness: The role and progression of policy. *Entrepreneurship & Regional Development*, vol. 23, no. 9-10, pp. 907-932.
- Klage, J.P. (1991). *Corporate identify im Kreditwesen*. Wiesbaden: Deutscher Universität Verlag.
- Kotler, Ph. (2005). *Marketing – wydanie jedenaste*. Poznań: Dom Wydawniczy REBIS.
- Kotler, Ph., Gertner, D. (2002). Country as brand, products, and beyond: A place marketing and brand management perspective. *Journal of Brand Management*, vol. 9, iss. 4/5, pp. 249-262.
- Kudłacz, T. (2008). *Rozwój lokalny*. In J. Hausner (Ed.), *Ekonomia społeczna a rozwój* (pp. 103-123). Kraków: MSA UE.
- Loewendahl, H. (2001). A framework for FDI promotion. *Transnational Corporations*, vol. 10, no. 1, pp. 1-42.
- Mazllami, J. (2016). Contemporary Forms of Supporting Entrepreneurship and Investments on SMEs: The case of Polog Region in the Republic of Macedonia. *Journal of Economic and Social Studies*, vol. 6, iss. 1., pp. 81-103.
- Minniti, M. (2008). The role of government policy on entrepreneurial activity: productive, unproductive, or destructive?. *Entrepreneurship Theory and Practice*, vol. 32, iss. 5, pp. 779-790.
- Entrepreneurship Support Program of the Town of Żagań for 2016-20* (2016). Resolution No. XXVIII/93/2016 of the Town Council of Żagań of 28 October 2016.
- Rumpel, P., Siwek, T. (2006). Marketing terytorialny a kreowanie regionów: przykład czeski. *Przegląd Geograficzny*, t. 78, z. 2, pp. 191-205.
- Sautet, F. (2013). Local and systemic entrepreneurship: Solving the puzzle of entrepreneurship and economic development. *Entrepreneurship Theory and Practice*, vol. 37, iss. 2, pp. 387-402.
- Skica, T., Rodzinka, J., Harasym, R. (2017) Impact of Financial Policies of Local Authorities on Entrepreneurship: Comprehensiveness of Policy Matters. In K. Jajuga, L. Orłowski, K. Staehr (Eds.), *Contemporary Trends and Challenges in Finance. Springer Proceedings in Business and Economics*. Springer, Cham.
- Skica, T., Bem, A., Zygadlo, K. (2013). The role of local government in the process of entrepreneurship development. *e-Finanse*, vol. 9, iss. 4, pp. 1-24.
- Skinner, H. (2008). The emergence and development of place marketing's confused identity. *Journal of Marketing Management*, vol. 24, iss. 9-10, pp. 915-926.
- Smedby, N., Quitzau, M.B. (2016). Municipal Governance and Sustainability: The Role of Local Governments in Promoting Transitions. *Environmental Policy and Governance*, vol. 26, iss. 5, pp. 323-336.
- Strategia Rozwoju Miasta Żagań na lata 2015-2020 (2015). Uchwała Rady Miasta Żagań nr VIII/26/2015 z dnia 30.04.2015r.
- Strużycki, M. (red.). (2006). *Przedsiębiorczość w procesach rozwoju rynków lokalnych*. Warszawa: IRWiK.
- Szromnik, A. (2012). *Marketing terytorialny. Miasto i region na rynku*. Warszawa: Oficyna a Wolters Kluwer business.
- Szromnik, A. (2006). Marketing terytorialny – koncepcja ogólna i doświadczenia praktyczne, w: *Marketing terytorialny*. In T. Markowski (Ed.). *Studia Komitetu Przestrzennego Zagospodarowania Kraju PAN*, T. CXVI, Warszawa.
- Vecchi, V., Brusoni, M., Borgonovi, E. (2014). Public Authorities for Entrepreneurship: A management approach to execute competitiveness policies. *Public Management Review*, vol. 16, iss. 2, pp. 256-273.
- Ventura, C. (2014). Territorial Marketing Applied to Cultural Tourism: Assessment of Cultural Event Impacts. *Advanced Engineering Forum*, vol. 11, pp. 585-593. Trans Tech Publications.
- Wiktor, J.W. (2001). *Promocja. System komunikacji przedsiębiorstwa z rynkiem*. Warszawa: Wydawnictwo PWN.
- Wojciechowski, E. (2003). *Zarządzanie w samorządzie terytorialnym*. Warszawa: Difin.
- Yu, J., Stough, R.R., Nijkamp, P. (2009). Governing technological entrepreneurship in China and the West. *Public Administration Review*, vol. 69, pp. 95-100.
- Zenker, S., Martin, N. (2011). Measuring success in place marketing and branding. *Place Branding & Public Diplomacy*, vol. 7, iss. 1, pp. 32-41.

Gheorghe Cojocariu¹

Spiru Haret University
Romania

Raluca Balica²

University of Craiova
Romania

Elvira Nica^{3*}

Bucharest University of Economic Studies
Romania

Sofia Bratu⁴

Spiru Haret University
Romania

Ionel Mohîrță⁵

Danubius University
Romania

7. ORGANIZATIONAL TACTICS AND INDIVIDUAL PROACTIVE BEHAVIORS IN THE NEWCOMER SOCIALIZATION PROCESS

Abstract: We rely on recent literature (e.g. Korte, Lin, 2013; Moyson et al., 2017; Nifadkar, Bauer, 2016) to prove that the impact of social connections and network relations is instrumental in the capacity of newcomers to harmonize successfully into the organization. We conducted our survey in 150 top tech companies covering ICT workforce based on CompTIA data, using Australian Public Service Commission and Orima Research questionnaires, as they were most relevant for our research. Then employing data from U.S. Labor Department and The Wall Street Journal, we performed an analysis and made estimations concerning why people leave jobs, i.e. the socialization process might have been affected: although a large portion of job separations has been caused by recession, most of them encompassed voluntary quits and involuntary layoffs. The reconfiguration of newcomers from outsiders to insiders may be massively affected by the nature of the links and benevolence advanced between the newcomer and the supervisor and fellow workers. Our findings bring groundbreaking insights indicating that a significant proportion of task-related knowledge suitability may instruct newcomers proactively regarding the adequate ways to settle technical issues they experience at work, improving their task-proficiency, and assist them in carrying out their performance objectives competently. The mechanism of identifying their position in the organization, assimilating into the relational arrangement, and grasping the convenient manners of assessment and laboring are challenging if decided by the newcomers to realize how to fit in.

Keywords: behavior, newcomer, organization, proactive, socialization.

JEL Classification: D83, A13, D46, D63

1. Introduction

The reconfiguration of newcomers from outsiders to insiders may be massively affected by the nature of the links and benevolence advanced between the newcomer and the supervisor and fellow workers (Korte, Lin, 2013). Our findings bring groundbreaking insights indicating that a significant proportion of task-related knowledge suitability may instruct newcomers proactively regarding the adequate ways to settle technical issues they experience at work, improving their task-proficiency, and assist them in carrying out their performance objectives competently (Nifadkar, Bauer, 2016). Organizational socialization is a mechanism of collective adjustment between organizations and newcomers (Nica, 2017) in which the outcomes of the embracing of the proactive behavior models of the surrounding

¹ Assoc. Prof. Gheorghe Cojocariu Ph.D.; Berceni Road 24, Bucharest, Romania, email: jur.gheorghe.cojocariu@spiruharet.ro

² Teach. Ass. Raluca Balica Ph.D.; Alexandru Ioan Cuza Street 13, Craiova, Romania, email: ralu.balica@yahoo.com

³ Prof. Elvira Nica Ph.D.; Romana Plaza, No. 6, Bucharest, Romania, email: popescu_elvira@yahoo.com

⁴ Prof. Sofia Bratu Ph.D.; Berceni Road 24, Bucharest, Romania, email: sofiabratu@yahoo.com

⁵ Assoc. Prof. Ionel Mohîrță Ph.D.; Galați Bvd. 10, Galați, Romania, email: mohirta@tanatopsihologie.ro

* Corresponding author

culture may be an effect of organizational ascendancies in addition to separate approaches and conducts. With regularized socialization, entities persuade newcomers to analyze and perform in consonance with deep-rooted roles (Hrabytskyi, Horin, Ukrayinets, 2017), consequently inviting them to adhere to extremely structured processes. Entities depending on personalized socialization assimilate newcomers more by default (Campbell, Ross, Thomson, 2017) than purposefully and ask them to be groundbreaking and to enthusiastically create their own position in their new entity. Organizational involvement may not bring out a superior fit between newcomers (Nica, 2017) and their organization as there are qualitative determinants and barriers to this process. Organizational socialization may not be a decisive/adequate component of person-organization fit, because the impact of the organizational socialization mechanism (Bratu, 2017) on person-organization fit (Pera, 2017) is greatly conditional on a diversity of precursors. Organizational socialization does not invariably generate superior consistency among employees or a more powerful fit with their entity. The impact of organizational socialization on entities and newcomers advances over time and requires entities' elementary features and newcomers' antecedent approaches (Moyson et al., 2017).

2. Literature Review

Research indicates that, concerning organizational socialization, the prevalent individualist view should be surpassed and the consequences of social connections on newcomers (Reimann, 2017) in the socialization mechanism should be encompassed. The impact of social connections and network relations (Misankova, 2016) is instrumental in the capacity of newcomers to harmonize successfully into the organization. Social capital is a relevant component (Esty, 2017) shaping separate and organizational performance. How satisfactorily newcomers are assimilated proactively into the entity's social arrangement and what resources they advance or take up throughout the socialization mechanism are reliant on the conjoint architecture of acquirements and involvement by newcomers, fellow workers, and supervisors. The resources provided to newcomers by the individuals comprising the labor collective in the course of socialization represent the social capital (Moghtader, 2017) of the group. The participants in various network positions (Orlova, 2017) have distinctive access (Chapman, 2017) to resources (Popescu Ljungholm, 2017a) and may supply distinct chances and resources to newcomers during the time that they endeavor to harmonize into the collective. A relevant component of the socialization mechanism is grasping to perform the task (Kliestikova et al., 2017) in a manner that is consonant with the other fellow workers of the organization. As significant features of the job may not be recognizable, newcomers depend on other workers in the group to assist them proactively in grasping the manner things are done (Korte, Lin, 2013). Thus, our hypothesis, developed from the literature review, and aimed to fill a research gap, is that there is an identifiable substantial link between organizational tactics and individual proactive behaviors in the newcomer socialization process.

3. Methodology

We conducted our survey between February and May 2017 in 150 top tech companies covering ICT workforce based on CompTIA data, using Australian Public Service Commission and Orima Research questionnaires, as they were most relevant for our research. We covered four main sections: critical attraction attributes, attributes/benefits influencing employees to stay in the public services, factors influencing employees to leave the public services, and explanations for people leaving jobs (% of job separations that are voluntary quits, involuntary layoffs, or others). Then employing data from U.S. Labor Department and The Wall Street Journal, we performed a quantitative analysis and made estimates concerning why people leave jobs, i.e. the socialization process might have been affected: although a large portion of job separations has been caused by recession, most of them encompassed voluntary quits and involuntary layoffs. The selected companies were of great assistance in our proving that no matter how self-assured new workers are regarding their abilities, teaming up proactively with a new entity signifies redesigning themselves socially and grasping new job duties. Newcomers' relationship discord with their fellow workers may bring about social distress, which may diminish newcomers' information asking from them. Confronting relationship friction with their fellow workers (Petcu, 2017), newcomers may be driven to set up relationship building (Friedman, Gerstein, 2017) with their managers and such endeavors may afterwards further information asking from them. We have enhanced previous research by proving that, albeit some coworkers may

communicate information without requiring guidance from others (Peters, 2017), the more the newcomers appeal to their fellow workers for advice, the more relevant the information they are to communicate to newcomers, and thus the more wide-ranging is the information accessible to newcomers (Nifadkar, Bauer, 2016).

4. Results

The results confirm our hypothesis that there is an identifiable substantial link between organizational tactics and individual proactive behaviors in the newcomer socialization process. As previously indicated, the position of newcomers proactively assimilated into an organization emerges at a negligible status in the network. The reconfiguration of newcomers (Thiel, 2017) from outsiders to insiders may be massively affected by the nature of the links and benevolence advanced between the newcomer and the supervisor and fellow workers. Our outcomes demonstrate that newcomers should establish confidence and seek for some impartial degree of control, admission into the group (incorporation), and consonance (affect). Evidence shows that, for newcomers, such characteristics of the relational component of the labor collective are more relevant than the standards, duties, and identity provided by the group. Handling the enhancement of labor ties by newcomers and fellow workers is an intricate mechanism because newcomers do not grasp the structural (Harris, Estevez, 2017), relational (Shaefer, Wu, Edin, 2017), or cognitive facets of the group. We contribute to the body of knowledge by delineating that mastering such conventional standards is furthered by initially cultivating satisfactory connections and via mentoring, which supply newcomers the collective's resources of information (Mattingly, Wimer, Collyer, 2017), values, and convictions. An element of the difficult task intrinsic in the mechanism of socialization entails the elaboration of newcomers' proficiencies and staunchness to the organization (Korte, Lin, 2013) (Figures 1-4).

Our analyses are based on the results obtained from our survey between February and May 2017 in 150 top tech companies covering ICT workforce based on CompTIA data, using Australian Public Service Commission and Orima Research questionnaires. The most critical attraction attributes were: the interests and/or experience match the responsibilities of the job and/or the business of the organization, technical challenge/complexity of work, and job security.

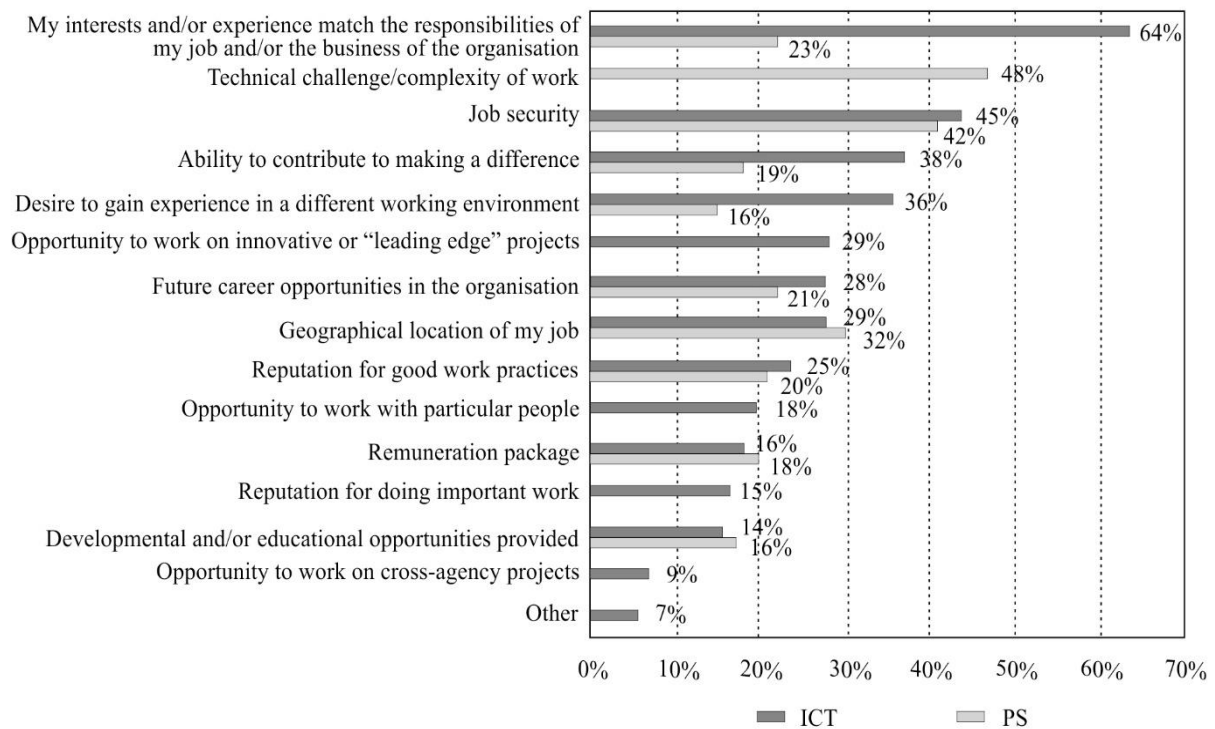


Figure 1. Critical attraction attributes

Source: Australian Public Service Commission. *ICT Workforce Capability and Assessment, Report of Employee Survey Findings*, Orima Research, and own results

Issues of medium importance include: ability to contribute to making a difference, desire to gain experience in a different working environment, opportunity to work on innovative or “leading edge” projects, future career opportunities in the organization, geographical location of the job, and reputation for good work practices. Less relevant aspects encompass: opportunity to work with particular people, remuneration package, reputation for doing important work, developmental and/or educational opportunities provided, and opportunity to work on cross-agency projects (Figure 1).

The most relevant attributes/benefits influencing employees to stay in the public services were: job security, flexible hours and alternative work arrangements, interests and/or experience matching the responsibilities of the job, technically challenging and engaging work, positive working relationships with colleagues, and ability to contribute to making a difference. Issues of medium importance include: opportunities for career development and progression, convenience of location of the agency where work is performed, good remuneration package, and opportunity to work on innovative or “leading edge” projects. Less relevant aspects encompass: the desirability of working with the immediate manager, a sense of belonging and being valued as an employee, good developmental and/or educational opportunities, fun, positive and vibrant work environment, opportunities to work on cross-agency projects, and recognition of prior learning (Figure 2).

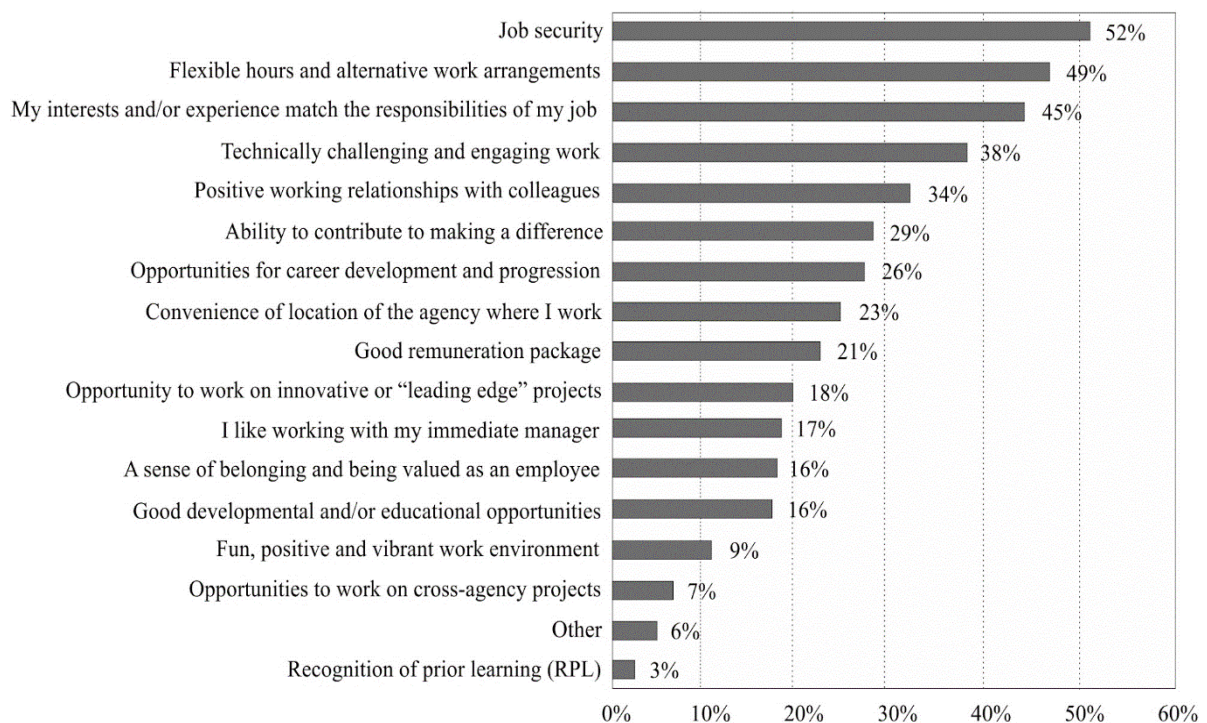


Figure 2. Attributes/benefits influencing employees to stay in the public services

Source: Australian Public Service Commission. *ICT Workforce Capability and Assessment, Report of Employee Survey Findings*, Orima Research, and own results

The most relevant factors influencing employees to leave the public services were: good working relationships, opportunities to utilize/develop the skills and capabilities, good management, appropriate remuneration package, interesting work provided, seeing tangible results from the work performed, and opportunities to be creative/innovative and for career development. Issues of medium importance include: access to flexible working arrangements, regular feedback/recognition received for effort, duties/expectations that need to be made clear, appropriate workload and level of autonomy in the job. Less relevant aspects encompass: working with inspired/enthusiastic people, suitable employment conditions package, chance to make a useful contribution to society, opportunities to vary duties/roles/jobs, sufficient technical complexity of work issues, and stability of job responsibilities (Figure 3).

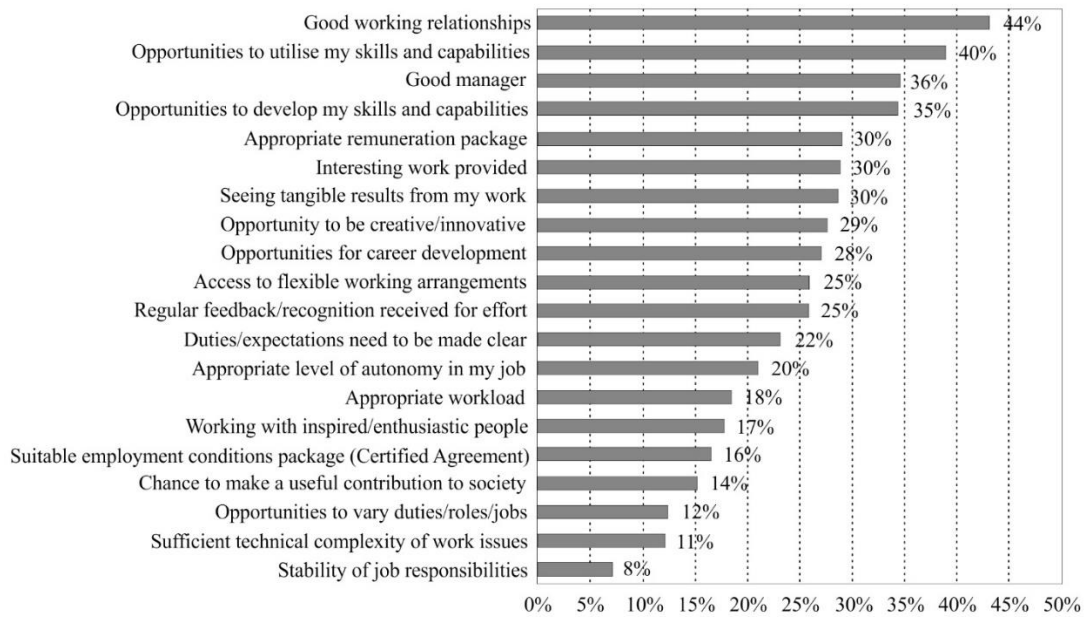


Figure 3. Factors influencing employees to leave the public services

Source: Australian Public Service Commission. *ICT Workforce Capability and Assessment, Report of Employee Survey Findings*, Orima Research, and own results

We finally estimate the proportion of job separations that are mainly voluntary quits, involuntary layoffs, and caused by recession (Figure 4).

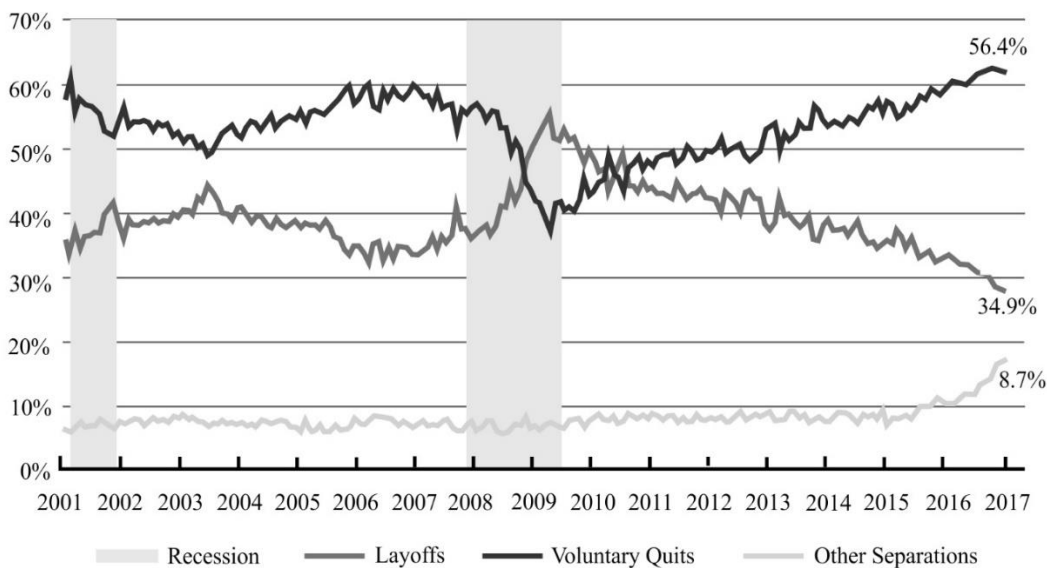


Figure 4. Why people leave jobs: Percent of job separations that are voluntary quits, involuntary layoffs, or others

Source: Labor Department, WSJ.com, and own estimates

5. Discussion

There might be within-organization dissimilarities in the unique practices of newcomers that may exert far-reaching impact on their adjustment. As soon as the socialization schemes are completed, newcomers may spend a large portion of their time (Popescu Ljungholm, 2017b) with their fellow workers and supervisors, who gradually exert more ascendancy on newcomers in comparison with the distal entity. Besides companywide orientation schemes, organizations should give heed to the continuing experiences newcomers have the moment they team up with an entity. Organizations should keep apart newcomers from circumstances that lead to significant degrees of relationship

disputes for a considerable time after integration and instruct them on how to handle and construe discord situations they may come across. Organizations should proactively include fellow employees in the newcomer adjustment proposals (Reimann, Pausch, Diewald, 2017), e.g. bolstering the senior workers to prevent divergences with new ones to make sure that they accommodate satisfactorily. Newcomers may take up sufficient information and carry out tasks effectively even when they do not acquire advice from their fellow workers, if they can identify an acceptable equivalent (e.g. the supervisor). A significant proportion of task-related knowledge suitability (Molina, 2017) may instruct newcomers regarding the adequate ways to settle technical issues they experience at work, improving their task-proficiency, and assist them in carrying out their performance objectives competently. Information seeking may make sure that correct information is accessible to newcomers, improving their self-assessment of their capacity to accomplish tasks (Prowle, Araali, 2017) and increasing their performance as appraised by the manager. Information suitability may moderate the connection between information-seeking parameters and task-related results (Nifadkar, Bauer, 2016).

6. Conclusion

Our outcomes supply relevant evidence for the claim that the mechanism of proactively identifying their position in the organization, assimilating into the relational arrangement, and grasping the convenient manners of assessment and laboring are challenging if decided by the newcomers to realize how to fit in. Transferring such an intricate, interdependent process to labor collectives and newcomers without a certain direction and cognizance of the shared duties of both parties (Popescu Ljungholm, 2017c) is a delicate situation for entities. We have found significant support for the expectation that the substantial priority on the relational features of socialization suggests the requirement for labor collectives to take more accountability for incorporating newcomers into their social arrangements. The newcomers and their fellow workers and manager conjointly comprise grasping and harmonizing into an organization (newcomers cannot do that on their own). Furthering interpersonal connections among employees has important consequences (Collins, 2017) on how satisfactorily newcomers are assimilated into the organization. As limitations in the current research, more hypotheses should be inspected and related directions for subsequent multilevel analyses to clarify whether the repercussions of the somewhat intangible social systems on employees are relevant mediators that facilitate and hinder the activity of the organization. The notion of social capital and its advantages are crucial to the training and performance of newcomers. Our results may have applications specifically in the sphere of the relational arrangements of labor collectives that moderate the configuration of, and access to (Androniceanu, 2014), the resources of the collective, which impacts the favorable outcome of socialization mechanisms for newcomers (Korte, Lin, 2013).

References

- Androniceanu, A. (2014). Research on Management Capacity of Medical Units for Addicts to Deliver Quality Services in Time of Crisis. *Revista de Cercetare și Intervenție Socială*, vol. 47, pp. 78-104.
- Bratu, S. (2017). Is Green Consumerism Really an Environmentally Conscious Behavior? *Geopolitics, History and International Relations*, vol. 9, iss. 2, pp. 167-173.
- Campbell, J., Ross, S., Thomson, E. (2017). Recession and Recovery in Scotland: The Impact on Women's Labor Market Participation beyond the Headline Statistics. *Journal of Research in Gender Studies*, vol. 7, iss. 1, pp. 123-136.
- Chapman, B. (2017). Geopolitics of the 2016 Australian Defense White Paper and Its Predecessors. *Geopolitics, History and International Relations*, vol. 9, iss. 1, pp. 17-67.
- Collins, S. (2017). How Well Can the Gender Pay Gap in Mississippi Be Explained? *Journal of Research in Gender Studies*, vol. 7, iss. 2, pp. 27-38.
- Esty, D.C. (2017). Toward a Sustainable Global Economy: An Initiative for G20 Leadership. *Journal of Self-Governance and Management Economics*, vol. 5, iss. 2, pp. 46-60.
- Friedman, H.H., Gerstein, M. (2017). Leading with Compassion: The Key to Changing the Organizational Culture and Achieving Success. *Psychosociological Issues in Human Resource Management*, vol. 5, iss. 1, pp. 160-175.
- Harris, E.C., Estevez, M.L. (2017). The Role of Gender and Motherhood Ideologies in Perpetuating Workplace Inequality. *Journal of Research in Gender Studies*, vol. 7, iss. 2, 67-85.
- Hrabynskyy, I., Horin, N., Ukrayinets, L. (2017). Barriers and Drivers to Eco-innovation: Comparative Analysis of Germany, Poland and Ukraine. *Ekonomicko-manazerske spektrum*, vol. 11, iss. 1, pp. 13-24.

- Kliestikova, J., Kliestik, T., Misankova, M., Corejova, T., Krizanova, A. (2017). Aspects of Morality and Law Enforcement in Today's Science in Post-Soviet Countries. *Science and Engineering Ethics*, [online]. Available: <https://doi.org/10.1007/s11948-017-9988-x> [2017, December 15].
- Korte, R., Lin, S. (2013). Getting on Board: Organizational Socialization and the Contribution of Social Capital. *Human Relations*, vol. 66, iss. 3, pp. 407-428.
- Mattingly, M.J., Wimer, C.T., Collyer, S.M. (2017). Child Care Costs and Poverty among Families with Young Children. *American Journal of Medical Research*, vol. 4, iss. 2, pp. 162-167.
- Misankova, M. (2016). Strategic Planning - Surveys Carried Out in the Slovak Republic. *Ekonomicko-manazerske spektrum*, vol. 10, iss. 1, pp. 59-72.
- Moghtader, B. (2017). Human Capital and Education of Desires after Michel Foucault. *Journal of Self-Governance and Management Economics*, vol. 5, iss. 4, pp. 35-52.
- Molina, N. (2017). Why Didn't More Ethnic Mexicans Sign Up for Obamacare?: Examining Public Health's Impact over One Hundred Fifty Years. *American Journal of Medical Research*, vol. 4, iss. 2, pp. 20-46.
- Moyson, S., Raaphorst, N., Groeneveld, S., Van de Walle, S. (2017). Organizational Socialization in Public Administration Research: A Systematic Review and Directions for Future Research. *The American Review of Public Administration*. Forthcoming, [online]. Available: <https://doi.org/10.1177/0275074017696160> [2017, December 15].
- Nica, E. (2017). Foucault on Managerial Governmentality and Biopolitical Neoliberalism. *Journal of Self-Governance and Management Economics*, vol. 5, iss. 1, pp. 80-86.
- Nica, E., Potcovaru, A.-M., Mirică (Dumitrescu), C-O. (2017). Job Loss, Unemployment, and Perceived Job Insecurity: Their Effects on Individuals' Health and Well-Being. *Psychosociological Issues in Human Resource Management*, vol. 5, iss. 2, pp. 193-198.
- Nifadkar, S.S., Bauer, T.N. (2016). Breach of Belongingness: Newcomer Relationship Conflict, Information, and Task-related Outcomes during Organizational Socialization. *Journal of Applied Psychology*, vol. 101, iss. 1, pp. 1-13.
- Orlova, A.V. (2017). 'Public Interest,' Judicial Reasoning and Violence of the Law: Constructing Boundaries of the 'Morally Acceptable.' *Contemporary Readings in Law and Social Justice*, vol. 9, iss. 2, pp. 51-80.
- Pera, A. (2017). The Prevalence and Cost of Deviant Behavior in the Workplace to Both Organizations and Employees. *Contemporary Readings in Law and Social Justice*, vol. 9, iss. 1, pp. 139-145.
- Petcu, C. (2017). Democratic Sexuality and Alienated Capitalism in Houellebecq's Novels. *Contemporary Readings in Law and Social Justice*, vol. 9, iss. 2, pp. 81-87.
- Peters, M.A. (2017). Ecopolitical Philosophy, Education and Grassroots Democracy: The 'Return' of Murray Bookchin (and John Dewey?). *Geopolitics, History, and International Relations*, vol. 9, iss. 2, pp. 7-14.
- Popescu Ljungholm, D. (2017a). The Social Ontology of Institutions: A Reassessment. *Contemporary Readings in Law and Social Justice*, vol. 9, iss. 1, pp. 132-138.
- Popescu Ljungholm, D. (2017b). Global Policy Mechanisms, Intergovernmental Power Politics, and Democratic Decision-Making Modes of Transnational Public Administration. *Geopolitics, History, and International Relations*, vol. 9, iss. 2, pp. 199-205.
- Popescu Ljungholm, D. (2017c). Feminist Institutionalism Revisited: The Gendered Features of the Norms, Rules and Routines Operating within Institutions. *Journal of Research in Gender Studies*, vol. 7, iss. 1, pp. 248-254.
- Prowle, M.J., Araali, N.A. (2017). Meeting the Escalating Demands for Health and Social Care Services of Elderly Populations in Developing Countries: A Strategic Perspective. *American Journal of Medical Research*, vol. 4, iss. 2, pp. 127-146.
- Reimann, M. (2017). What Contributes to Psychological Contract Breach? Investigating a Multilevel Approach on the Interplay of Organizational and Individual Factors. *Psychosociological Issues in Human Resource Management*, vol. 5, iss. 1, pp. 7-45.
- Reimann, M., Pausch, S., Diewald, M. (2017). Work-Family Conflict in Germany: Psychological Contracts as Part of Employment Relationships in Work-Family Research. *Psychosociological Issues in Human Resource Management*, vol. 5, iss. 2, pp. 127-153.
- Shaefer, H.L., Wu, P., Edin, K. (2017). Can Poverty in America Be Compared to Conditions in the World's Poorest Countries? *American Journal of Medical Research*, vol. 4, iss. 1, pp. 84-92.
- Thiel, A. (2017). The Scope of Polycentric Governance Analysis and Resulting Challenges. *Journal of Self-Governance and Management Economics*, vol. 5, iss. 3, pp. 52-82.

Liliana Czwajda^{1*}

Poznan University of Technology
Poland

Mariusz Kostrzewski²

Warsaw University of Technology
Poland

8. APPLICATION OF FMEA ANALYSIS TO THE RISK ASSESSMENT IN THE AREA OF LIQUID FUEL STORAGE MANAGEMENT

Abstract: Nowadays, risk management is one of the key issues supporting the right corporate governance process. Entrepreneurs implement it in order to reduce probability of adverse events or circumstances that adversely affect entrepreneurship objectives. Every business activity operates in area of risk and uncertainty. Companies which operate in the fuel sector that deal with the production and distribution of hazardous substances are exceptionally exposed to mentioned risk and uncertainty. The aim of the paper is to identify and analyze various risk factors affecting the level of liquid fuel stocks in storage facilities using the quality analysis tool, which is the FMEA analysis. The paper also presents the author's mathematical model of the FMEA method, which enables qualitative data to be transformed into quantitative data. The sources of risk are identified, which made it possible to make an illustrative risk assessment that can be made with use of the FMEA analysis. The next step of research that may be conducted is more detailed risk analysis in the context of a specific source of risk. Nevertheless, the presented example allows looking at the risk as a whole, which may also help to determine the correlation of different types of risk.

Keywords: FMEA, petroleum products, risk management.

JEL Classification: CO2, D82

1. Introduction

Globalization, technological change, and more and more demanding customers lead to increased supply chain requirements. The mentioned demands and its fulfilling lead to higher levels of uncertainty and hence increased risk exposure in organizations. Today, more and more manufacturers are looking for global suppliers (overseas) to get better quality and lower delivery costs (Drake, 2011), which adds risks to the supply chain, that often are results from the economic, political or cultural characteristics of foreign suppliers (Li, Zeng, 2016). Risks cannot be completely eliminated, but they can be reduced to acceptable levels and ensure its supervision. Therefore, in the risk management process, decisions are made based on the results of the risk assessment and the level of risk.

Risk measurement in the supply chain is very important because it involves losses. For this reason, an important element is the assessment of the level of these losses. And information about this fact becomes essential in decision making process.

The issue of supply chain management is currently popular in the literature (Tummala, Schoenherr, 2011; Tuncel, Alpan, 2010). Yet, because risk measurement is not purely objective, there are no recognized units that can be defined and measured physically and there are different definitions of risk that often reflect specific problems in the context of taken decisions. Qualitative techniques are used to assess risk, recognized as important risk management tools in the supply chain. With these tools, experts can use implicit and qualitative information and their expertise in decision-making. It is important then, to ensure systematic monitoring of the risks involved and to continually measure them. The FMEA analysis ensures these capabilities. It provides a systematic platform for organizing and evaluating expert risk assessments. The purpose of risk analysis is to facilitate the transmission of information about possible breakdowns that may occur during deliveries between raw material and supply managers and risk management (Zsidisin et al., 2004).

¹ Liliana Czwajda Msc. Eng.; Strzelecka 11, 60-965 Poznań, Poland, liliana.czwajda@gmail.com

² Mariusz Kostrzewski Ph.D. Eng.; Koszykowa 75, 00-662 Warszawa, Poland, markos@wt.pw.edu.pl

* Corresponding author

The risk assessment methods existing in the literature focus only on the assessment of specific areas or sources of risk, which means that there is no holistic view of the risk involved, e.g. in a supply chain. The main objective of the paper is to analyze various risk factors affecting the level of liquid fuel stocks in storage facilities with use of a single tool. This tool is the FMEA analysis, which, with the appropriate implication, can ensure constant and simultaneous monitoring of various risk factors. The paper also presents the author's mathematical model of the FMEA method, which enables the qualitative data to be transformed into quantitative data.

The paper consists of four sections. Section 2 is literature review. Section 3 is connected to evaluation of efficiency in the management of liquid fuel storage with FMEA analysis and it consists of methodology of research, synthetic, authorial formal model of the FMEA analysis and results of research and their discussion. The last section is conclusion of the paper.

2. Literature Review

In the literature connected to the supply chain, a wide division of risks and uncertainties is given. The overall classification that can be encountered is internal and external risk. There are also risk divisions: internal organizational (e.g. process and control risk), network or supply chain risk (e.g. supply and demand) and external risks (e.g. natural disasters, wars and terrorism and political instability) (Czwajda, Kosacka, 2017) and also for value chains: suppliers, companies, distribution channels and buyers (Nowacki, 2014).

There is also a separate distribution of uncertainty in the supply chain, largely in line with the identification of risk sources. Sources of uncertainty (Simangunsongy, Hendry, Stevenson, 2012) can be divided into those from the local company (internal uncertainty of the organization, internal supply chain) that arise in the sphere of local regulations of the company or supply chain partners and related to external factors outside direct control of the company. There is also a separate distribution of uncertainty in the supply chain, largely in line with the identification of risk sources.

Uncertainty and risk are recognized in the literature as the best and the simplest manner of measurement of the supply chain integration (Towill, Childerhouse, 2003). For this reason, the introduction of risk reduction and mitigation measures and uncertainty will increase the integration of the supply chain.

There are many ways to deal with uncertainty and risk. It can be realized by:

- taking actions of reduction of the impact of risk on the functioning of the organization,
- reducing the risk of supply through implementation some behavioral techniques of inventory management,
- building strategic relationships with suppliers,
- reduction the complexity of the supply base,
- hedging against exchange of rate fluctuations and commodity prices, flexible supply chain (Tang, Tomlin, 2008),
- building trust and introducing knowledge management into the supply chain,
- identification and assessment of gaps in the supply chain and identification of bottlenecks (Ho et al., 2015).

The FMEA analysis has found a wide application in the industry among others: air and nuclear, chemical, electronic, automotive, mechanical and medical technologies industries (Liu, Liu, Liu, 2013). In the 1990s, it was incorporated into the ISO 9000 standard, and specifically for the automotive industry: QS 9000. In the industry, the FMEA is also part of the Six Sigma quality management methodology (Raisinghani et al., 2005). The FMEA is a risk analysis tool used in the product design process to improve its reliability (Anleitner, 2010; Carlson, 2012).

The method consists of analytically determining causal relationships of potential product defects and takes into account the criticality (risk) factor analysis. The FMEA method allows to subject the product or process to subsequent analyzes, and then on the basis of the results, make corrections and new solutions, effectively elimination the source of defects, which is consistent with the principle of continuous improvement (Hamrol, Mantura, 2005).

3. Evaluation of Efficiency in the Management of Liquid Fuel Storage with FMEA Analysis

Due to its world-wideness and complexity, the logistics system of liquid fuels is exposed to a number of threats, including: economic crisis, fluctuations in exchange rates, oil and gas prices in the world, political situation in different countries and armed conflicts. Liquid fuels belong to group of products

characterized by strategic importance to the security of the country. For this reason, they are subjected to strict legal regulations among others as regards the maintenance of mandatory reserves of liquid fuels. Liquid fuels are largely flammable liquids. Due to the characteristics of liquid fuel products, the regulations also cover the area of production, infrastructure, health, safety and logistics. The characteristics of the product itself determine the conditions of its processing, storage or transport. During oil refining and the distribution of liquid fuels, employees are exposed to many chemical, physical and toxic effects of oil and its products, their physical-chemical properties, explosion and flammability. For this reason, it is important to introduce the process of controlling and monitoring risk factors in the organization. In this work, the risk assessment area concerns the risk factors affecting the liquid fuel storage area. The FMEA analysis will be used for this purpose.

An important element in the risk management process is its supervision through systematic assessment, control and monitoring. For this purpose, among others, Total Quality Management (TQM) tools and techniques are used. One of such tools is FMEA analysis, used mainly for product development. However, after interpretation and adaptation, it can be also applied to other areas such as the supply chain etc. (Chen, Wu, 2013). The use of FMEA analysis for supply chain risk analysis is listed in literature (Zsidisin et al., 2004; Christopher, Lee, 2004). According to the tradition of risk management (Hopkin, 2013) two factors are often involved in risk assessment: probability and its impact (Harland, Brenchley, Walker, 2003; Zsidisin et al., 2004). The FMEA analyzes risk in three dimensions: probability, impact and control and it involves risk avoidance or mitigation techniques. To evaluate each of these three dimensions, the FMEA uses a 10-point scale (higher scores indicate worse cases). Its result, which is the *RPN* parameter (it will be explained in the next section) is obtained by multiplying the points related to probability, impact, and control (Li, Zeng, 2016).

3.1. Methodology of Research

The fuel sector is burdened with high risk, among others due to the strategic importance of fuels for the national economy and the flammability of oil products. For this reason, it is necessary to assess various types of risk in order to be able to provide a comprehensive overview of them. In traditional risk assessment, two factors often take part: probability and its impact. With the FMEA method it is possible to analyze risk in three dimensions: probability, impact and control, including risk avoidance or mitigation techniques. In addition, the FMEA analysis, with the appropriate implications, enables the monitoring of risk levels, which makes it a valuable tool for risk assessment and supervision in various areas. In the first stage of the research, the main areas of risk/uncertainty affecting the operation of the storage stations and the management of liquid fuel stocks were identified. With use of the expert method in the fuel base, the key factors influencing fuel losses were identified. The identification of factors was carried out twice with 3 months interval. The next stage was the analysis of literature, among others reports POPiHN (2015; 2016) and identification of internal and external factors affecting the functioning of enterprises in the fuel industry. On this basis, a risk and uncertainty classification was created in the liquid fuel supply chain presented in (Czwajda, 2016).

Subsequently, the possible effects of any aspect affecting the level of fuel stocks were identified for use in assessing and prioritizing certain aspects. The side effects of the storage station operation can include various influences such as environmental pollution and resource wastage. Adequate knowledge of the areas of these impacts can significantly help to identify more effectively the causes of a given aspect and take action to reduce the impact or eradication of a given phenomenon (Dargahi et al., 2015). Risk assessment was performed using the FMEA tool by estimating the intensity of the effect – *R* (which shows the extent and severity of losses), ability to detect – *P* and the probability of occurrence of the event within a specified time period – *N*. The equation (1) was adapted to the needs of the formal model defined in the next subsection (Oazi et al., 2017).

$$RPN = R \cdot P \cdot N \quad (1)$$

Risk analyses are based on FMEA tables, where they are often a standard practice, further supporting risk analysis in aspects of communication and documentation. In this case, the FMEA tables were used as a platform where the experts in the individual departments conduct risk assessments in a uniform manner while avoiding misunderstandings about the way risk is assessed

3.2. Synthetic, Authorial Formal Model of the FMEA Analysis

In this subsection formal model of the FMEA analysis is defined. The symbol j is a number of the assessed feature and assigned to risk factors d_j . Risk factors unite as set D are given as formula (2).

$$D = \{d_1, \dots, d_j, \dots, d_J\}, \quad j = \overline{1, J} \quad (2)$$

Every risk factor d_j is evaluated by 3 evaluation criteria: $R(d_j)$ – parameters detection of defect d_j , $P(d_j)$ – importance, significance of defect, $N(d_j)$ – level of detection of risk factor d_j . They are formally explained as formulas: (4), (6), (8).

Parameter a in formula (4) is an incidence of risk factor d_j taken from, for example, the failure and repair log for the type of defect. This makes it possible to quantify the occurrence frequency of the defect. If the failure and repair log is not run then an expert method can be used. A set of $R(d_j)$ parameters is given as formula (3).

$$R = \{R(d_1), \dots, R(d_j), \dots, R(d_J)\}, \quad j = \overline{1, J} \quad (3)$$

$$R: R(d_j) \xrightarrow{a_j \in D} f(d_j; a) = \begin{cases} \forall a \in (0; 1.00E^{-6}): f(d_j; a) = 1 \\ \forall a \in (1.00E^{-6}; 2.00E^{-4}): f(d_j; a) = 2 \\ \forall a \in (2.00E^{-4}; 4.00E^{-3}): f(d_j; a) = 3 \\ \forall a \in (4.00E^{-3}; 1.00E^{-2}): f(d_j; a) = 4 \\ \forall a \in (1.00E^{-2}; 2.50E^{-2}): f(d_j; a) = 5 \\ \forall a \in (2.50E^{-2}; 1.25E^{-1}): f(d_j; a) = 6 \\ \forall a \in (1.25E^{-1}; 2.50E^{-1}): f(d_j; a) = 7 \\ \forall a \in (2.50E^{-1}; 5.00E^{-1}): f(d_j; a) = 8 \\ \forall a \in (5.00E^{-1}; 1.25E^0): f(d_j; a) = 9 \\ \forall a \in (1.25E^0; 1.00E^1): f(d_j; a) = 10 \end{cases} \quad (4)$$

The parameter $P(d_j)$ is qualitative parameter with assigned numerical values. Every of these values are defined by importance, significance of defect described more precisely due to aversion to mathematics for long descriptions of words (every point is connected to every next $f(d_j; b)$ given in formula (6)):

- no relevant effect on reliability or safety (b_1),
- little effect on reliability or safety (b_2),
- less than very minor effect, no damage, no injuries, only results in a maintenance action (only noticed by discriminating customers; b_3),
- very minor effect, no damage, no injuries, only results in a maintenance action (only noticed by discriminating customers; b_4),
- minor effect, low damage, light injuries (affects very little of the system, noticed by average customer; b_5),
- less than critical effect (causes a loss of primary function; loss of all safety margins, 1 failure away from a catastrophe; b_6),
- critical effect (causes a loss of primary function; loss of all safety margins, 1 failure away from a catastrophe, severe damage; b_7),
- more than critical effect (causes a loss of primary function; loss of all safety margins, 1 failure away from a catastrophe, severe damage, severe injuries; b_8),
- catastrophic effect (product becomes inoperative, maximum 1 possible death; b_9),

– catastrophic effect (the failure may result in complete unsafe operation and multiple deaths; b_{10}).

$$P = \{P(d_1); \dots P(d_j); \dots P(d_J)\}, \quad j = \overline{1, J} \tag{5}$$

$$P: P(d_j) \rightarrow f(d_j; b) = \begin{cases} \forall b \equiv b_1 : f(d_j; b) = 1 \\ \forall b \equiv b_2 : f(d_j; b) = 2 \\ \forall b \equiv b_3 : f(d_j; b) = 3 \\ \forall b \equiv b_4 : f(d_j; b) = 4 \\ \forall b \equiv b_5 : f(d_j; b) = 5 \\ \forall b \equiv b_6 : f(d_j; b) = 6 \\ \forall b \equiv b_7 : f(d_j; b) = 7 \\ \forall b \equiv b_8 : f(d_j; b) = 8 \\ \forall b \equiv b_9 : f(d_j; b) = 9 \\ \forall b \equiv b_{10} : f(d_j; b) = 10 \end{cases} \tag{6}$$

The parameter $N(d_j)$, as a level of detection of risk factor d_j , is described by $p(d_j)$ probability of risk factor d_j detection.

$$N = \{N(d_1); \dots N(d_j); \dots N(d_J)\}, \quad j = \overline{1, J} \tag{7}$$

$$N: N(d_j) \rightarrow f(d_j; p(d_j)): f(d_j; p(d_j)) = \lceil 10 \cdot p(d_j) \rceil, \quad j = \overline{1, J} \tag{8}$$

At least RPN , known as Risk Priority Number, is defined after formula (1) and after appropriate adjustments given as formula (10). Risk Priority Number matrix is given as formula (9). If $RPN(d_j) > 1$ then some preventive actions due to eliminate the potential risk/defects should be taken.

$$RPN = R \times P \times N \tag{9}$$

$$RPN(d_j) = R(d_j) \cdot P(d_j) \cdot N(d_j), \quad j = \overline{1, J} \tag{10}$$

3.3. Results of Research and their Discussion

The FMEA method in this case has been used as a tool to record the expertise of fuel service workers from different areas to support the decision-making process. By creating and sharing the platform, company employees will be able to use their knowledge and experience from different areas to gain greater insight into the failures and the underlying causes and effects and to determine the likelihood of future occurrences. The FMEA tables, in addition to using them to organize expertise on the sources of risk (causes) and their effects, can also be used as an official document for discussing risks among employees at various levels and areas, thus allowing for a holistic view.

Table 1. Risk factors and values of parameters of $R(d_j)$, $P(d_j)$, $N(d_j)$ assignments

Risk areas		Risk factors d_j	$R(d_j)$	$P(d_j)$	$N(d_j)$	RPN
Demand		The accuracy of the demand forecasting method	4	5	8	160
			5	6	9	270
		Development of the electric car industry				
Stock	Fuel reserves (75 days) Current stock	Aging fuel	2	5	8	80
		Infrastructure failure	4	7	6	168
		Evaporation	3	5	7	105
		Catastrophes and natural disasters	9	3	5	135
		Contamination with microorganisms	8	4	3	96
		Mixing good fuel with low quality fuel	9	8	5	360

Internal infrastructure	Tanks and distribution system	Fuel tank self-sealing	3	7	4	84
		Over level pouring	4	6	4	96
		Evaporation	4	4	8	128
		Leaking tanks	8	8	6	384
		Contamination of fuel and distribution systems	3	8	5	120
		Contamination of fuel from the outside	4	4	5	80
		Adding poor quality fuel to a batch of fresh fuel	9	7	4	252
	Tanks with floating roofs	Sinking of the floating roof	8	8	8	512
		Uneven distribution of loads on floating roofs	5	6	9	270
	Transmission pipelines	Delayed deliveries	9	9	7	567
		Failure of transmission infrastructure	6	6	5	180
		Mixing fuel between each other	5	5	9	225
	Spatial-functional layout: car and rail scales, car parks and internal roads, pumps, vehicles	Efficiency	6	5	4	120
		Accuracy of measurement	9	4	4	144
		Car park and road capacity	6	9	6	324
Vulnerability to failure		9	5	4	180	
Efficiency		8	9	4	288	
Vehicle use - efficiency		6	7	4	168	
Climatic and environmental aspects Environment pollution	Infrastructure failure	5	6	5	150	
	Inadvertent handling	4	7	4	112	
	Natural disasters - hurricanes, floods, etc.	5	7	7	245	
Human factor	Inadvertent handling	9	6	3	162	
	Not detecting of overload/underload	8	6	5	240	
	Incorrect dosage of chemical additives	8	5	4	160	
	Incorrect mixing of additives with fuel	6	4	5	120	
	Incorrect assessment of equipment condition	9	9	5	405	
	Failure to assess valve opening	8	5	3	120	
	Mixing good fuel with low quality fuel	9	6	5	270	
Organization	Delivery schedule to customer Supply schedule to the base	Problems with scheduling	7	9	8	504
		Admission of tank wagons to the fuel base	8	7	7	392
		Unloading of railway or truck tanks	7	9	9	567
	Occupational Health and Safety	Failure to comply with OSH regulations by the organization	10	7	3	210
		(...) by employees	10	7	4	280
Information (computerization of processes, IT systems)	External environmental factors	Delays in the flow of information	9	5	5	225
		System failures	9	8	2	144
		IT system compatibility	8	5	3	120
Regulation	Energy and climate policy, Wholesale and retail trade, Taxes and charges	Introducing new bio-components to fuel	7	6	8	336
		Taxes (excise tax, VAT, fuel surcharge)	8	6	5	240
		Obligation to introduce biofuels	7	8	3	168
		Stocks obligatory	6	5	6	180
		Environmental, concession and regulatory fees	7	4	5	140

Source: Authors work

Table 1 lists the respective risk factors d_j and assigns them the values for following parameters: $R(d_j)$, $P(d_j)$, $N(d_j)$. The values of these parameters were assigned with use of expert method. Ten highly qualified experts gave their opinions and as the results mean values, rounded to the normal numbers, were input to the Table 1. Calculated RPN values are also included into the Table 1. The higher the value of the RPN is, the faster the steps should be taken to reduce its impact or its elimination (if it is possible). The next step is to prioritize individual risk factors by calculating the RPN and planning preventive and minimizing risk occurrences. The highest number of RPN points has been assigned to risk factors like delayed deliveries – 567 points, sinking of the floating roof – 512 points that are in the internal infrastructure risk area. The organizational risk factors that have a high impact of risk on the stock are problems with scheduling – 504 points and unloading of railway or truck tanks (...) – 567 points. Table 1 allows an overview of the risk that can be made with use of the FMEA analysis. The next step would be to conduct a more detailed risk analysis in the context of a specific source of risk. Nevertheless, the presented example allows looking at the risk as a whole, which may also help in determining the correlation of different types of risk in future research.

4. Conclusion

Every economic activity functions in an environment of uncertainty and it cannot be completely eliminated. In the field of fuel bases, there are various types of loss resulting e.g. from evaporation or aging of fuels that cannot be measured accurately. For this reason, there is a need to apply qualitative methods, including estimation of fuel losses or assessment of different risk types. The use of FMEA analysis allows the risk assessment of various factors affecting fuel storage. In contrast to the typically qualitative applications of FMEA method, the implementation of the mathematical model enables the quantitative assessment (other authors were also considered the formulation of formal model as Gandhi, Agrawal, 1992). This paper presents an innovative approach to risk assessment in a holistic context, which takes into account both infrastructure (internal) and environmental (external) risk, affecting the level of stored fuels.

Thanks to the possibility of simultaneous assessment of various risk types, after calculating the *RPN* score, they are prioritized, and then the preventive actions and the limit of risk occurrence can be taken. Risk assessment, with use of FMEA, of various forms of supplies to fuel bases, can help organizations to choose the right source of supply with the least risk. The FMEA analysis gives a wide range of possibilities to apply it to risk assessment in various areas of the company operations simultaneously and to risk monitoring. However, this requires the use of IT platform that enables collecting opinions from specialists from various departments as well as involving employees in a systematic process of risk assessment. There is also a need to define clear rules for risk assessment.

As the research show (Simangunsongy, Hendry, Stevenson, 2012), there is a clear research gap in the area of infrastructure risk, including transport and information. The risk monitoring process itself received much less researchers' attention than in the process of risk identification, assessment and reduction methods. As the researchers point out, there is a need to study the impact of different types of risk on each other in order to better understand their formation and supply chain management. An important element is also the measurement of the correlation of various risk factors to the types of risk or the measurement of the probability of occurrence of particular types of risk and their coefficients. According to the authors, FMEA analysis gives the opportunity to further develop the method.

References

- Anleitner, M.A. (2010). *The power of deduction: Failure modes and effects analysis for design*. Milwaukee: ASQ Quality Press.
- Carlson, C. (2012). *Effective FMEAs: Achieving safe, reliable, and economical products and processes using failure mode and effects analysis*. New Jersey: Wiley.
- Chen, P-S., Wu, M-T. (2013). A modified failure mode and effects analysis method for supplier selection problems in the supply chain risk environment: A case study. *Computers & Industrial Engineering*, vol. 66, iss. 4, pp. 634-642.
- Christopher, M., Lee, H. (2004). Mitigating supply chain risk through improved. *International Journal of Physical Distribution and Logistics Management*, vol. 34, pp. 388-396.
- Czwajda, L. (2016). Ryzyko i niepewność w systemach wieloszczeblowych na przykładzie paliw płynnych. In S. Saniuk, K. Witkowski (Eds.), *Przedsiębiorczość i Zarządzanie: Nowe kierunki w zarządzaniu logistycznym* (pp. 54-74). Łódź, Warszawa: Wydawnictwo Społecznej Akademii Nauk.
- Czwajda, L. Kosacka, M. (2017). The challenges of concept multi-echelon inventory management. *Research in Logistics & Production*, vol. 7, iss. 5, pp. 417-429.
- Dargahi, M.D., Naderi, S., Hashemi, S.A., Aghaiepour, M., Nouri, Z. Sahneh, S.K. (2015). Use FMEA method for environmental risk assessment in ore complex on wildlife habitats. *Human and Ecological Risk Assessment: An International Journal*, vol. 22, iss. 5, pp. 1123-1132.
- Drake, M. (2011). *Global supply chain management*. New York: Business Expert Press.
- Gandhi, O.P., Agrawal, V.P. (1992). FMEA – A diagraph and matrix approach. *Reliability Engineering & System Safety*, vol. 35, iss. 2, pp. 147-158.
- Hamrol, A. Mantura, W. (2005). *Zarządzanie jakością. Teoria i praktyka*. Wydawnictwo PWN, Warszawa.
- Harland, C., Brenchley, R., Walker, H. (2003). Risk in supply networks. *Journal of Purchasing and Supply Management*, vol. 9, pp. 51-62.
- Ho, W., Zheng, T., Yildiz, H., Srinivas, T. (2015). Supply chain risk management: a literature review. *International Journal of Production Research*, vol. 53, iss. 16, pp. 5031-5069.

- Hopkin, P. (2013). *Risk management*. London: Kogan Page Ltd.
- Li, S., Zeng, W. (2016). Risk analysis for the supplier selection problem using failure modes and effects analysis (FMEA). *Journal of Intelligent Manufacturing*, vol. 27, iss. 6, pp. 1309-1321.
- Liu, H-Ch., Liu L., Liu, N. (2013). Risk evaluation approaches in failure mode and effects analysis: A literature review. *Expert Systems with Applications*, no. 40, pp. 828-838.
- Nowacki, F. (2014). Analiza ryzyka w łańcuchu dostaw i zarządzania nim w aspekcie międzynarodowym, *Gospodarka Materialowa i Logistyka*, no 4, pp. 2-9.
- Oazi, A., Quigley, J., Dickson, A., Ekici, S.O. (2017). Exploring dependency based probabilistic supply chain risk measures for prioritising interdependent risks and strategies. *European Journal of Operational Research*, vol. 259, iss.1, pp. 189-204.
- POPiHN (Polska Organizacja Przemysłu I Handlu Naftowego) (2015). *Oil Industry and Trade 2015. Annual Report* [online]. Available: <http://www.popihn.pl/download.php?id=303>. [2017, December 17].
- POPiHN (Polska Organizacja Przemysłu I Handlu Naftowego) (2016). *Oil Industry and Trade 2016. Annual Report* [online]. Available: <http://www.popihn.pl/download.php?id=221>. [2017, December 17].
- Raisinghani, M.S., Ette, H., Pierce, R., Cannon, G., Daripaly, P. (2005). Six Sigma: Concepts, tools, and applications. *Industrial Management & Data Systems*, vol. 105, pp. 491-505.
- Tang, Ch., Tomlin, B. (2008). The power of flexibility for mitigating supply chain risks. *International Journal of Production Economics*, vol. 116, iss. 1, pp. 12-27.
- Towill, D., Childerhouse, P. (2003). Simplified material flow holds the key to supply chain integration. *The International Journal of Management Science*, vol. 31, pp. 17-27.
- Tummala, R., Schoenherr, T. (2011). Assessing and managing risks using the Supply Chain Risk Management Process (SCRMP). *Supply Chain Management: An International Journal*, vol. 16, iss. 6, pp. 474-483.
- Tuncel, G., Alpan, G. (2010). Risk assessment and management for supply chain networks: A case study. *Computer in Industry*, vol. 61, iss. 3, pp. 250-259.
- Simangunsongy, E., Hendry, L.C., Stevenson, M. (2012). Supply-chain uncertainty: a review and theoretical foundation for future research. *International Journal of Production Research*, vol. 50, iss. 16, pp. 4493-4523.
- Zsidisin, G.A., Ellram, L.M., Carter, J.R., Cavinato, J.L. (2004). An analysis of supply risk assessment techniques. *International Journal of Physical Distribution and Logistics Management*, vol. 34, pp. 397-413.

9. FACTORS AFFECTING YOUTH EMPLOYMENT: AN ANALYSIS OF THE EMFULENI AND METSIMAHOLO LOCAL MUNICIPAL AREAS, SOUTH AFRICA

Abstract: The phenomenon of youth unemployment has been a major socio-economic issue facing developing countries for many years. The global crisis together with profound structural changes in labour markets has seen many young labour market participants face prolonged economic marginalization, posing a serious challenge for policy and managerial stakeholders alike. This has been especially evident in the South African context where the country exhibits among the highest youth unemployment figures globally. Public management and policy strategies directed towards the issue requires a clear comprehension of the contributing factors. The aim of the study is to analyse the impact of various factors on the employment status of young labour market participants in the Emfuleni and Metsimaholo local municipal areas, South Africa. Primary data were collected through the use of a self-administered questionnaire. The sample were split between employed (n =176) and unemployed (n=163) participants between the ages of 18 and 35 years. Descriptive statistics and a binary logistic regression were used in analyzing the data. Results showed that the youths' struggle to acquire work emanating among others from inadequate skills sets and education levels whilst also lacking the needed labour market information. Furthermore, the impact of labour market inequalities such as the lack of social capital is evident. Additional results relating to the participants' expected wages and household social welfare also suggest indirect voluntary barriers to employment. The findings of the study hold important implications especially for local policymakers around the globe; providing valuable insight into the situation that can assist initiatives directed at youth development and the improvement of labour market access.

Keywords: Emfuleni, employment, Metsimaholo, South Africa policy management, youth.

JEL Classification: J10, J13, J64, O10

1. Introduction

The South African economic landscape currently finds itself in the midst of its most perilous socio-economic challenges (Mncayi, de Jongh, 2017). Recent reports indicate that poverty levels have reached an all-time high, with more than 50 percent of the population living below the poverty line (Statistics South Africa (StatsSA, 2017). Moreover, the country exhibits some of the most unequal living standards worldwide whilst improvement in economic growth and more importantly, inclusion has been insignificant. This all has unequivocally meant that many South Africans are faced with poor standards of living which in turn has subdued crucial developmental processes desperately required to enhance the lives of millions. Although the comprehension of the causes of the current situation proves intricate, one of the underlining drivers has undoubtedly been the poor performance of the labour market for at least the past two decades (Petersson, 2013). Since 1997, narrow unemployment rates have remained above 20 percent with recent estimates suggesting that close to 28 percent of the economically active population are unable to find work, the highest for the past 13 years.

No more so has the lack of decent job creation and labour absorption affected individuals than the youth. In fact, globally young people are increasingly struggling to secure decent employment opportunities, raising fears amongst policy and managerial stakeholders (Bikse, Lusena-Ezera, Rivza, 2016). However for the country in particular, youth unemployment has become the central pressing socio-economic concern (Centre for Development and Enterprise, 2017). Most recent unemployment rates amongst this cohort (15 to 24 years) show that approximately 52.2 percent were unable to

¹ Masters of Economics Jacques De Jongh; Hendrick van Eck Boulevard, Vanderbijlpark, South Africa, Jacques.dejongh@nwu.ac.za

* Corresponding author

acquire work with broader rates (including discouraged work seekers) estimated at 64.5 percent, the highest globally (Organisation for Economic Co-operation and Development, 2017). The current situation has reemphasized the role governments and organizations play in reducing unemployment. It in fact, signals a failure of the use of conventional strategies and the need for broader, clearer and more modern understandings on the factors contributing to the cohort's struggles. Evidence suggests that the inability to secure work especially among young people and their early stages of life prove ruinous, not only for themselves but the communities in which they reside (Meyer, 2017). The prolonged absence of young workers in economic structures has been associated with among other, a loss of valuable future resources, scarring effects, a lack of independence, high crime rates, additional social welfare pressures and political instability (Azeng, Yogo, 2013). Despite these severe consequences, research especially from developing countries and even more so from the African continent relating to the factors affecting the employment outcomes of the cohort seem to be scarce (Roberts, 2016). The significance of the study in this sense is based mainly on contributing to the body of knowledge of youth unemployment from a developing region faced with its own unique set of challenges. In doing so, the main objective of the study is to identify and analyze the impact of various factors affecting the employment outcomes of the youth in two selected local municipal areas in South Africa.

2. Literature Review

Unemployment, as a social and economic issue, has endured over time. It is a concept, which in its various definitions, has come to resemble the complexity with which it is understood today. Simplistically viewed, it is regarded as a market failure that is exacerbated by the lack of opportunities provided to those physically capable to work and actively involved in the search thereof (Mukhovha, 2008). However, the concept presents a much more multi-dimensional ideology. This in fact has rested upon the various causes of being unable to effectively utilise labour and the failure of labour markets to clear at equilibrium wage rates. Arguments from aggregate perspectives on the one hand have been directed at the functioning of labour markets, suggesting that the occurrence of unemployment is predominantly cyclical and voluntary, owing to the flexibility and efficiency in the wage setting processes (Holman, 2010). Others however have rejected the efficacy of self-regulating markets, emphasising the importance of fiscal and monetary management to rectify the imbalances in labour market outcomes. From microeconomic understandings, the underlining causes relate to significant differences among countries, regions and more explicitly, individuals (Blanchard, 2006). The outcomes of specifically young labour market participants from these perspectives have resonated on their inexperience in the labour market whilst additionally highlighting the geographical, structural and imperfect nature of their job seeking processes (Urminský, 2017).

Whilst showing a number of similarities from these theoretical views, outcomes from the South African labour market have been characterised by their own unique set of challenges. Compared to other African countries, the country attributes significantly higher unemployment rates, smaller informal sectors and lower labour absorption rates (Oosthuisen et al., 2016). Much of these distinctive characteristics can be partly ascribed to effects of a racially segregated past that saw many non-white individuals restricted from quality education whilst subsequently being confined to geographical areas far from decent employment opportunities (Van der Berg, 2011). Whilst acknowledging these underlining aspects, the failure to produce noticeable inclusive growth over the last decade, together with the establishment of highly rigid labour legislative frameworks and a structural shift in the demand for highly skilled labour have all contributed to the pervasive nature of unemployment. In light of these factors, new labour market participants in the country have found it severely difficult in undertaking the transition from school to work. In fact, the youth unemployment problem has been described as a ticking time bomb with adverse political and economic consequences (Mtwesi, 2014). Most recent estimated unemployment rates (52.2%) among the cohort are among the highest in the globe and significantly higher than those reported in similar developing regions such as Brazil (27.3%), India (9.65%), Poland (17.7%), Nigeria (25.2%) and Lesotho (37.3%) (International Labour Organisation, 2017). Additionally, of the nine million young (15 and 34 years) labour force participants approximately 3.3 million were in an unemployed state for longer than a year (StatsSA, 2017b). However, more concerning has been the burgeoning number of young people in the country who are being classified as those individuals who are not in employment, education or training (NEET).

On this background, it is clear that the labour market status of young workers in the country has reached a crisis point. Graham and De Lannoy, (2016) in this regard point out that no single cause can be ascribed to the situation, but rather view youth unemployment in South Africa as a multifaceted problem. Whilst research on the various causes from a developing perspective have been somewhat limited (Roberts, 2016), empirical evidence suggest that the contributing factors are diverse. In their study, Matsumoto, Hengge and Islam (2012) found that youths' employment outcomes display a high sensitivity towards businesses cycle fluctuations. From this point of view, young inexperienced workers are the first to let go during stringent economic conditions given the lower opportunity costs compared to more experienced workers. In the South African context, this has been further exacerbated due to sluggish economic performances over the last 10 years that have failed to keep pace with an increasing young labour force. In addition to these issues, Orr, Van Meelis (2014) found that even after 20 years of democracy racial and gender barriers for these young labour market participants still exist. These have predominantly been ascribed to the historically low investments in African education together with their lack of job search abilities and geographical constraints. Although these educational concerns have been concentrated among mostly Black/African, apprehensions regarding skills mismatches have been universal in the employment outcomes of all young people (Bobáková, Karpeta, 2015). This has been mostly due to the low quality and capacity of educational institutions that have failed to instill the needed hard as well as soft skills required by the labour market. Additionally, Lam, Leibbrandt and Mlatsheni (2008) highlight that young people struggle in their employment endeavours mainly due to a lack of the needed social capital. In this regard, as new inexperienced job seekers not having the needed networks reduce access to crucial labour market information. Seekings (2013) reiterates that this contributes to prolonged job matching processes as well as misperceptions on initial labour market entries specifically relating to expected entry level positions and initial earnings. Whilst the aforementioned studies have shown explicitly clear relationships with the youths' employment outcomes, evidence on the impact of social welfare in their households have been somewhat contentious. Klasen and Woolard's (2009) findings infer that the presence of these grants in the youths' households contributes to voluntary aspects in difficulties to secure work mainly through reduced labour supply and job search activities. Others (Stapleton, 2015) however contend that these social security measures improve labour mobility assisting those situated in decentralised areas to move to locations where employment opportunities are concentrated.

3. Methodology

3.1. Research Purpose and Design

Given the aforementioned, the primary objective of this study was to determine the factors affecting young peoples' employment outcomes in the Emfuleni and Metsimaholo local municipal areas situated in South Africa. In doing so, the study utilised a quantitative research approach. A cross sectional research design was adopted through the use of a survey method. The inquiry ascribed to a positivist research philosophy with substantial belief accorded to the use of statistical analyses and their role in empirically understanding and observing real life events.

3.2. Study Area and Sample

The Emfuleni and Metsimaholo local municipal areas were chosen as the study regions with both areas reporting high youth unemployment rates. These areas are located in the southern and northern parts of the Gauteng and Free State Provinces in South Africa. The Emfuleni Local Municipality is predominantly urbanised and has strong linkages with other well-known surrounding areas such as Johannesburg, Bloemfontein and the East Rand. The Metsimaholo local municipality is adjacent to the Gauteng province with the Vaal River providing the southern and northern border between the areas. The sample were selected using two non-probability sampling techniques. Firstly, purposive sampling were utilised which saw the selection of participants based on the criteria of being either employed or unemployed (broadly defined). Secondly, for selection purposes, convenience sampling was applied where sampling procedures took place in locations with an associated popularity among the youth.

3.3. Survey Design, Procedure Method and Ethical Considerations

Data were collected through the use of a self-administered questionnaire. The questionnaire was constructed based on comprehensive literature and empirical reviews. Questions included in the measuring instrument pertained general demographic information together with descriptive questions directed at participants' socio-economic background. The questionnaire was subject to a pilot study that was undertaken with 40 young people at a local training centre in the Emfuleni municipal region. Afterwards, it was distributed through four trained fieldworkers in the study area. Based on the revision of similar studies (Fatoki, Chindoga, 2011; sample size: 357) a sample size of 400 was deemed adequate. All questionnaires were completed on a voluntary basis with no incentives provided to encourage participation. Participants were ensured that any details would be kept confidential.

3.4. Data Analysis and Model Specification

Data analysis made use of descriptive statistics that involved the use of frequency distributions in order to report the demographic composition of the sample. Towards identifying the variables that formed the factors affecting the employment status of the youth, a binary logistic regression was utilised. The model used in this study is presented as follows:

$$ES_i = \phi_0 + \phi_1 AGE_i + \phi_2 GEN_i + \phi_3 RAC_i + \phi_4 MS_i + \phi_5 HHS_i + \phi_6 NEI_i + \phi_7 SG_i + \phi_8 HLE_i + \phi_9 RW_i + \varepsilon_i \quad (1)$$

Where ES_i represents the dependent variable, the participant's employment status, coded as 1 = employed (self-employed and wage employed) and 0 = unemployed; AGE_i shows the number of years of a participant, GEN_i is the gender of the participant (1 = male & 0 = female); RAC_i refers to the race of the participant; MS_i indicates the marital status (1 = married/living together & 0 = not married/living alone); HHS_i shows the household size; NEI_i the number of employed individuals within the household; SG_i represents the presence of social grants within the household (1 = receiving a grant & 0 = not receiving a grant); HLE_i is the highest level of education of the participant (0 = completed secondary education, 1 = not completed secondary education & 2 = tertiary education) and RW_i shows the reservation wage level (0 = R4 501-R9 000, 1 = R0-R4 500 & 2 = > R9 000) $\phi_1, \phi_2, \phi_3 \dots \phi_9$ are the estimated coefficients; ϕ_0 is the constant and ε_i represents the error term.

4. Results and Discussion

4.1. Demographic Background of the Participants

The demographic information of the sample shows that 41.0 percent of the sample participants were between the ages of 25 and 29 years while, 30.4 percent were between 18 and 24 years. Slightly more participants were female (52.5%) as opposed to male (47.5%). From a racial perspective, the sample followed national race distributions where more than 80 percent of the sample were Black/African. This was followed by those that were White (11.8%) and Coloured (5.9%). Based on the participants' household size, approximately two thirds (67.3%) resided in households with between three and six members while only 14.7 percent were situated in households with one or two household members. A large proportion of the sample (61.1%) were single compared to the 38.9 percent that were either married or living with a partner. From an educational view point, 37.5 percent of the sample attributed a completed secondary education (Grade 12), while 15.3 percent acquired a postgraduate degree. Notably, a large number of participants (20.1%) did not have a completed secondary qualification. Lastly, based on their distribution according to employment status, 48.1 percent of the sample indicated that they did not have a job at the time of the survey while 51.9 percent indicated that they were employed. Both waged employed (40.4%) and self-employed (11.5%) individuals were included.

4.2. Binary Logistic Regression Results

Before the estimation of the regression results, multicollinearity diagnostics using variance inflator factors (VIF) and tolerance values were used. Results from Table 1 shows that all VIF values were below five and tolerance values above the prescribed 0.1 threshold (Rogerson, 2001) indicating no serious threat of multicollinearity. Results for the Omnibus model of coefficients (chi-square = 198.903) as well the Hosmer and Lemeshow test (chi-square = 11.784) both indicate that the model was a good fit with the data that was used. Finally, Cox and Snell R-square and Nagelkerke R-square values indicates that the independent variables explained 44.2 and 59.2 percent of the variation in the participants' employment status.

Table 1. Diagnostic tests and summary results for the binary regression model

Omnibus Tests of Model Coefficients		Hosmer and Lemeshow Test	
Chi-square = 198.903	p-value = 0.000	Chi-square = 11.784	p-value = 0.161
-2 Log likelihood = 270.552	Cox & Snell R-Square = 0.444	Nagelkerke R-Square = 0.592	

Source: Survey data, 2016

The results of the logistic regression is shown in Table 2. Results indicate a positive relationship between the age of the job seeker and the probability of being employed in the area. The p-value for the coefficient, estimated at 0.296, however, suggests that age was not a significant factor affecting the employment outcomes of the youth in the area. Likewise, gender had a positive coefficient however the p-value of 0.047 suggests a statistically significant influence (5% level of significance). Given that females were used as the reference category, the results infer that males had a greater probability of being employed compared to their female counterparts. The odds ratio (1.871) in fact shows that males were 87.1 (1.871 – 1) percent more likely to find a job than females. In their study Beukes et al. (2017) also found similar results, reiterating that labour market experiences for the youth tend to be gender biased. These studies suggest that the disparity in labour market outcomes for young females resonate on the basis of their comparatively lower education qualifications.

Table 2. Binary logistic regression results

Indicator	B	S.E.	Wald	df	Sig.	Exp (B)	Tolerance VIF	
Age	0.041	0.039	1.094	1	0.296	1.042	0.844	1.185
Gender (Male)	0.626	0.315	3.950	1	0.047**	1.871	0.978	1.023
African	-0.179	0.552	0.105	1	0.745	0.836	0.866	1.154
White (Ref. group)			0.129	2	0.937			
Other races	-0.248	0.803	0.095	1	0.758	0.780		
Marital status (Married or living together)	1.150	0.346	11.030	1	0.001*	3.159	0.978	1.023
Household size	-0.823	0.122	45.506	1	0.000*	0.439	0.579	1.727
Nr of employed household members	1.261	0.210	36.127	1	0.000*	3.530	0.700	1.429
Grant (Received a grant)	-0.600	0.338	3.163	1	0.075**	0.549	0.717	1.395
No secondary education	-1.110	0.433	6.554	1	0.010**	0.330	0.965	1.037
Completed secondary education (Ref. group)			18.723	2	0.000*			
Tertiary education	0.806	0.353	5.215	1	0.022**	2.240		
R0 – R4 500	1.216	0.369	10.860	1	0.001*	3.372	0.955	1.047
R4 501 – R9 000 (Ref. group)			11.318	2	0.003*			
Above R9 000	-0.977	0.453	4.652	1	0.031**	0.376		
Constant	-1.270	1.218	1.087	1	0.297	0.281		

*Significant at 1% level of significance ** 5% level of significance *** 10% level of significance

B = Coefficient, S.E. = Standard error, df = degrees of freedom, Sig. = Significance value, Exp (B) = Odds ratio, VIF = Variance inflator factors

Source: Survey data, 2016

In the South African context, race has been one of the central points of discussion in labour market outcomes. Race in this model was entered with three categories with White used as the reference group. Results from Table 2 indicate a negative coefficient for those participants that were

African/Black. Therefore, Africans/Blacks had a lower chance of being employed than White individuals. Similarly the coefficient for other races (Coloured and Indian/Asian) was negative. Contrary to the findings relating to ethnicity, the coefficient for the participants' marital status is positive and statistically significant at the 5 percent level of significance. This implies that for these young individuals being married or living with a partner is associated with a higher probability of being employed when compared to individuals who were single or living on their own. The odds ratio (3.159) infers that these individuals were 215.9 (3.519 – 1) percent more likely to be employed. The explanation to this finding emanates from the fact that having a partner adds to both the social and monetary capital for the youth. Being married or living with someone provides these individuals with added networks that can assist in finding a job and further cover high job search costs (Elima, 2015).

The significant (p -value = 0.000) negative coefficient for household size implies that an increasing number of household members is associated with lower employment probabilities for the participants. The odds ratio of 0.439 in fact shows that for each additional household member, participants were 56.1 (0.439 – 1) less likely to be employed. Opposing the negative association, the number of employed household members had a significant (p -value = 0.000) positive coefficient. Thus implying that more employed members in the household increased the participants' likelihood of finding a job. Flek, Hála and Mysíková (2015) likewise indicated a negative relationship between household size and youth employment, suggesting that the increasing number of household members contribute to reduced labour supply for the cohort on the basis of more secure income sources. However, results from Table 2 show a positive and significant relationship between the numbers of employed household members with the youth's employment probabilities. The negative relationship between household size and youth employment can therefore possibly be ascribed to survivalist strategies for the youth. Results from Table 2 in fact suggest that the increased number of employed household members provided more and better quality social capital that can facilitate better sources of job search and monetary assistance that can overcome high job search costs.

As part of the measuring instrument that was utilised, participants were asked whether individuals in their household received any social support. Responses were captured where a dummy variable was coded with yes = 1 and no = 0. Results from the regression analysis in Table 2 showed that living in grant receiving households had a statically significant negative association with the participants' employment status. The odds ratio of 0.541 suggests that living in households receiving grants decreased the likelihood of being employed by 45.9 percent. Klasen and Woolard (2009) in their study obtained similar results, inferring that the lower employment probabilities associated with these indirect effects of social grants receipts are attributed to the majority of the households that are situated in geographically isolated areas. From this point of view, the unemployed, as a means of surviving, depend on these households. This consequently reduces their job search activities due to the geographical induced high job search costs. As far as the level of education is concerned, completed secondary education was entered as the reference group in the model. Regression results from Table 2 show that not having a completed secondary education had a statistically negative coefficient. On the other hand, having a tertiary qualification was associated with an increased likelihood of finding a job when compared to those with a completed secondary education given that the coefficient was positive and statistically significant. In fact, having a tertiary qualification as opposed to only a completed secondary qualification is associated with a 124.0 (2.240–1) percent greater likelihood of being employed. These results suggest that increased levels of education increased the likelihood of finding a job. Levels of education, more so for young people, play an important role in securing a job due to the fact that they lack evidence on their productivity levels.

As part of the survey, participants were asked the minimum level of income (reservation wage) they would or did accept when entering employment. For the purpose of the study, three reservation wage categories were entered into the regression model. These included reservation wages between R0 to R4 500 (lower bound), R4 501 to R9 000 (used as the benchmark) and all those above R9 000 (upper bound). In contrast to the level of education, the lower bound category had a positive coefficient with the upper bound category attributing a negative coefficient. The odds ratio for the R0 to R4 500 category is estimated at 3.372. Hence, those who indicated that they did/would accept a job with an income between R0 and R4 500 were 237.1 (3.372–1) percent more likely to be employed than those participants who would only accept a job offering for a monthly salary between R 4 501 and R9 000. On the other hand, the odds ratio for the above R9 000 category is estimated at 0.376

indicating that participants who stated they would/did only accept a job at this particular wage level are 62.4 (0.376 – 1) percent less likely to find a job compared to the R4 501 to R9 000 category. Both the lower bound (significant at 1 % significance level) and upper bound (significant at 5% significance level) categories are statically significant determinants in the model. Zoch (2013) similarly indicates the negative impact of higher reservation wages on the employment outcomes of the youth. Given their recent entry into the labour market, young job seekers are more likely to start at entry level positions. High expectations in this regard induce a voluntary nature of unemployment, seeing that these reservation wages are higher than the equilibrium wages set by market forces.

5. Conclusion and Recommendations

The current state of the youth in the South African labour market warrants considerable concern. Their difficulties in securing the needed employment opportunities upon making the transition not only to the workforce but subsequently their financial independence are among the leading concerns for policymakers. Overall this study found the employment among the participants to be affected by a number of factors that attests the intricate nature of youth unemployment. Results indicate that the cohort's struggle to acquire work revolves mainly around inadequate skills sets, low education levels, gender barriers and lacking the needed labour market information. Whilst these factors support the structural evidence on unemployment in the country (Roberts, 2016), the findings relating to the participants reservation wages, household characteristics and social welfare infer voluntary aspects in their difficulties towards finding employment.

The results of the study hold important implications especially for key role players in local developing regions. In order to improve the economic outlook of many young South Africans, current management and policy approaches need to be enhanced and improved. Focus should be directed towards a significant improvement in the quality of education structures on especially secondary and tertiary levels. This should entail a more clear communication channel and linkage between private sector and educational institutions with the aim of instilling practical skills and experience required by employers (Illés, Dunay, Jelonek, 2015). Furthermore, labour market laws and legislation not only on a local level but national level needs to be drastically altered and relaxed with the aim of reducing the cost of employment. Current implemented youth targeted wage subsidies in this regard has shown noteworthy potential in creating additional employment opportunities and subsequently reducing the cost of inexperienced job seekers. Other possible strategies should focus on including the establishment of local labour market information centres, the development of the informal labour market whilst likewise improving and enhancing public employment programmes. Whilst these reforms can assist in alleviating the high number of young people unable to secure employment, the unfortunate reality is that South Africa's unemployment problem is largely structural and multifaceted. Significantly improving the employment outlook in the country necessitates a sustainable inclusive growth outlook that is focused on enterprise-led growth and the development of key labour intensive industries.

References

- Azeng, T.F., Yogo, T.U. (2013). Youth Unemployment and Political Instability in Selected Developing Countries. African Development Bank Group Working Paper, No. 171. Tunis: African Development Bank.
- Beukes, R., Fransman, T., Murozvi, S., Yu, D. (2017). Underemployment in South Africa. *Development Southern Africa*, vol. 34, iss. 1, pp. 33-55.
- Bikse, V., Lusena-Ezera, I., Rivza, B. (2016). Performance Trends in Youth Entrepreneur's Capacity Prerequisite for the Entrepreneurship Development of Latvia. *Polish Journal of Management Studies*, vol. 14, iss. 1, pp. 40-50.
- Blanchard, O. (2006). European Unemployment: The Evolution of the Facts. *Economic Policy*, vol. 21, iss. 45, pp. 6-59.
- Bobáková, H.L., Karpeta, J. (2015). The Development of Key Competences as an Important Task of Management. *Forum Scientiae Oeconomia*, vol. 3, iss. 4, pp. 91-100.
- Center for Development and Enterprise. (2017). No Country for Young People: The Crisis of Youth Unemployment and What to do About It. Johannesburg: Center for Development and Enterprise.
- Elima, E.K. (2015). *The Effect of Education on Youth Employment in Kenya*. Doctoral Thesis. Nairobi: University of Nairobi.
- Fatoki, O., Chindoga, L. (2011). An Investigation into the Obstacles to Youth Entrepreneurship in South Africa. *International Business Research*, vol. 4, iss. 2, pp. 161-169.

- Flek, V., Hála, M., Mysíková, M. (2015). Duration Dependence and Exits from Youth Unemployment in Spain and the Czech Republic. *Economic Research-Ekonomska Istraživanja*, vol. 28, iss. 1, pp. 1063-1078.
- Graham, L., De Lannoy, A. (2016). Youth Unemployment: What Can We Do in the Short Run? Cape Town: Development Policy Research Unit, University of Cape Town.
- Holman, R. (2010). *Makroekonomie: Středně pokročilý kurz*. Praha: C.H. Beck.
- Illés, B.C., Dunay, A., Jelonek, D. (2015). The Entrepreneurship in Poland and in Hungary: Future Entrepreneurs Education Perspective. *Polish Journal of Management Studies*, vol. 12, iss. 1, pp. 48-58.
- International Labour Organisation. (2017). *Youth unemployment rates*, [online]. Available: <http://www.ilo.org/ilostat/faces/oracle/webcenter/portalapp/pagehierarchy/Page27.jspx?subject=LUU&indicator=UNE> [2017, November 17].
- Klasen, S., Woolard, I. (2009). Surviving Unemployment without State Support: Unemployment and Household Formation in South Africa. *Journal of African Economies*, vol. 18, iss. 1, pp. 1-51.
- Lam, D., Leibbrandt, M., Mlatsheni, C. (2008). Education and Youth Unemployment in South Africa. *SALDRU Working Paper, No. 22*. Cape Town: SALDRU, University of Cape Town.
- Matsumoto, M., Hengge, M., Islam, I. (2012). Tackling the Youth Employment Crisis: A Macroeconomic Perspective. *ILO Employment Working Paper, No. 124*. Geneva: International Labour Organisation.
- Meyer, N. (2017). South Africa's Youth Unemployment Dilemma: Whose Baby Is It Anyway? *Journal of Economics and Behavioral Studies*, vol. 9, iss. 1, pp. 56-68.
- Mncayi, N.P., de Jongh, J.J. (2017). Perceptions of Local Businesses on the Newly Proposed National Minimum Wage in South Africa. *International Journal of Business and Management Studies*, vol. 9, iss. 2, pp. 120-136.
- Mtwesi, A. (2014). An Overview of Youth Policy. *The Journal of the Helen Suzman Foundation*, vol. 2014, iss. 74, pp. 37-41.
- Mukhovha, C.R. (2008). *The Influence of Unemployment on Parenting Skills in the Waterberg District of the Limpopo Province*. Masters Dissertation. Pretoria: University of Pretoria.
- Oosthuisen, M., Lilenstein, K., Steenkamp, F., Cassim, A. (2016). Informality and Inclusive Growth in Sub-Saharan Africa. Cape Town: Development Policy Research Unit, University of Cape Town.
- Organisation for Economic Co-operation and Development. (2017). *Youth unemployment rates*, [online]. Available: <https://data.oecd.org/unemp/youth-unemployment-rate.htm>. [2017, November 18].
- Orr, L., Van Meelis, T. (2014). Women and Gender Relations in the South African Labour Market: A Twenty Year Review. Woodstock: Labour Research Service.
- Petersson, L. (2013). Localization and integration between unequal partners: Policy implications for Lesotho. In L. Petersson. (Ed.), *Post-Apartheid Southern Africa: Economic Challenges and Policies for the Future*. (pp. 239-266). London: Routledge.
- Roberts, G.A. (2016). *Essays on the Dimensions of Youth Unemployment in South Africa*. Doctoral Thesis. Johannesburg: University of the Witwatersrand.
- Rogerson, P.A. (2001). *Statistical Methods for Geography*. London: Sage.
- Seekings, J. (2013). The Social and Political Implications of Demographic Change in Post-Apartheid South Africa. *CSSR Working Paper, No. 328*. Cape Town: Centre for Social Science Research, University of Cape Town.
- Stapleton, C. (2015). The Migrant Network Effect: An Empirical Analysis of Rural-To-Urban Migration in South Africa. Masters Dissertation. Cape Town: University of Cape Town.
- StatsSA (Statistics South Africa) (2017). Poverty Trends in South Africa: An Examination of Absolute Poverty between 2006 and 2015. Pretoria: Statistics South Africa.
- Urminský, J. (2017). Classification of Labor Markets in the Czech Republic. *Forum Scientiae Oeconomica*, vol. 5, iss. 1, 105-117.
- Van der Berg, S. (2011). Current Poverty and Income Distribution in the Context of South African History. *Economic History of Developing Regions*, vol. 26, iss. 1, pp. 20-140.
- Zoch, A. (2013). Understanding the Underlying Dynamics of the Reservation Wage for South African Youth. Stellenbosch: Stellenbosch University.

Jacques De Jongh^{1*}
North-West University
South Africa
Natanya Meyer²
North-West University
South Africa

10. PERCEIVED BARRIERS OF EMPLOYMENT AMONG YOUNG LABOUR MARKET PARTICIPANTS: EVIDENCE FROM SELECTED MUNICIPAL AREAS IN SOUTH AFRICA

Abstract: Significantly high youth unemployment rates have become a prominent economic and social concern for policy and managerial role players on a global scale. From a South African perspective, the situation has reached critical stages where ominously large numbers of unemployed youth contribute to high poverty levels and an invaluable loss of future organizational resources. Despite the recognition of the severity of the issue, the comprehension of the factors contributing to the youths' difficulties in securing decent employment has proven complex. The study's primary objective was to analyse the perceptions of a group of young labour market participants on the factors affecting their employment outcomes in selected municipal areas in South Africa. Measurement of the factors made use of a tested and validated youth employment barrier scale. Primary data were collected through the use of a self-administered questionnaire. The sample consisted of both employed and unemployed participants between the ages of 18 and 35 years. Descriptive statistics and chi-square tests were used to analyse the data. The findings of the study revealed that participants perceived the lack of available employment opportunities, their level of education and skill mismatches as the most prominent factors affecting their employment outcomes. Chi-square tests further revealed significant differences in the perceptions of the employed and unemployed participants regarding the impact of family responsibilities, access to quality education and household social networks. The findings of the study provide valuable insights as well as recommendations for future research into the youth employment nexus not only in the South African context but globally as this phenomenon is prevalent in many countries.

Keywords: barriers, skills, South Africa, unemployment, youth unemployment.

JEL Classification: E24, J64

1. Introduction

Youth unemployment is a global concern with many countries facing challenges in this regard. Similar to the overall unemployment rate, youth unemployment is measured and trends in the variance of this rate is noted making it possible to determine if the phenomenon has improved or not. Youth unemployment can be categorised into two measurement clusters, firstly, the International Labour Organization (ILO), World Bank, OECD and World Economic Forum (WEF) defines youths as people between the ages of 15 and 24 years (OECD, 2017; Meyer, 2017), whereas, Statistics South Africa (StatsSA, 2015) additionally defines youth as people between the ages of 15 and 34 years. Global comparisons normally uses the measurement cluster ranging between the ages of 15 and 24 years. Generally, youth unemployment may be slightly higher than total unemployment as youths and graduates tend to take longer to find employment and do not enter the job market immediately after completing school or tertiary education. However, the 2016 youth unemployment rates in many countries such as Greece (47.4%), Spain (44.5%), Italy (37.8%), Portugal (27.9%), Slovakia (22.2%) and Poland (17.6%) is a major concern and has been high for unacceptable longer periods than expected and are significantly higher than the adult unemployment rates (OECD, 2017). Even areas such as the European Union, consisting of 28 countries and the Euro area, consisting of 19 countries

¹ Masters of Economics Jacques De Jongh; Hendrick van Eck Boulevard, Vanderbijlpark, South Africa, Jacques.deJongh@nwu.ac.za

² Masters of Development and Management Natanya Meyer; Hendrick van Eck Boulevard, Vanderbijlpark, South Africa, Natanya.meyer@nwu.ac.za

* Corresponding author

have experienced high overall youth unemployment rates of 18.7 percent and 20.9 percent respectively (OECD, 2017). The global youth unemployment rate, although not as concerning, has also shown a slight upward trend from 12.9 percent in 2009 to 13.2 percent in 2017 (Statista, 2017). South Africa is currently ranked as the country with the highest youth unemployment rate at a staggering 53.3 percent according to the OECD (2017) definition (youths between 15-24 years) and 67.4 percent according to the expanded definition which includes discourages workers (Peyper, 2017). Fortunately, as youths tend to get work slightly easier as they cross the 25 year of age mark, the current unemployment rate as per the Statistics South Africa definitions (15-34 years) is lower at 38.6 percent (StatsSA, 2017). Although this rate is lower compared to the age group between 15 and 24 years, this rate is still unacceptably high raising fears amongst policy and managerial stakeholders alike. Understanding what barriers young people are experiencing in finding employment may assist governments and organisations finding possible solutions to this growing phenomenon. Given the aforementioned, the study's primary objective is to analyse the perceptions of a group of young labour market participants on the factors affecting their employment outcomes in selected municipal areas in South Africa. In doing so, the study aims to contribute to the limited body of knowledge on youth unemployment as well as provide invaluable insight towards effective public and organizational strategy development directed at young labour market participants.

2. Literature Review

Several youth unemployment barriers exist that may have a significant impact on them securing employment. These barriers can be divided into demand and supply side aspects which contribute to this growing problem of youth unemployment (de Jongh, 2017). From a demand-side, one of the main contributing factors adding to youth unemployment is the current economic conditions. Since the end of the global financial crisis in 2009, South Africa has struggled to return to the prosperous growth it had experienced prior to 2008. The lack of sustainable growth has been detrimental to job creation and employment and has particularly affected the youth of the country. StatsSA (2015) shows that in 2009, 2011 and 2013 job losses for young people amounted to 164 000, 85 000 and 24 000 respectively, while, contrastingly, employment rose for adults. Furthermore, as economic conditions improve, initially, young people are the first to be overlooked for employment. In addition to struggling economic growth, labour market rigidity is also a contributing factor to youth unemployment. The effects of minimum wages on youth employment in an international context have been highlighted by a number of studies (Bazen, Skourias, 1997; Kalenkoski, 2016). These studies empirically proved that the introduction of minimum wages did lead to subsequent declines in the employment of young work seekers. The size of the youth cohort also has an impact on employment figures.

The sub-Saharan African youth population has been increasing at a higher rate than any other region in the world (ECOSOC, 2016). The upsurges in the populations of these young people have meant that countries in the region are encountering "youth bulges" in their demographic statistics. La Graffe (2012) explains these bulges as a phenomenon where national mortality rates have started to decline but fertility remains high. Statistics indicate that the "youth bulge" in South Africa has developed extensively over the last decade, with 2016 figures showing that young people account for approximately 36 percent of the total population: an increase of six percent since 2009 (StatsSA, 2016).

Whilst the inherent demand side factors undoubtedly play an important role in the uptake of young people in the economy, several supply side factors contribute to the youth unemployment situation. The first of these are job mismatches and lack of human capital. These mismatches are mainly the result of the imbalances that exist between the educational choices of the youth and their lack of job market knowledge when these decisions are made (WEF, 2014). Young people in this context are affected either by over-education or under-education in their employment endeavours. Being overly educated see those gaining higher skills than those which employers require, while the opposite refers to the lack of skills needed for employment (Pompa, 2015). Many young people particularly in secondary education do not finish their schooling, dropping out early with the aim of assisting in income support for families while others simply lack the financial resources to continue (Gustafsson, 2011).

The lack of soft and hard skills is considered another cause. Hard skills in this context refer to the specific technical abilities required to undertake a specific task (Babić, Slavković, 2011). In association with these technical abilities, research has shown that soft skills in the workplace are

increasingly playing an important role in the employment outcomes of young people (Dančišinová, Benková, Daňková, 2017). Soft skills pertain to personal attributes, which improve an individual's workplace behaviour. Another contributor to youth unemployment is lack of work experience. As first time entrants into the labour market, young people in their transition are significantly disadvantaged in relation to their older competitors in finding jobs (Rees, 1986). Essentially, employers in their hiring processes make use of job experience as an indicator of the capabilities of workers and their productivity. Further challenges can be ascribed to lack of job search methods and lack of social capital which poses a further cause to youth unemployment. The initial labour market entries for the youth are characterised by long waiting periods before their first successful transition into the working environment (ILO, 2011). One contributing factor that stems from the supply of these young work seekers is that many of them lack the necessary labour market information in their job search process mainly due the absence of necessary social capital and networks (Lam, Leibbrandt, Mlatsheni, 2008).

Geographical location poses another challenge. Rural areas, characterised by noteworthy distances and a lack of access to urban concentrated employment opportunities, have been shown to increase the probability of unemployment. Mlatsheni (2014) reiterates that many of the job opportunities in the country are located in urbanised areas with the majority of the poor residing on the rural fringes of the country. The youth in general have shown tendencies towards unrealistic wage expectations in relation to their entry level positions and initial earnings. Banerjee et al. (2008) explain that on embarking on the transition from school to work, young people often search for employment primarily based on the expectations of high levels of wages. Young people receiving job offers lower than these wages therefore choose to be voluntarily unemployed as they price themselves out of a job. The prevalence of joblessness contains many dimensions on which race and gender exert notable influences (Burger, Jafta, 2006). Africans as a group have carried the brunt of the difficulties in accessing the labour market, and this characteristic also holds for the younger generations, but to a greater degree (Van Aardt, 2012). The gender dimension in the explanation of high youth unemployment signals that females face even greater barriers in accessing the labour market than young males in South Africa (Orr, Van Meelis, 2014).

3. Methodology

The main aim of study was to analyse the perceptions of a group of young (15 to 34 years) labour market participants on the factors affecting their employment outcomes in selected municipal areas in South Africa. Towards achieving this objective, a quantitative research approach was deemed adequate with the use of a cross sectional research design. The methodology of the study followed a positivist research paradigm affording credence to the quantifiable nature of understanding human behavior.

3.1 Study Region and Sample

The study areas included the Emfuleni local municipality which is one of three local municipalities in the Sedibeng district located in the Southern parts of the Gauteng province in South Africa and the Metsimaholo local municipal region which is situated in the Northern parts of the Free State province and together with the aforementioned and adjacent towns, forms part of the Vaal Triangle economic region. The sample were selected, firstly by using a purposive sampling technique with participants selected based on the criteria of being economically active (either employed or unemployed). Secondly, convenience sampling procedures were used where participants were selected at locations where their densities were known to be high.

3.2 Measuring Instrument, Procedure Method and Data Analysis

The survey method through the use of self-administered questionnaires were used in order to collect the data. General demographic and socio-economic information of the participants such as ethnic group, age, gender, level of education and employment status were included. Measurement of the participants' perceptions on the factors affecting their employment made use of Kuan et al. (2014) employment barrier scale. The scale was adapted and included 17 items. Responses were captured using a six point Likert scale (1-Strongly disagree to 6-Strongly agree). After collection procedures, a final sample size of 339 was acquired.

The collected data were coded and captured. Data analysis involved the use of the Statistical Packages of Social Sciences (SPSS) version 24.0. Frequency distributions and descriptive statistics were used to report the demographic composition of the sample as well as the samples perception on the various factors affecting their employment outcomes. In addition, cross tabulation and chi-square test were used to compare the perceptions between the employed and unemployed participants. More specifically, these techniques were employed to test the following hypotheses:

- Null hypothesis (H_0): Perceptions are not statically different among employed and unemployed participants.
- Alternative hypothesis (H_1): Perceptions are statistically different among employed and unemployed participants.

4. Results and Discussion

The demographic information of the sample shows that more participants (41.0%) were between the ages of 25 and 29 years, followed by those that were aged between 18 and 24 years (30.4%). More females (51.9%) participated in the study compared to males (48.1%). Race distribution indicates that the sample consisted largely of African/Black individuals (81.4%), while only 11.8% were White. Based on their geographical locations, the sample were approximately evenly split between the Emfuleni (50.1%) and Metsimaholo (49.9%) local municipal regions. Distributions according to the level of education indicates that most (38.9%) of the participants completed their secondary education, with 21.3% reporting that they had a completed tertiary qualification and 16.8% some form of vocational training. A large share however failed to obtain higher than a primary qualification (23.0%). As the sample was drawn using a combination of non-probability sampling techniques, a large number of the participants were unemployed (48.1%), 11.6% indicated that they were self-employed, 34.8% were employed full time and 5.5% reported they were only employed on a part-time basis.

This section of the study reports the results on the perceptions of the participants relating to the barriers young people face in their search for employment. Results from Table 1 indicate that among the sample 57.8% (15 + 29.8 + 13) believed that the gender of young job seekers did not have an impact on the youth's employment outcomes, while 42.2% agreed. Likewise, greater disagreement is also shown pertaining to the impact of the race of the youth. Responses relating to the geographical barriers however, shows that more than two thirds of the participants (69.4%) believed that the geographical location of young people's households affect their employment outcomes. Based on empirical evidence (Brewer, 2013), the majority of young job seekers in their efforts still depend on parental figures and the associated household characteristics. One of these especially point to a large amount of young job seekers situated in households far from decent employment opportunities (Harrison, 2013). Their struggles in obtaining employment in this regard centres around the inability to overcome associated high job search costs, indirectly reducing labour supply.

Relating to the impact of the youth's education and skills, participants strongly believed (31.6%) that the level of education among the youth acted as a barrier towards their employment. Furthermore, 33% agreed while 24.5% strongly agreed that skill mismatches affected youth employment. Studies have signified the importance of education in the employment outcomes of younger job seekers (Ackah-Baidoo, 2016). From a South African perspective, these arguments have revolved around the demand for higher skilled labour and the lack of higher order cognitive abilities that have consequently resulted in various skill mismatches (Branson, Hofmeyr, Lam, 2013). In addition to these mismatches, when aggregated, 70.5% (13.0 + 33.0 + 24.5) of the sample also agreed that not having the necessary knowledge on prospective employer requirements deter the employment prospects of the youth. As young and inexperienced job seekers, the group lack the needed knowledge on labour market processes that has also been associated with ineffective job search practices.

Responses from the participants when asked whether the lack of knowing people who could assist in finding work contributed to the difficulties in finding work for the youth, indicated that 30.7% of the sample agreed, while 26.8% slightly agreed. In addition, 73.8% of all participants believed that young people do not know enough people that could assist in their job search efforts. Responses with regard to the lack of employed household members and their impact on youth employment indicated that slightly more of the sample (53.4%) disagreed with the statement. Similar empirical findings suggests that the lack of social capital for young people significantly affects their employment

outcomes (Fengqiao, Dan, 2015). Given that these job seekers lack the necessary experience to be competitive in the labour market as well as the lack of formal work relationships, these networks provide them a direct line to potential employers and work opportunities.

Table 1. Perceptions on the youth's barriers to employment (%)

Item	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree	Mean*
Struggle in getting a job because of their gender	15.0	29.8	13.0	10.6	17.1	14.5	3.29
Having trouble finding a job due to the colour of their skin	21.5	23.6	13.6	10.9	18.3	12.1	3.17
Young people live in areas far from any suitable jobs	8.0	12.7	10.0	18.6	31.3	19.5	4.11
Young people don't look for work as they need to take care of family members at home	15.0	24.8	19.8	12.4	16.8	11.2	3.25
The level of education/training young people have	4.1	4.4	6.8	17.4	35.7	31.6	4.71
Do not have access to quality education	7.7	22.7	13.8	15.6	25.3	14.8	3.72
The skills the youth have are not what employers are looking for	4.4	17.8	9.7	10.8	33.0	24.5	4.24
Young people don't know what skills employers are looking for and/or what industries are hiring young people	5.9	10.9	12.7	13.0	33.0	24.5	4.30
Young people do not know how to go about in finding a suitable job	6.5	13.3	11.5	15.9	30.7	22.1	4.17
The youth do not know enough people that can help finding a job	8.3	16.0	13.9	20.8	24.7	16.3	3.87
Lack of people in the youth's household that have jobs and assist in finding a job	14.2	17.4	21.8	19.2	16.8	11.6	3.35
Lack of job search assistance	8.8	12.1	20.9	17.7	21.3	19.2	3.88
It costs too much searching for a job	16.3	22.1	17.7	17.4	16.8	9.7	3.25
The wages employers are offering is not enough	21.8	23.0	10.7	19.2	13.7	11.5	3.08
There is not enough jobs available for everyone	2.1	5.0	9.4	13.3	35.4	34.8	4.79
Young people are not willing to work hard	22.7	18.0	14.7	16.8	18.6	9.2	3.18
Young people lack responsibility when still living with parents	15.3	18.5	11.7	21.0	19.5	13.9	3.52

* Min = 1; Max = 6

Source: Own research

In as far as the sample perceptions regarding labour market specific barriers to employment, responses in Table 2 show that 56.1% (16.3 + 22.1 + 17.7) of the participants did not believe that high job search costs impacted the employment of the youth. Likewise, 21.8 percent of the sample strongly disagreed and 23.0% disagreed that too low wage offerings prevented young people to acquire much needed work. However, a large proportion of the sample (70.2%) agreed that the difficulties for these young job seekers in finding work, stem from the lack of available. These findings point to the fact that although supply side factors do play a major role in the employment outcomes for these job seekers, the lack of demand and growth in the labour market is essential. This proves even more so for the group, as studies (Matsumoto, Hengge, Islam, 2012) have found their employment to be significantly more sensitive to business cycle fluctuations. Young people in this regard, mainly based on their inexperience, are the last to be employed and the first to be let go during low growth periods. Finally, results from the study suggest that slightly more participants (55.4%) did not believe that the laxity among the group or lack of willingness to work impacted their employment outcomes. However, more than half of the sample (54.4%) agreed that the lack of responsibility due to parental dependence does in fact affect the employment outcomes of the group.

After showing how the participants perceived various factors and their relevance towards explaining why young people struggle to find work, this section compares these perceptions among the employed and unemployed participants (shown in Table 2). Likert responses were dichotomously coded as Agree (Strongly agree + Agree + Slightly agree) and Disagree (Strongly disagree + Disagree + Slightly disagree). Furthermore, chi-square tests were used to determine if any noted differences were significant. Results from Table 2 indicate that both the employed and unemployed participants perceived the impact of gender (Sig. = 0.544), race (Sig. = 0.944) and the geographical location (Sig. = 0.479) similarly.

In contrast to these results, responses on the impact of family responsibilities on the youth's likelihood of finding a job, indicate that 19.6% (50.2-30.6) more unemployed participants agreed with the statement than employed participants. The low Sig. value of 0.000 (< 0.1) suggests that the difference is significant. Similar results were also reported by Ndhlovu (2010), suggesting that

unemployed youth situated especially in peri-urban areas had to act as caretakers in the household, mostly in the case of absent parental figures, consequently reducing available job search time.

Table 2. Perceived impact of barriers among employed and unemployed participants (%)

Item	Unemployed		Employed		Chi-square	Sig.
	Disagree	Agree	Disagree	Agree		
Gender	59.5	40.5	56.2	43.8	0.369	0.544
Race	58.8	41.2	58.5	41.5	0.005	0.944
Geographic location	28.8	71.2	32.4	67.6	0.502	0.479
Familial responsibilities	49.8	50.2	69.4	30.6	13.566	0.000*
Level of education	13.5	86.5	17.0	83.0	0.821	0.365
Lack of access to quality education	34.9	65.1	54.7	46.3	13.069	0.000*
Skills mismatches	27.7	72.3	35.7	64.3	2.613	0.106
Inadequate job search skills	33.7	66.3	29.0	71.0	0.894	0.344
Lack of job market knowledge	27.6	72.4	31.3	68.8	0.540	0.462
Lack of personal contacts	36.3	63.7	40.1	59.9	0.445	0.504
Lack of employed household members to assist job search	40.3	59.7	52.9	47.1	5.183	0.023**
Lack of job search assistance	37.8	62.2	45.8	54.2	2.219	0.136
High job search costs	54.6	45.4	57.6	42.4	0.266	0.606
Wages are too low	49.2	50.8	61.8	38.2	5.662	0.017**
High competition for jobs	14.1	85.9	18.8	81.3	1.321	0.250
Not willing to work hard	58.4	41.6	52.4	47.6	0.103	0.748
Lack of responsibility	45.0	55.0	46.4	53.4	0.459	0.500

* Significance at 1 percent level, ** Significance at a 5 percent level

Source: Own research

Responses on the items relating to the participants' education and skills indicate that on the majority of these factors both employed and unemployed participants agreed. For example, 86.5 percent of the unemployed participants agreed that the level of education affected youth employment. Furthermore, 66.3% of the unemployed participants and 71.0% of the employed participants believed that the lack of needed job market knowledge acts as a barrier to the group's employment. As opposed to these similarities, 18.8% (65.1–46.3) more unemployed participants believed that the lack of access to quality educational institutions affect the employment among the youth. The high chi-square statistic (13.069) indicate that these differences are in fact significant at a 1 percent level of significance. Therefore, the acknowledgment among the unemployed may suggest greater difficulties for the group to access decent educational institutions that may not be the case for those that had successfully acquired a job. These difficulties may emanate from a lack of resources to afford more quality schooling or being situated far from quality educational institutions (Van der Berg, 2011).

As far as the groups' perceptions in relation to the impact of the youth's social capital and market related factors goes, results from Table 2 suggest that perceptions from both groups in respect of inadequate job search skills (Sig. = 0.344), the lack of the needed labour market knowledge (Sig. = 0.462), not having the needed personal contacts (Sig. = 0.504) and high job search costs (sig. = 0.606) were all in coherence. The two groups did, however, significantly differ in how they perceived the impact of not having enough household members that have a job (Chi-square = 5.183). The acknowledgement for the unemployed may suggest that these young individuals lack the needed household members who could provide valuable job market information to be able to effectively search for work. Furthermore, significant differences in their perceptions towards too low wage offerings (Sig. = 0.017) are noted with agreement among unemployed participants 12.6 (50.8 -38.2)% higher. Given that the employed believed that the wages were enough it may point to the fact that unemployed are misinformed on realistic offerings in the market, as a result perceiving these wage offers as too low. As new labour market entrants lacking the needed labour market experience, young people are more likely to be employed in entry level positions that unfortunately are associated with lower remunerations.

In relation to the personal factors, approximately 58.4% of the unemployed participants and 52.4% of those that had a job disagreed that a lack of willingness to work among the group affected their employment outcomes. However, both groups agreed that still residing with parental figures may induce

a lack of motivation to actively search for work among the youth. The acknowledgment among both groups pertaining to young people's lack of responsibility suggests that the youth themselves concur that some voluntary aspects of unemployment exist among the cohort. Residing with parents that have secure income streams may increase their dependence, consequently reducing their labour supply.

5. Conclusion and Recommendations

Finding decent jobs for the millions of young people entering labour markets has become amongst the most pressing social and economic challenges of modern times. Globally, optimism among young people in finding a good job is decreasing even among those who are not unemployed and more so in countries that are still recovering from the global financial crisis. Their exclusion especially in the South African context represents a loss of valuable future resources and the obstruction of crucially needed economic development opportunities. The main objective of this study was to analyse the perceptions of a group of young labour market participants on the factors affecting the youths' employment outcomes. In doing so, the study aims to contribute to the limited body of knowledge on youth unemployment from a developing context. The findings showed that participants viewed the lack of jobs, absence of the necessary skills and the labour market knowledge as the most prominent barriers affecting their employment. Cross-tabulation analysis further showed significant differences in the manner that the employed and unemployed participants perceived the impact of family responsibilities and the lack of access to quality education inferring additional geographical barriers for the unemployed, resonating with the findings of Graham and Mltasheni (2015).

The implications of the research are two-fold. Firstly, the study supports and further extends evidence on the intricate nature of youth unemployment. Secondly, the findings as shown lend insight to the various actions required to effectively improve the cohorts' labour market access. Public policy and management initiatives in this regard should focus on education and skill improvement more as this is an important factor for future employability (Dima, Man, Ciurea, 2010). This however should be accompanied largely by apprenticeship opportunities from private sector that facilitates the development of specific job skills and experience. Other strategies on a broader level should be directed at the overall improvement of the economy with emphasis on labour intensive production, the relaxation of labour regulations as well as demand stimulating policies such as wage subsidies aimed specifically at the cohort. Future research could be extended to hold interviews with selected youth to require a deeper understanding of the barriers and possible solutions as well as extending the research into different areas and countries and compare results for improved recommendations.

References

- Ackah-Baidoo, P. (2016). Youth Unemployment in Resource-Rich Sub-Saharan Africa: A Critical Review. *The Extractive Industries and Society*, vol. 3, iss. 1, pp. 249-261.
- Babić, V., Slavković, M. (2011). Soft and Hard Skills Development: A Current Situation in Serbian Companies. In V. Dermol, N.T. Širca, G. Đaković, U. Lindav (Eds.), *Proceedings of the Management, Knowledge and Learning International Conference*. (pp. 407-414). Celje: International School for Social and Business Studies.
- Banerjee, A., Galiani, S., Levinsohn, J., McLaren, Z., Woolard, I. (2008). Why Has Unemployment Risen in the New South Africa? *Economics of Transition*, vol. 16, iss. 4, pp. 715-740.
- Bazen, S., Skourias, N. (1997). Is There a Negative Effect of Minimum Wages on Youth Employment in France? *European Economic Review*, vol. 41, iss. 3, pp. 723-732.
- Branson, N., C. Hofmeyr, C., Lam, D. (2013). Progress through School and the Determinants of School Dropout in South Africa. *SALDRU Working Paper, No. 100*. Cape Town: SALDRU, University of Cape Town.
- Brewer, L. (2013). *Enhancing Youth Employability: What? Why and How?* Geneva: International Labour Organisation.
- Burger, R., Jafta, R. (2006). *Returns to Race: Labour Market Discrimination in Post-Apartheid South Africa*. Stellenbosch: Stellenbosch University.
- Dančišinová, L., Benková, E., Daňková, Z. (2017). Presentation skills as important managerial competences in the context of professional communication. *Polish Journal of Management Studies*, vol. 15, iss. 2, pp. 37-46.
- De Jongh, J.J. (2017). *Youth employment barriers in the Emfuleni and Metsimaholo local municipal areas*. Masters Dissertation. Vanderbijlpark: North-West University.
- Dima, I.C., Man, M., Ciurea, V. (2010). Positioning of pre-university education into the national system of education of Romania. *Polish Journal of Management Studies*, vol. 1, pp. 102-110.

- ECOSOC (United Nations Economic and Social Council). (2016). *Concept Note: Regional Break out Session, Sub-Saharan Africa*. New York, NY: United Nations.
- Fengqiao, Y., Dan, M. (2015). The Impact of Social Capital on the Employment of College Graduates. *Chinese Education & Society*, vol. 48, iss. 1, pp. 59-75.
- Graham, L., Mltasheni, C. (2015). Youth Unemployment in South Africa: Understanding the Challenge and Working on Solutions. In A. De Lannoy, S. Swartz, L. Lake, C. Smith (Eds.), *South African child gauge 2015* (pp. 34-41). Cape Town: Children's Institute, University of Cape Town.
- Gustafsson, M. (2011). *The When and How of Leaving School: The Policy Implications of New Evidence on Secondary Schooling in South Africa. Stellenbosch Economic Working Paper, No. 09/2011*. Bureau for Economic Research, Stellenbosch University.
- Harrison, P. (2013). *South Africa's Spatial Development: The Journey From 1994*. Pretoria: Government Printer.
- ILO (International Labour Organisation). (2011). *Skills for Employment: Increasing the Employability of Disadvantaged Youth*. Geneva: International Labour Organisation.
- Kalenkoski, C.M. (2016). *The Effects of Minimum Wages on Youth Employment and Income*. Bonn: IZA World of Labor.
- Kuan, T.S., Armum, P., Chokkalingam, A.I., Osman, K., Chellappan, K. (2014). Perceptions of barriers in labour market attachments among marginalised youth in Malaysia. *Proceedings of the 1st International Conference on Language, Literature, Culture & Education 2014*, pp. 87-96. Kuala Lumpur: Infobase Creation.
- La Graffe, D. (2012). The Youth Bulge in Egypt: An Intersection of Demographics, Security, and the Arab Spring. *Journal of Strategic Security*, vol. 5, iss. 2, pp. 65-80.
- Lam, D., Leibbrandt, M., Mlatsheni, C. (2008). Education and Youth Unemployment in South Africa. *SALDRU Working Paper, No. 22*. Cape Town: SALDRU, University of Cape Town.
- Matsumoto, M., Hengge, M., Islam, I. (2012). Tackling the Youth Employment Crisis: A Macroeconomic Perspective. *ILO Employment Working Paper, No. 124*. Geneva: International Labour Organisation.
- Meyer, N. (2017). South Africa's Youth Unemployment Dilemma: Whose Baby is it Anyway? *Journal of Economics and Behavioral Studies*, vol. 9, iss 1, pp. 56-68.
- Mlatsheni, C. (2014). *Youth Unemployment and the Transition from School to Work in Cape Town*. Doctoral Thesis. Cape Town: University of Cape Town.
- Ndhlovu, D. (2010). *The Socio-Economic Characteristics and Implications of Youth Unemployment in Galeshewe Township in the Kimberley Area (Northern Cape Province)*. Masters Dissertation. Cape Town: University of the Western Cape.
- OECD. (2017). *Youth unemployment rate*, [online]. Available: <https://data.oecd.org/unemp/youth-unemployment-rate.htm>. [2017, November 14].
- Orr, L., Van Meelis, T. (2014). *Women and Gender Relations in the South African Labour Market: A Twenty Year Review*. Woodstock: Labour Research Service.
- Peyper, L. (2017). *Youth Unemployment in SA, a National Crises*, [online]. Available: <https://m.fin24.com/8/8/2017>. [2017, November 14].
- Pompa, C. (2015). *Jobs for the Future Report*. London: Overseas Development Institute.
- Rees, A. (1986). An Essay on Youth Joblessness. *Journal of Economic Literature*, vol. 24, iss. 2, pp. 613-628.
- Statista. (2017). *Global youth unemployment rate from 2009 to 2014 with a forecast up to 2019*, [online]. Available: <https://www.statista.com/statistics/269636/global-youth-unemployment-rate/>. [2017, November 14].
- StatsSA (Statistics South Africa). (2015). *National and Provincial Labour Market: Youth, Statistical Release P0211.4.2*. June 2015. Pretoria: Government Printer.
- StatsSA (Statistics South Africa). (2016). *Mid-Year Population Estimates*. 2016. Government Printer: Pretoria.
- StatsSA (Statistics South Africa). (2017). *Quarterly Labour Force Survey, Statistical Release P0211*, Oct 2017. Pretoria: Government Printer.
- Van Aardt, I. (2012). A Review of Youth Unemployment in SA from 2004 to 2011. *South African Journal of Labour Relations*, vol. 36, iss. 1, pp. 54-68.
- Van der Berg, S. (2011). Current Poverty and Income Distribution in the Context of South African History. *Economic History of Developing Regions*, vol. 26, iss. 1, pp. 20-140.
- WEF (World Economic Forum). (2014). *Matching Skills and Labour Market Needs Building Social Partnerships for Better Skills and Better Jobs*. Geneva: World Economic Forum.

Elena Delgadová¹

Alexander Dubcek University of Trenčín
Slovakia

Monika Gullerová^{2*}

Alexander Dubcek University of Trenčín
Slovakia

11. RECRUITMENT AND SELECTION METHODS IN AN AMERICAN AND A SLOVAK MANUFACTURING COMPANY

Abstract: Fierce economic competition and intense pressure to reduce labour costs make Human Resource departments in organizations act accordingly. Proper recruitment and selection procedures can give an organization a competitive advantage and save money. Therefore, it is crucial for any organization to recruit highly qualified people who best meet the requirements for a particular job. The paper addresses recruitment and selection techniques employed for a position of an operator in a Slovak and an American company. The main purpose of the paper was to describe and compare recruitment and selection processes employed in both companies. In addition, the paper attempted to assess the effectiveness of selection processes in terms of process (time-related costs) and result (turnover rate). Last but not least, the authors made suggestions to enhance the selection methods in both companies. This pre-research will serve as a basis for a follow-up comprehensive and comparative research to be conducted in cooperation with colleagues from the Universidad de Valencia and Universidad Católica de Valencia San Vicente Mártir in Spain. The pre-research intends to confirm or reject the appropriateness of research questions and methods. In the paper, the methods of an interview, comparative analysis and synthesis were employed. The research results indicated that the number of hours needed to select an operator in an American company was three times higher than in a Slovak company. Concerning the employee turnover rate, it was found that both companies used effective methods to recruit operators. The turnover rate was, however, slightly higher in an American company than in a Slovak company.

Keywords: foreign manufacturing company, recruitment, selection, Slovak manufacturing company.

JEL Classification: J24, J29

1. Introduction

Demographic change, advances in technology, globalization, and value change are some of the major trends that affect national labour markets in western economies profoundly. Thus, human resource practices need to be adapted to respond to these challenges in labour markets. In order to succeed in the competitive environment, nations attempt to gain a comparative advantage in terms of labour cost, cost of capital, geographic location, natural resources, as well as workforce productivity. Porter (1985) highlighted the role of human resources as creator of competitive advantages in any enterprises. Similarly, Wright and McMahan (1992) argue that human resources have the potential to be sources of sustained competitive advantage, when they are both highly skilled and motivated, thus they are a high-quality workforce. Since employees are the most valuable asset of every company, one of the most important challenges that every organization faces is how to retain them. If our employees are satisfied and motivated in the proper way, there is a higher chance that they will stay in the organization. Satisfied and motivated employees are more productive, more efficient and contribute more to the fulfillment of organizational goals (Ristic, Selakovic, Qureshi, 2017; Lazányi, Bilan, 2017). A comparative advantage gained through employees goes hand in hand with innovations and knowledge. Thus, in order to be competitive, economies need well-qualified, inventive and appropriately trained human capital. Business competition in this global era has become a challenge for every company. This business competition has demanded the companies to innovate and implement various strategies to survive within the competitive environment. Among the companies' capital, human resource capital is one of the fundamental elements. Human resource is an active resource to optimize other capitals, such as financial capital, information, and facilities (Fauzia et al., 2017). Human capital is defined as the "ability of an individual to create new knowledge (innovations)" (Vojtovič, 2009, p. 320; Mulgan et al., 2007). Schumpeter is regarded as the

¹ Elena Delgadová Ph.D.; Študentská 2, 911 50 Trenčín, Slovakia, elena.delgadova@tnuni.sk

² Mgr. Monika Gullerová Ph.D.; Študentská 2, 911 50 Trenčín, Slovakia, monika.gullerova@tnuni.sk

* Corresponding author

originator of this the notion of innovation; having claimed in the 1930s that innovation has a much greater impact on economic development than capital, and defined this term as the critical dimension of economic change (Schumpeter, 1934). Thus, new knowledge is required if economies want to thrive in both economic and social terms. New knowledge refers to “something new, what distinguishes itself from the old one. It is new not only because knowledge is its driving engine (knowledge economy), neither because it uses innovations (innovative economy), nor because it is network-interconnected (network economy) (Krajňáková, Vojtovič, 2011, p. 144). The concept of "innovation" is characterized by evolution, which makes it possible to refer not only to products, companies and services, but also to non-productive aspects. The term "innovative" relates not only to new products, but also to the new application of existing ones, and a new way of managing business processes (Hamel, 2009), or organizational innovations (Wolfe, 1994). Nevertheless, the significance of other types of innovation has been recognized, such as for instance Rennings (2000) drew attention to eco-innovations, and Foley and Kerr (2012) to ethnic innovation. Vojtovič and Karbach (2014, p. 139) maintain that “theoretically, the definition of the new or knowledge economy is usually connected with the process of creation and elaboration of information.” Undoubtedly, new knowledge is being developed by human capital having the necessary abilities and skills, we support the statement saying that “investing in human capital brings about improvement of performance, flexibility, and productivity, and enhances the ability to innovate, which naturally follows from continuous enhancement of qualification as well as skills and expertise of staff” (Grenčíková, Vojtovič, Gullerová, 2013, p. 42). There are two categories of human capital, i.e. general and specific. Vojtovič and Krajňáková (2014, p. 147) write that “universal abilities that are useful in almost all spheres of human activities were identified as the source of general human capital, whereas specific human capital includes such specific knowledge and abilities that are usable only in very concrete and specific group of activities.” In economics, innovation is often regarded as a precondition for higher productivity and sustained competitive advantage, as well as a prerequisite for boosting growth, especially during financial crises (Ciani et al., 2016). Therefore, it is in the best interest of companies to take on the best employees who are regarded to be critical in gaining a comparative advantage. In order to gain a comparative advantage, organizations need advanced and effective recruitment and selection procedures in place.

2. Recruitment and Selection

The underlying function of recruitment and selection is to hire in an efficient fashion people in the right amount and quality that are required to meet the human resource demands of an organization. Armstrong (2006, p. 409) distinguished three stages of recruitment and selection, i.e. “1) defining requirements – preparing job descriptions and specifications; deciding terms and conditions of employment; 2) attracting candidates – reviewing and evaluating alternative sources of applicants, inside and outside the company, advertising, using agencies and consultants; 3) selecting candidates – sifting applications, interviewing, testing, assessing candidates, assessment centres, offering employment, obtaining references; preparing contracts of employment.” In attracting job applicants, organizations can opt for internal or external sources, both having their pros and cons. When internal sources are selected, employees within an organization are transferred or promoted. “By filling vacancies in this way, and organization can capitalize on the investment it has made in recruiting, selecting, training, and developing its current employees, who might look for jobs elsewhere if they lack promotion opportunities (Snell, Bohlander, 2011, p. 182). Internal employee promotions can enhance morale, and mishaps in selection process can be minimized or avoided. Using internal sources of recruitment is advantageous with regard to fostering loyalty, avoiding taking hasty decisions, cutting the training costs, and supporting employee self-development. Weaknesses of internal sources may entail a limited number of applicants, shortage of skilled and qualified workforce, favouritism or nepotism. Internal sources of recruitment are best to be employed as a source of recruitment for lower posts whereas external ones are best suited for recruiting employees for higher positions be due to unavailability or unsuitability of existing employees. External sources include placing ads in various media, career fairs, co-operating with employment agencies, collaborating with universities and colleges, system of employee referrals, online job boards, recruitment via social media channels and social media networks, job agencies, etc. Recruiting externally has several advantages, such as novel and original ideas and/or approaches, and a wide array of job applicants to hire from. The drawback of external recruitment is primarily higher costs connected with employee recruitment, which can take a long time, and leading to higher employee turnover, lower employee motivation, etc. According to DeCenzo and Robbins (2010) the top five recruiting sources include company web sites (used by 87% of employers), internet job sites (used by 82% of employers), in-house referrals (used by 78% of employers), newspapers and magazines (used by 73% of employers), and

colleges and high schools (used by 60% of employers). The process of identifying and hiring job applicants with a great likelihood of success in a job is referred to as selection. Applicants engaged should not only meet the job requirements, but also possess the right personal qualities to promote sound relationships among work team members, and be able to think highly of the values followed by an organization (Koubek, 2009). The key purpose of selection is not to assess and take on applicants, but to eliminate those who do not fit the job requirements. On the other hand, Blašková (1998) maintains that employee selection is a process of obtaining information about job applicants in order to determine who should be hired. Taking on not right people may result in losing the market share of an organization, lower output, and possibly mean the loss of customers and earnings. It is maintained that “selection of the right person for the job at the right time” as well as rational costs represent the essence of human resource development” (Blašková, 1998, p. 66). The nature of selecting candidates varies greatly from organization to organization and from job to job. There are, however, the following universal selection criteria to be followed: “employing various employee recruitment sources; preferably giving jobs to internal candidates; in-depth candidate assessment; selecting candidates that have the potential being personally developed” (Drábiková, 2008, p. 19). Selection is viewed as an interaction between an organization and an applicant. Having identified the potential job candidates, employers have to persuade them that it is in their best interest to work for their organization. Conversely, job candidates have to convince the employers that they are the best fit to work for them. Nowadays, employers look for employees with creative skills, common sense, able to take part in managing. They search for employees who are able to make decisions quickly and effectively, who are loyal and energetic, etc. (Blašková, 1998). Employee selection makes use of a wide array of techniques, such as application forms or covering letters which tell employers whether job candidates are fit for a given vacancy. Interviews represent another common and frequent selection technique. Several interview techniques are distinguished, such as nondirective interviews, structured interviews, situational interviews, and behaviour description interview. The most frequent interview setup is the individual one, even though there are also some other options, such as panel interviews. Other techniques include psychological tests, for instance intelligence tests which are meant to assess thinking abilities, aptitude tests that are intended to acquire information about skills such as mechanical ability, logic and numerical ability, and manual dexterity. Attainment tests are utilized to assess the job candidate’s depth of knowledge or skills. In addition, there are personality tests employed in the process of employee selection, one of their drawback is, however, their limited validity. Assessment centre is a “special technique to determine whether job candidates are suitable for specific positions, such as managerial positions” (Szarková, 2009, p. 51). Assessment centre comprises several techniques, for instance group exercises, interviews, presentations, examinations and psychometric testing which are employed to evaluate candidates’ personality and aptitudes.

2.1. Methodology of Research

The paper addresses recruitment and selection techniques employed for a position of an operator in a Slovak and an American company. The main purpose of the paper was to describe and compare recruitment and selection processes employed in both companies. Partial goals were the following:

- A. to describe recruitment and selection methods procedures employed for a position of an operator in a Slovak and foreign company,
- B. to describe the set-up and changes in selection methods in both companies,
- C. to compare methods of recruitment and selection utilized in both companies,
- D. to assess the effectiveness of selection methods in terms of a process (time-related costs) and a result (turnover rate).

In order to meet the goals of the paper, the methods of a semi-structured interview, comparative analysis and synthesis were used. The following questions were asked in the interview:

- 1A. What recruitment and selection methods does your company use?
- 2B. What is the method set-up and how did it change in time?
- 3C. What was the turnover rate in operators in 2016?
- 4D. What were the time-related costs to fill the position of an operator?

A semi-structured interview was conducted with personnel managers in an American and Slovak company. The American company is an automotive company with approximately 115,000 employees in 221 operations in 36 countries. The research was conducted in a company based in the Bratislava region, having 188 employees. The Slovak company with 244 employees specializes in rail vehicle production and repair and is based in the Trnava region.

2.2. Research Results

A. Recruitment and selection methods employed to fill a position of an operator.

In an American company, CVs are first studied by HR managers. When applicants meet the requirements for the position of an operator, they are invited to the company. Next, a group of applicants are given the basic information about the company, then they go to the production area where they are shown what their job will entail. This part is focused on introducing the conditions of work, incl. lightning, noise, personal protective equipment, ergonomics, and breaks. At this point, if anyone wishes to leave, they may. Those who are still interested in the job position will move to an assembly room and they are informed about the wage structure, bonus system, and benefits. Then, job applicants are tested in alertness and instruction comprehension in writing. In a 20 minute break, which follows, the tests are evaluated. A semi-structured interview is conducted by an HR officer and production manager after a 20 minute break with each applicant. Its length is limited to 30 minutes. During the interview, the following items are paid attention to: manual skills, ability to learn quickly, ability to concentrate/good alertness, text comprehension, coping with stress, physical fitness, previous experience with assembly line production, discipline (reasons why previous jobs were terminated, sickness periods, reference background check is done only occasionally), and responsibility. At the end of the interview, applicants are asked to call the HR department no later than the noon next day and inform them whether they accept the position. In turn, the HR department will inform the applicants if they are invited to the second round of interviews. Having attended the second interview, they are shown the production process in more depth and their manual skills are tested individually by a production team leader. Team leader will then inform the HR department on the applicants' manual skills. The final decision is then communicated to all the applicants by the HR department. The American company also uses the services of contract workers which are provided by employment agencies, the proportion between salaried workers and contract workers is 80% to 20%.

In the Slovak company, vacancies are advertised on company notice boards. Thus, current employees tend to introduce suitable recruits from among the people they know. If such recruits manage to work for the company for 6 months, referees are given a financial reward of EUR 50. If there is a shortage of applicants, an internal company database is used which is updated on a regular basis. If employee referral system and internal database are of no use, the Office of Labour, Social Affairs and Family is contacted to check suitable candidates in their database. In the Slovak company, CVs are first studied by the HR managers. When applicants meet the requirements for the position of an operator, they are invited to the company. Applicants have to hand in their CVs and fill in a company job application form. Upon arrival, an applicant receives basic information about the company, then s/she goes to the production area where s/he receives information about the conditions of work and the job itself. S/he is toured by the production foreman who goes through his/her CV while focusing on manual work, manual skills, and work experience. The last stage is the final decision on hiring/rejecting a candidate made by the production foreman. The production foreman and the successful candidate agree on the beginning of the employment, and then the candidate proceeds to the HR department. The data on recruitment techniques and the percentage of their use by both companies in 2016 are given in Table 1.

Table 1. Recruitment techniques in an American and Slovak company in 2016

Method	American Company/used in recruitment in %	Slovak Company/ used in recruitment in %
Newspaper advertisement	No	No
Ads on internet portals	Yes/79%	No
Ads on noticeboards	Yes	Yes
Cooperation with educational institutions	No	No
Cooperation with the Employment Office	No	Yes/5%
Employee referral system	No	Yes/85% *
Individual applications	Yes/1%	Yes/10%
E-recruitment	No	No
Career fairs	No	No
Job agencies (specializing in recruitment and selection)	No	No
Employee hiring	Yes/20%	No
Open Door Days	No	No

* ads on noticeboards and employee referral system are considered to be interconnected

Source: Authors' own based on the interview results

It follows from Table 1 that companies employ 4 recruitment methods each. The most relevant for the American company are advertisements placed on the profesia.sk job portal and Employee hiring whereas employee referral and individual applications sent by applicants are the most relevant for the Slovak company. Since vacancies advertised on noticeboards in a company and employee referral system are hard to be distinguished or separated from each other, 85% employability was assigned to employee referral system only, whereas ads posted on noticeboards within the given organization are included in that value. In this relation, the economic aspect of employee referral system used in the Slovak company is worth noting as there are no costs involved in recruiting candidates.

B. Description of the set-up and changes in selection methods in both companies.

The branch of an American company was established in 2008. At that time, the first employees were relocated from a branch of the same company based in the Czech Republic to Slovakia. Methods of attracting potential employees were ads on a job portal (profesia.sk), ads placed in local newspaper and employee referral system. Nowadays, the company no longer places ads in a local newspaper for ever decreasing number of candidates attracted this way. Another reason were applicants coming to the plant unexpectedly which was disrupting the HR department activities. Currently, the company only places ads on a job portal, uses services of job agencies and rarely utilizes an employee referral system. Key selection methods were decided to be looking at CVs and semi-structured interviews. Negative feedback from the production and quality department and high turnover rate made HR department modify these techniques. Thus, a second interview round with the production team leader present and practical tests were added. Since the turnover rate did not go dramatically down, HR and production managers made a more detailed review of the selection techniques, and the so called “response time” between the first interview and the response by the potential candidate was introduced. The response time checks whether the candidate has a genuine interest in working in the company and whether s/he finds the job to be suitable for him/her. In order to further enhance the selection process, the original candidate profile was complemented with additional competences required for the given job performance.

Table 2. Selection methods employed in an American and Slovak company in 2016

Method	Method validity	American company	Slovak company	American company / performed by	Slovak company / performed by	American Company / Remarks	Slovak company / Remarks
Application forms	Not available	In use	In use	HR manager	HR manager	Focused on the position	Focused on basic information
Studying CVs	0.4	In use	In use	HR manager	HR manager		
Testing work ability	0.4	In use	Not in use	HR manager		Evaluated by an expert	
Practical tests	0.5	In use	Not in use	Production team leader			
Assessment centre	0.4-0.7	Not in use	Not in use				
Interview	Struct. 0.6 Non-struct. 0.3	In use	In use	HR manager Production leader	Production foreman	Semi-structured	Non-structured
Reference check	0.1	Not in use	Not in use				
External specialized job agencies	Not available	In use	Not in use	Job agencies		Employee hiring	

Source: Authors' own based on the interview results

Since the Slovak company was established through transformation from a former state-owned company, there was no need to have some specific recruitment and selection techniques in place. When a need for workers arose, an HR manager and production foreman opted for studying CVs,

application forms, and job interviews. These very same techniques have been in use up to now. Selection techniques used for a position of an operator in both companies in 2016 are given in Table 2.

The method validity is calculated according to the research by Pilbeam and Corbridge of 2006. It follows from Table 2 that the selection techniques in the American company are more complex than in the Slovak company. The American company makes use of 6 selection methods while the Slovak company utilizes only 3 of them. As there are 3 persons involved in selecting operators (HR manager, production leader, team leader) in the American company compared to 2 persons in charge of selection in the Slovak company (HR manager, foreman), the process of selection is more objective in the American company. The American company has the competences of a candidate clearly defined, and they are assessed through standardized methods (alertness test) and own tests (manual test in production, instruction comprehension test). The course of testing as well as their evaluation are clearly defined, thus candidates can be assessed and compared to one another without bias. Candidates in the Slovak company are selected through a non-structured interview which is less objective than a semi-structured interview employed in candidate selection in the American company. Table 3 lists theoretical prediction validity of employee selection methods in both companies.

Table 3. Prediction validity of employee employed in the American and Slovak companies

Method	American company	Slovak company
Studying CVs	0.4	0.4
Testing work ability	0.4	-
Practical testing	0.5	-
Interview	0.5	0.3
Average Prediction Validity of Selection Methods	0.48	0.35

Source: Authors' own

It follows from the above table that the average theoretical prediction validity of selection techniques in the American company is 0.48 and 0.35 in the Slovak company. Since the theoretical prediction validity of selection techniques employed in the American company is higher, the candidate assessment during an interview and his/her actual work performance should not contradict dramatically than in the Slovak company. We are aware of the limitations with regard to the theoretical prediction validity. Whether or not the theoretical prediction validity corresponds with the actual one depends not only on the quality of the method itself but also on the conditions of its implementation.

C./D. Assessment of the effectiveness of selection methods in terms of process (time-related costs) and result (turnover rate).

The data on the average time viewed as a cost that both companies spend on filling one position of an operator is given in Table 4.

Table 4. The average time seen as a cost that companies spend on filling one position of an operator

Method description	American company / Usage	Slovak company / Usage	American company / 1 person per an applicant (in hours)	Slovak company / 1 person per an applicant (in hours)
Application forms	In use	In use	0.5	1
Studying a CV	In use	In use	2.5	1.5
Testing work ability	In use	Not in use	2.5	0
Practical testing	In use	Not in use	2.5	0
Interview	In use	In use	2.5	1.5
External specialized job agencies	In use	Not in use	2	0

Source: Authors' own

It follows from the data given in Table 4 that the Slovak company spends more time only on selecting candidates through application forms at the expense of looking at CVs. The American company can process two application forms in order to fill a vacancy whereas the Slovak company can process five of them on average. With regard to the time devoted to additional two selection methods, i.e. looking at CVs and interviews, it is approximately one hour less in the Slovak company than in the American company. Thus, in order to fill a position of an operator, the American company needs three

times more hours than the Slovak company. The turnover rate in the American company was 2.7% in 2016 compared to 2% in the Slovak company.

3. Conclusion

Human Resource managers are in charge of managing the people in organizations. Technology makes the functions of Human Resource managers more demanding and challenging. One of the key missions of Human Resource managers is to build and nurture a pool of good employees in an organization, which begins with recruitment and selection. The main purpose of the paper was to describe and compare recruitment and selection methods employed in both companies. This preliminary research will serve as a basis for a larger scale comparative research to be conducted in cooperation with colleagues from the Universidad de Valencia and Universidad Católica de Valencia San Vicente Mártir in Spain. The pre-research intended to confirm or reject the appropriateness of the research questions formulated and research methods applied. The study is limited to conducting a structured interview with only two Human Resource officers in an American and Slovak company operating in Slovakia.

It was found that companies employ 4 recruitment methods each. The most relevant for the American company are advertisements placed on the profesia.sk job portal and that of employee hiring whereas employee referral and individual applications sent by applicants are the most relevant for the Slovak company. Since vacancies advertised on noticeboards in a company and employee referral system are hard to be distinguished or separated from each other, 85% employability was assigned to employee referral system only, whereas ads posted on noticeboards within the given organization are included. In this relation, the economic aspect of employee referral system used in the Slovak company is worth noting as there are no costs involved in recruiting candidates.

Regarding the selection techniques, it was established that they are more complex in the American company than in the Slovak company. The American company make use of 6 selection methods while the Slovak company utilizes only 3 of them. As there are 3 persons involved in selecting operators in the American company compared to 2 persons in charge of selection in the Slovak company, the process of selection tends to be more objective in the American company. The American company has the competences of a candidate clearly defined, and candidates are assessed through standardized methods and own tests. The course of testing as well as their evaluation are clearly defined, thus candidates can be assessed and compared to one another without bias. Candidates in the Slovak company are selected through a non-structured interview which is less objective than a semi-structured interview employed in candidate selection in the American company. In terms of time efficiency, the Slovak company spends more time on selecting candidates through studying application forms rather than looking at CVs. Whereas the American company can process two questionnaires in order to fill a vacancy, the Slovak company can process five of them on average. With regard to the time devoted to additional two selection methods, i.e. looking at CVs and interview, it is approximately one hour less in the Slovak company than in the American company. Thus, in order to fill a position of an operator, the American company needs three times more hours than the Slovak company. With the same amount of costs, it is suggested that the American company cooperates more with specialized agencies whereas testing should be identical with that of used by the company. The company should have the testing results available before the agency workers arrive in the company. They should also undergo practical testing in the company to see whether agency workers are fit for the position of an operator. The Slovak company should have more people involved in conducting an interview in order the interview results to be more objective and reliable. It is also advisable for the Slovak company to conduct a semi-structured interview instead of a non-structured interview in order to provide applicants with detailed information regarding the job, to compare the job applicants with one another, and to decrease discrimination. The introduction of simple testing of manual skills should also be considered in the Slovak company. The turnover rate in the American company was 2.7% in 2016 compared to 2% in the Slovak company. The turnover rates seem to be reasonable however, they may change with the volume of production required or macro-economic factors such as for instance unemployment rate.

References

- Armstrong, M. (2006). *A Handbook of Human Resource Management Practice*. London and Philadelphia: Kogan Page.
- Blašková, M. (1998). *Manažment ľudských zdrojov*. Žilina: Žilinská univerzita v Žiline.
- Ciani, O., Armeni, P., Boscolo, P.R., Cavazza M., Jommi, C., Tarricone, R. (2016). De innovatione: The Concept of Innovation for Medical Technologies and its Implications for Healthcare Policy-making. *Health Policy and Technology*, vol. 5, iss. 1, pp. 47-64.
- DeCenzo, D.A., Robbins, S.P. (2010). *Fundamentals of Human Resource Management*. Hoboken: John Wiley&Sons, Inc.
- Drábiková, M. (2008). *Základné nástroje a súčasné trendy personálneho manažmentu*. Bratislava: Metodicko-pedagogické centrum v Bratislave.
- Fauzia, S., Budiningsih, I., Djaelani, A., Masduki, A. (2017). Dominant Factors Affecting the Behavior of Innovative Employees. *Polish Journal of Management Studies*, vol. 16, iss.1, pp. 32-40.
- Grenčíková, A., Vojtovič, S., Gullerová, M. (2013). Staff Qualification and the Quality of Tourism-related Services in the Nitra Region. *Bulletin of Geography. Socio-economic Series*. vol. 21, pp. 41-48.
- Hamel, G. (2009). Moon Shots for Management. *Harvard Business Review*. vol. 87, iss. 2, pp. 1-10.
- Koubek, J. (2009). *Řízení lidských zdrojů*. Praha: Management Press.
- Kozycka, K., Szopa, R. (2016). Managing of the Tourist Destinations Offer Based on the Dynamics and the Forecast of Tourist Movement. *Polish Journal of Management Studies*, vol. 14, iss.2, pp. 127-136.
- Krajňáková, E., Vojtovič, S. (2011). Priorities in the Methods and Forms of Higher Education. *8th International Conference on Efficiency and Responsibility in Education*, pp. 143-147. Prague: CZU.
- Lazányi, K., Bilan, Y. (2017). Generation Z on the Labour Market – Do They Trust Others within their Workplace? *Polish Journal of Management Studies*, vol. 16, iss.1, pp. 78-93.
- Mulgan, G., Tucker, S., Rushanara, A., Sanders, B. (2007). *Social Innovation. What it is, why it matters and how it can be accelerated*. London: The Basingstoke Press.
- Pilbeam, S., Corbridge, M. (2006). *People Resourcing: Contemporary HRM in Practice*. Essex: Pearson Education Limited.
- Porter, M.E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance with a New Introduction*. New York: First Free Press.
- Rennings, K. (2000). Redefining Innovation – Eco-Innovation Research and the Contribution from Ecological Economics. *Ecological Economics*, vol. 32, iss. 2, pp. 319-332.
- Ristic, M.R., Quereshi, T.M., Selakovic, M. (2017). Employee Motivation Strategies and Creation of Supportive Work Environment in Societies of Post-socialist Transformation. *Polish Journal of Management Studies*, vol. 15, iss.2, pp. 205-216.
- Schumpeter, J.A. (1934). The Theory of Economic Development: an Inquiry into Profits, Capital, Credit, Interest and the Business Cycle. *Harvard Economic Studies*, 46.
- Snell, S., Bohlander, G. (2011). *Managing Human Resources*. Mason: Cengage Learning.
- Szarková, M. (2009). *Psychológia pre manažérov a podnikateľov*. Bratislava: Sprint dva.
- Vojtovič, S., Krajňáková, E. (2014). Development of New Economy and Human Capital. *Vadyba Journal of Management*, vol. 25, iss. 2, pp. 145-150.
- Vojtovič, S., Karbach, R. (2014). New Economy and the Development of Creative Industry. *Vadyba Journal of Management*, vol. 25, iss. 2, pp. 139-143.
- Vojtovič, S. (2009). Ľudský potenciál ako facilitator rozvoja regiónu. Význam ľudského potenciálu v regionálnom rozvoji. *Zborník z vedeckej konferencie*, pp. 318-328. Podhájska: EEDA.
- Wolfe, R.A. (1994). Organizational Innovation: Review, Critique and Suggested Research Directions. *Journal of Management Studies*, vol. 31, iss. 3, pp. 405-431.
- Wright, P.M., Mc Mahan, G.C. (1992). Theoretical Perspectives for Strategic Human Resource Management. *Journal of Management*, vol. 18, iss. 2, pp. 295-320.

12. SCENARIOS OF ENTRY OF UKRAINIAN ENTERPRISES INTO GVCs

Abstract: The unprecedented in its pace development of newest information technologies has been the decisive trend in the changes to the technological mode taking place over the last decades. The processes of internationalization of economic activity, caused by a lack of resources in the conditions of accelerated technological and technical updating of all factors and means of production, are happening alongside that. Many countries thus consider their future part in the international division of labor dependent on the advancement of technological development by means of investing in human capital and improving innovation systems through participation in global value chains (GVCs). The modern economy of Ukraine is characterized by technological multimodality, since its individual components correspond to different technological orders, from the second to the fifth waves of innovation, which negatively affects its efficiency because of the fact that cooperation of enterprises with different technological modes leads to significant resource losses. In this way, for Ukraine, an understanding of the possible scenarios for joining GVCs is a topical issue, given the difficult initial conditions for this integration. This is the main focus of our paper. The results of the study substantiate that optimization can be achieved on the basis of developing the existing industrial and manufacturing base of a country based on innovations of the fifth and sixth technological modes. Also, three scenarios for the inclusion of Ukrainian enterprises into GVCs are offered, based on achieving a high degree of controlledness of the national economy, the ability to concentrate efforts and means on advancing in priority directions and development programs, and combining business, state and science vectors of interest.

Keywords: export potential, global value chains, international division of labor, wave of innovation.

JEL Classification: F12, O24, E23

1. Introduction

The rapid growth of international trade in intermediate goods actualized the study of GVCs and of the subsequent determination of a possible place in them for a particular country. The benefits of integration into said chains, the right policy choice for the gradual advancement upwards in the chain towards supplying products and services with high added value, as well as the problems of correctly assessing international trade for understanding the real situation in the world economy are topics of particular significance. It should be noted that despite the proclaimed strategy of increasing exports of high value added goods, the issue is not given sufficient attention in Ukraine. This leads to a lack of a unified policy regarding the country's gradual entrance onto the world market as a supplier of high value added goods, which is especially relevant during the period of declining tendencies on the world's raw material markets.

In the simulation of trade flows, it is necessary to understand that the estimates for the countries concerned reflect already established trends. In particular, the impossibility of distinguishing particular GVCs in the macrodata, in spite of the fact that, in reality, the routes of the movement of goods can be very and complicated, may lead to contradictory interpretations of the estimates. Moreover, speaking in terms of empirical analysis, the inability to take into account the critical factors for each GVC will lead to a shift in the obtained estimates.

In the world practice, different methods and tools for joining GVCs are used, and not every state is able to improve their position in the chain, often being simply embedded into chains under the control of TNCs (Lin, 2015). Some governments develop strategies consisting of a series of actions aimed at integrating in such a way as to maximize the benefits of integration (Sun, Hong, 2011; Pham, 2015; Feenstra, Hanson, 1997). Given the difficult initial conditions of possible integration, the formation of such a strategy is a topical issue for Ukraine.

¹ Assoc. Prof. Ganna Duginets Ph.D. Doctorate Student; 13 A Krakovskaya street, 107, Kiyv, Ukraine 02094, anna.duginets@gmail.com

* Corresponding author

For Ukraine, understanding the possible scenarios for joining GVCs is a very important issue, given the difficult initial conditions of integration. This is the main focus of this paper.

2. Literature Review

Developments in the study of the formation and development of global value chains are multidimensional and focus on the following subjects: the theoretical foundations of the international division of labor, vertical integration and transnationalization of the economy (Lundvall, Jurowetzki, Lema, 2015; Kindzersky, Yu, 2012; Pietrobelli, Rabellotti, 2011; Mazaraki, Duginets, 2016); investigation of the possibility of Ukraine's participation in international industrial-investment cooperation (Gladiy, Zvarych, 2011; Pidchoshka, 2012; Heyets, Ostashko, 2016); the practical aspects of determining the participation of countries in global value chains (Amador, 2015; Gereffi, Humphrey, Sturgeon, 2005; Dicken, 1998; Feenstra, Hanson, 1997; Sturgeon, Biesebroeck, 2010; Sun, Hong, 2011; Kaplinsky, Morris, 2001; Cheng, Kierzkowski, 2001; Kimura, Ando, 2005; Kraemer, Linden, Dedrick, 2011; Spencer, 2016). But despite the present achievements, the problem of integration of the Ukrainian economy and its economic agents into GVCs in the current conditions of transformation of world production has not yet seen a proper solution in the works of domestic scholars.

3. Methodology of Research

While assessing the potential and direction of the formation of GVCs in the Ukrainian economy, it is important to understand the synergy between the interaction of investments, domestic consumption and net exports as factors that determine the possibilities for the transformation of production chains and production infrastructure in general. In this connection, it is precisely the domestic investment demand that forms the production base for expanding commodity exports.

The scenarios proposed in the study were obtained using the method of system analysis (definition of problems of state regulation of the national economy and justification of horizontal and vertical instruments for its intensification and diversification), and the structural-functional method (analysis of the basic principles and approaches to the use of international instruments of balancing economic interests in the conditions of integration into the GVCs).

In modeling the possible scenarios of entry of Ukrainian enterprises into GVCs, it should be noted that the increase of domestic consumption is the main factor in the production of goods with high added value. The main objective in this case should be reducing exports of raw materials, followed by their processing within the country and increasing the share of intermediate and end-products with a high degree of processing, including by means of increasing labor productivity in agriculture.

Within the new model of growth and updating of the sectoral profile of GVCs, an increase in domestic consumption will be determined by the speed and quality of the the sectoral restructuring of the economy. The purposefulness, systematic character and comprehensiveness of understanding of a general model for Ukraine's integration into GVCs is impossible without a formulated method of achieving the end goal. Thus, the purpose of simulation is the formation of advanced production on the basis of activating the innovation-investment model of development for entry into non-raw material segments of GVCs. Target milestones: modernization of existing and creation of new jobs with a competitive level of equipment and wages, increasing the share of technologies of the fifth and sixth technological modes in the production processes, ensuring the filling of the domestic market with high-quality domestic industrial products (within the framework of implementing the import supplementing strategy), development of export potential, and strengthening the positions of national producers on foreign markets. The object of management is the processes and relationships that affect the formation of advanced production as element of new or existing GVCs.

4. Results of Research

According to the results of the study, possible scenarios of the Ukrainian economy's development on the way of integration into GVCs (with other conditions being equal), which take into account the initial conditions at the end of 2017, are suggested.

Inertial/resource-based development scenario: constitutes the preservation of existing technological processes in production. It is based on exploiting competitive advantages in the form of cheap and scarce resources, environmental nihilism and monopolization of production. This model was actively used in Ukraine until the late 90's. As a result, the raw material focus of the industrial production

structure was formed, as well as the rigid dependence on the world market situation and import of energy resources, the underdeveloped domestic market, progressive pollution of the environment, deterioration of health and slow growth rates of the population's welfare. Possible prospects for joining GVCs in the implementation of the inertial model would be expressed in the integration into existing industrial relations of the European Union countries to a greater extent, as well as, to a lesser extent, of North American and Mediterranean countries, as an exporter of raw materials. This is facilitated, first of all, by the functioning of the DCFTA+ with EU, Free Trade Area with Canada, as well as the signing of the Pan-Euro-Mediterranean preferential rules of origin (PEM Convention) by Ukraine. The conclusion of a preferential trade agreement (PPT) can provide greater competitiveness of goods, thus increasing value added exports. It is also possible to formalize existing relationships between firms / countries and deepen the scope of cooperation, increasing the technological potential and competitiveness of firms, thereby leading to increased exports, i.e. growth rates of value added exports.

The existence of vocational schools increases the cost for new firms' (from third countries) entering into value chains. Consequently, exports of value added by enterprises (countries) already in the chains increases. Moreover, there may be an increase in exports of value added embodied in intermediate goods (which are then exported beyond the territory of the vocational training area).

The inertial model increases the risk of "average income traps," as the division of production initiated by developing countries increases the risk that a particular economy (in this case, the economy of Ukraine) can be integrated into the chain only at the low cost and low qualification level.

Active/modernizational development scenario - conducting state policy aimed at introducing and disseminating advanced technologies (5th and 6th waves of innovation) in all spheres of the production process, as well as in the socio-economic life of the society, in order to restructure the country's exports. The mechanism of developing an active model is the accelerated modernization of industrial production on the basis of technological and financial borrowings and attracting capital of leading TNCs.

Firstly, the economies of partner countries can be viewed from the perspective of a unified production and economic strength, so that value added exports would be the higher, the greater the potential that the value chain would have. In this regard, the inclusion in GVCs through FDI can have a significant positive impact on the exports of value added in Ukraine. In particular, increasing the level of specialization through attracting FDI (both greenfield investments and brownfield investments) can lead to an increase in value added embodied in intermediate goods, for example, due to the realization of the effect of scale and through the increase of production efficiency (Head, Ries, 2004). Also, the implementation of FDI can lead to the formation of new GVC routes. Secondly, and this applies primarily to Ukraine, FDI can contribute to increasing exports of services, thereby also increasing exports of value added. De-facto there should be a transition from labor-intensive industries to innovation-oriented, based on the latest technological mode. This process will inevitably be accompanied by the loss of enterprises involved in the labor-intensive sectors, which, in fact, currently do not meet sufficient revenue levels. This model is used by some developing countries, and in the early 2000s it was accepted for use in Ukraine. This allowed somewhat to intensify industrial production, increase the range of competitive products, expand international cooperation of industrial enterprises. However, "over-the-top modernization", even with the use of borrowed innovations, although it raises the competitiveness of domestic producers, but in general only establishes the peripheral status of the industry for servicing the needs of the industrial center.

Neo-industrial scenario. Economically developed countries, starting in the last quarter of the previous century, began to actively use the strategy of industrial development based on new industrialization. The practical implementation of this model involves positioning as a participant in modern production and economic strategies and developing innovative potential and science-intensive technologies, which allows for introducing a new structure and the modern economic parameters into the development of own industry. Development according to the neo-industrial scenario implies:

- active and effective interaction and partnership of the state, business and society in the framework of development and implementation of a new industrial policy based on the balance of interests of the parties, maximizing their economic and organizational potential, and systematically coordinating goals, plans and actions;
- the full use of the potential of entrepreneurial freedom and investment-innovation activity within the framework of agreed goals and development priorities;

- use of opportunities provided by modern forms of organizing industrial production, distribution and promotion of products on the markets, which have shown their high efficiency in international practice. Integration into GVCs in segments with high added value, as well as the development of other network structures and regional clusters, is a priority.

Within the framework of the neo-industrial model, partial use of other variants of industrial development (resource-based, modernizational, etc.) may be used, provided they are effective for addressing specific sectoral and / or territorial tasks. At the same time, in order to minimize the risk that local companies will remain stuck in the lower chains of GVCs, with little to zero chances to move up in the value added production chain, targeted policy measures are needed to support their participation in activities that provide higher added value. In this case, the main strategic interests of the state lie in maintaining and efficiently increasing the national industrial potential in its own territory and relying predominantly on its own resource base, while taking into account the modern environmental requirements and maintaining a sufficient level of diversification (in terms of product and technological structure).

The introduction of the neo-industrial scenario in a country's economic development will allow:

- to substantially improve the structure of the national industry on the basis of developing advanced production (with a gradual introduction of elements of "Industry 4.0" in advanced sectors);
- to accelerate the technological and assortment update of the existing production on the basis of forming favorable investment and innovation conditions. Cluster policy may become the main instrument: clusters, stimulating innovation, are the point of concentration of forces for the advancement within GVCs;
- the formation of a favorable environment for economic development through the combination of basic horizontal measures and their sectoral programs. First of all, this concerns the B2B sector, new technologies, expansion of export lending;
- to transform the structure of foreign trade flows of the country;
- to form and realize the potential of the “education-science-production” innovation triangle in addressing important issues of societal development. Addressing this will contribute to a better coordination and integration of science and production efforts, acceleration of generating new knowledge in strategic technological areas and the verification of the commercial capabilities of technologies under development.

Similarly, the priority of import supplementation policy over protectionism should be noted in this scenario, since its implementation has a negative impact on exports of value added. It is assumed that the use of “horizontal” industrial policy instruments and the implementation of the import supplement policy are more effective (in terms of increased exports and / or increments in value added exports, and the increase in the share of value added embodied in the country's exports) than the implementation of import substitution policy (the implementation of protectionist policies through tariff protection or use of non-tariff barriers).

Firstly, applying horizontal instruments of industrial policy can:

- accelerate (in the short and medium term) the growth rates of the economy;
- accelerate productivity growth;
- have a positive impact on employment;
- stimulate the creation, development and introduction of new technologies and products, at the same time distorting the mechanisms of competition to a lesser extent than protectionist policies.

On the one hand, these effects can contribute to the growth of gross exports (due to the export of new products, access to the market of high-tech services, etc.), which, while maintaining the same share of value added, will also lead to an increase in exports of value added. On the other hand, these effects may stimulate an increase of the share of national added value in the export of goods - while maintaining similar export volumes. Possession of unique knowledge and technologies can increase value added exports faster than actual gross exports.

Secondly, regarding protectionist policies, an increase in prices and expenditures/the growth rate of prices/expenditures would, as expected, slow down the growth of value added exports, affecting costs at all levels of GVCs.

Co-ordinated cooperation within the supply chain, backed by knowledge and experience accumulated at universities, can enable the concentration of available resources for the identification

and development of technologies with the maximum aggregate ecological effect for all participants. As universities are generally involved in the monitoring and development of supply chains of numerous state organizations, this provides the prospect of identifying and disseminating relevant knowledge and technology among various enterprises and sectors. Such additional technological competitive advantages that will contribute to the development of the national economy as a whole are the key consequence of using the hybrid model of the “triple helix” (Etzkowitz, Leydesdor, 1995).

In Ukraine it is advisable to begin the process of restoring connections within this triangle from the side of business: its dynamically developing demand (taking into account the specific needs of the market) and financial support can give a real impetus to large-scale industrial innovations. In this regard, it is necessary to fully learn from, for example, the experience of the CEE countries in stimulating the development of the automotive industry at the beginning of the XXI century (Sturgeon, Biesebroeck, 2010; Felden, 2015). Effective tools for financial support and integration processes in the field of research and development could be: a system of grants; program-targeted financing in the framework of scientific and technical programs, including the implementation of complex, interdisciplinary research; state demand for carrying out research and development, and public-private partnerships in the implementation of innovative projects.

At the same time, the state should develop forms and methods of selecting applicants for appropriate state resources and objective control over their effectiveness.

The substantiation of the scenario for integrating Ukrainian enterprises into GVCs allows making a number of conclusions both of general theoretical and methodological nature.

In the modern economy, the possibilities and strategy for the synthesis and development of GVCs are largely determined by the model of economic growth and economic policy. The theoretical assessment of these at the methodological level allows concluding that it is necessary to fundamentally distinguish between the two levels of construction of GVCs - macroeconomic and microeconomic. In this case, the real potential for market growth and economic stability of production and distribution chains is largely determined precisely at the macro level, where the institutional mix of exogenous conditions and factors of the development of certain organizational and economic forms of value creation is formed.

The dependence of construction and development of GVCs on the macro- and microeconomic levels is not of same direction. This further complicates the logic of the methodological update of global production. It is a question of orienting the model of economic growth on a certain configuration and institutional and market construction of value added chains. This correlation is not always possible, especially considering the fact that the business environment is very dynamic, which involves organizational mobility and the evolution of market logistics structures themselves. For example, China, or other countries (Japan, South Korea or Taiwan), in choosing between different models of growth and inclusion into GVCs, (making in some cases similar choices), relied on different growth resources and received different results (Cheng, Kierzkowski, 2001; Kimura, Ando, 2005; Spencer, 2016).

The third conclusion substantiates the logic of the first two, since it allows to empirically sharpening the impact of the models of inclusion into GVCs and the production and commodity-selling cooperation within the model of economic development of individual countries and their effectiveness.

On the one hand, the economic development strategies of countries influence the geometry and geography of production chains formed by them and the inclusion into GVCs. On the other hand, relying on the theory of value added management, one can appeal to the fact that the specificity of inclusion into GVCs determines the quality of a country's economic growth and the inclusion's effectiveness. Thus, overestimating the value of imported components included in the price of the final product means a decrease in the value added, that is, profitability. Such a link has a de-facto key value for identifying the key parameters of a country's foreign economic strategy. By developing this conclusion, we can indicate a reverse, not lesser dependence of the effectiveness of national producers' participation in GVCs on the level of import tariffs in a particular country. By increasing the fiscal burden, the state automatically contributes to the increase of the final product's value, reducing the price competitiveness of national exports.

In modern studies, a rather thorough analysis of the impact of economic policy on the state and performance of GVCs (Baldwin, 2011; World Bank, 2017) has already been presented. As an example, one can take China, in which the past economic policy had created rather tight conditions for

the development of low-cost labor-intensive chains of value added. It is also important to draw attention to the fact that the development of Chinese industrial infrastructure and manufacturing has created the most powerful preconditions for social uplift and equalization of living standards and wage increases. However, the crisis destruction of export-oriented chains created demand for changes in the vector of their development, which, without any doubt, is a derivative of changes in the economic policy of the country. At the same time, it would be reasonable to assume that the natural-evolutionary development of value creation chains with increasing over time labor costs would form conditions for their reorientation into the domestic market. However, the condition for the realization of such a turn is an inversion of the economic policy of the People's Republic of China.

Thus, a qualitative evolutionary transition in the development of GVCs can not be solved without the transformation of economic policy, which can be regarded as a necessary condition for such a transition. This conclusion is of great significance for the present and future development of the theory of global production. In turn, the actual practice of GVCs development, the practice of managing this process, should be based on a certain reference framework, through which the factors and conditions of the stability and economic efficiency of the workings of GVCs will be as transparent as possible. The most important thing here is that Ukrainian national producers, who are members of GVCs, should pay more attention to the extent to which the investment and trading scheme of cooperation between Ukraine and other countries in GVCs is sustainable and to what extent the economic policy pursued by the government will contribute to the stability of macroeconomic parameters of the functioning of Ukrainian enterprises, demand, supply etc.

A complement to the listed measures is a targeted sectoral policy, which, however, is not sufficient on its own. A sectoral approach (for example, the application of tariff and other trade restrictions, subsidies, export requirements, restrictions on foreign investments, etc.) can at best provide short-term positive changes in a particular industry (more often in a group of companies), but not a positive cumulative effect for the whole economy. Among the “horizontal” measures are the state's efforts to create favorable macroeconomic conditions, optimize the decision-making mechanism, develop human capital through education and employment, support science and innovation, trade and investment policy, improve the business climate, intensify foreign economic relations and international economic integration. Distinguishing this group of activities, including in the field of science, technology and innovation, corresponds to the approach of the school of innovation economy (Cooke, 2001; Etzkowitz, Leydesdor, 2000; Lundvall et al., 2015; Pietrobelli, Rabellotti, 2011) to identifying the connection between the nature of engagement in GVCs with the peculiarities of national innovation systems.

If we combine the proposed three scenarios, a comprehensive model of Ukraine's integration into GVCs can be proposed (Figure 1). An important stage of its implementation is the definition of so-called windows of opportunities - directions of development for the Ukrainian economy, most promising in terms of effective participation and achievement of leading positions. Moreover, for each particular industry, it may be about changing the share of capital or labor, including through increased productivity. The effect of increasing the attractiveness of value chains will be the higher, the greater the role of national enterprises in managing such chains and the technological dependence of importers and intermediate countries on domestic companies / goods and services becomes.

The issue is, however, not that simple. Much depends on the ability of companies to take the best positions in GVCs, since different activities in the same chain generate different income, and the so-called economic rent changes its proportion to different GVC links over time. Experience shows that it is higher in segments with less competition, where a company has more market power and the market is more secure – these are high-tech segments with a higher input of creative intellectual work: design, R & D, marketing, and services in general.

The ideal option for Ukrainian companies would be to do the following: move beyond the barrier of entry into a GVC caused by the chain's technical, logistical and other features, and to begin to perform a certain function. Further, by way of upgrading, on the one hand, to improve in the already occupied segment, and on the other - to accumulate the potential for the development of new functions in order to shift to more profitable segments of the GVC or to switch to more profitable GVCs. It is, however, necessary to understand that the competition of entry into the most profitable links is constantly increasing, while the incomes of their participants decrease.

5. Conclusion

Despite the high prevalence of the GVC phenomenon in the world economy, no comprehensive theoretical understanding of the fundamentals of participation strategy of countries in the chains has been formed; although there can be no universally effective strategies, for even in a globalized world, the specificity of the development of national economies remains. However, some of the universal tools that can help Ukrainian enterprises to integrate into GVCs effectively were discussed above. Guided by the knowledge gained through the study of the GVC phenomenon, it can be argued that a passive state policy of participation in GVCs, which does not involve any original and decisive steps, will unambiguously contribute only to the degradation, progression of the "Dutch disease" of the Ukrainian economy. Moreover, it seems that this disease already has the risk of passing to a chronic stage. Thus, Ukrainian enterprises do not have the opportunity to take a worthy place in the global value chain in the short-term. Most likely, this is a task for the future - distant future, in which it will be necessary to take into account the fact that the profitability of GVCs decreases constantly, while the competition increases. For the next 10 to 15 years, increasing the technological level of production and support of innovative transformations in society should be the main vector of development.

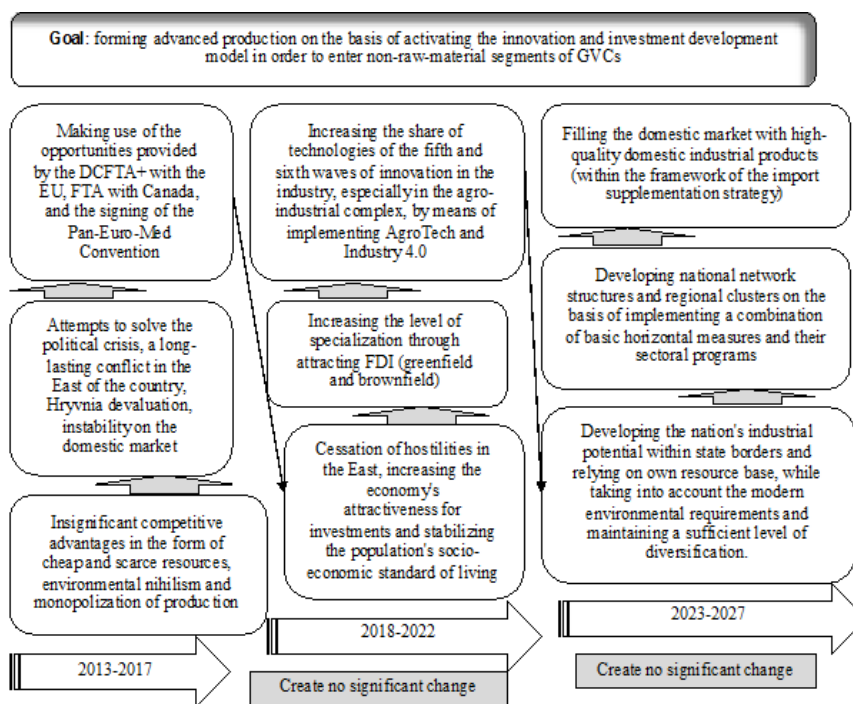


Figure 1. Comprehensive model of integration of Ukraine's economy into GVCs

Source: Own research

Our research should be regarded as a pilot project or a case study, and general conclusions could not be drawn. However, the present research may be considered as a first step in developing a concept for including Ukrainian enterprises into global value chains.

References

- Amador, J. (2015). *The Age of Global Value Chains*. CEPR's Policy Portal, Electronic resource, [online]. Available: <http://voxeu.org/content/age-global-value-chains-maps-and-policy-issues> [2017, December 07].
- Baldwin, R. (2011). Trade and Industrialisation after Globalisation's 2nd Unbundling: How Building and Joining a Supply Chain are Different and Why It Matters. *NBER Working Paper no 17716*, Cambridge: National Bureau of Economic Research.
- Cheng, L., Kierzkowski, H. (2001). *Global Production and Trade in East Asia*. New York: Kluwer Academic Press.
- Cooke, P. (2001). *Regional innovation systems, clusters, and the knowledge economy*. Oxford: Oxford University Press.

- Dicken, P. (1998). *Global shift. Transforming the World Economy*. Third Edition. London: Paul Chapman Publishing.
- Etzkowitz, H., Leydesdor, L. (1995). The Triple Helix - University-Industry-Government Relations: A Laboratory for Knowledge Based Economic Development. *EASST Review*, vol. 14, no. 1, pp. 14-19.
- Etzkowitz, H., Leydesdor, L. (2000). The Dynamics of Innovation: From National Systems and “Mode 2” to a Triple Helix of University– Industry–Government Relations. *Research Policy*, vol. 29, pp. 109-123.
- Feenstra, R., Hanson, G. (1997). Foreign Direct Investment and Relative Wages: Evidence from Mexico’s Maquiladoras, *Journal of International Economics*. vol. 42. iss. 3-4, pp. 371-394.
- Felden, E. (2015). A look at German-Korean economic ties. *Deutsche Welle (DW)*. [online]. Available: <http://www.dw.com/en/a-look-at-german-korean-economic-ties/a-18772159> [2017, December 05].
- Gereffi, G., Humphrey, J., Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, vol. 12, iss. 1, pp. 78-104.
- Gladiy, I., Zvarych, I. (2011). *Mezhdunarodnyye proizvodstvennyye seti v Yevrope*. Monografiya. Ternopol': Ekonomicheskaya mysl'.
- Head, K., Ries, J. (2004). Exporting and FDI as alternative strategies. *Oxford Review of Economic Policy*, vol. 20, iss. 3, pp. 409-423.
- Heyets, V., Ostashko, T. (2016). *Implementatsiya Uhody pro asotsiatsiyu mizh Ukrayinoyu ta YeS: ekonomichni vyklyky ta novi mozhlyvosti: naukova dopovid'*. DU "In-t ekon. ta prohnouzuv. NAN Ukrayiny".
- Kaplinsky, R., Morris, M. (2001). *A Manual for Value Chain Research*, Electronic version, [online]. Available: www.ids.ac.uk/ids/global [2017, December 01].
- Kimura, F., Ando, M. (2005). Two-Dimensional Fragmentation in East Asia: Conceptual Framework and Empirics. *International Review of Economics and Finance*. vol. 14. iss. 3, pp. 317-348.
- Kindzersky, Yu. (2012). Destruktiv promyshlennoy politiki v Ukraine. *Ekonomika Ukrainy*. no 12, pp. 4-16.
- Kraemer, K.L., Linden, G., Dedrick, J. (2011). *Capturing Value in Global Networks: Apple’s iPad and iPhone*: PCIC Working Paper, [online]. Available: <http://www.readbag.com/pcic-merage-uci-papers-2011-value-ipad-iphone> [2017, December 07].
- Lin, F. (2015). Learning by exporting effect in China revisited: An instrumental approach. *China Economic Review*, vol. 36, iss. c, pp. 1-13.
- Lundvall, B., Jurowetzki, R., Lema, R. (2015). *Combining the Global Value Chain and the Innovation System perspectives*. Paper presented at the DRUID Academy conference in Rebild, Aalborg, Denmark, January 21-23, [online]. Available: http://druid8.sit.aau.dk/acc_papers/p8ym61f17dacl4e0v3afdaitvntv.pdf [2017, December 02].
- Mazaraki, A., Duginets, A. (2016). Essence of international production networks: institutional analysis. Contemporary issues in economics, business and management. Conference Proceedings. Faculty of Economics University of Kragujevac, Kragujevac, The Republic of Serbia. *PRESSIA ltd. Belgrade*. pp. 265-270.
- Pham, T. (2015). Does exporting spur firm productivity? Evidence from Vietnam, *Journal of Southeast Asian Economies*, vol. 32, iss. 1, pp. 84-105.
- Pietrobelli, C., Rabellotti, R. (2011). Global Value Chains Meet Innovation Systems: Are ere Learning Opportunities for Developing Countries? *World Development*, vol. 39, iss 7, pp. 1261-1269.
- Pidchoshka, O.V. (2012). *Hlobal'nyy vartisnyy lantsyuh naftohazovoyi haluzi*. Aktual'ni problemy mizhnarodnykh vidnosyn, vol. 108, iss. 2, pp. 114-121.
- Spencer, R. (2016). Can an English suit be made in Cambodia? *BBC News*, [online]. Available: <http://www.bbc.com/news/magazine-35521559> [2017, December 03].
- Sturgeon, T., Biesebroeck, J. (2010). Effects of the Crisis on the Automotive Industry in Developing Countries. A Global Value Chain Perspective. (June 1, 2010). *World Bank Policy Research Working Paper No. 5330*, [online]. Available: [https://unstats.un.org/unsd/trade/s_geneva2011/refdocs/RDs/Automotive%20Industry%20and%20Crisis%20\(Sturgeon%20-%20Jun%202010\).pdf](https://unstats.un.org/unsd/trade/s_geneva2011/refdocs/RDs/Automotive%20Industry%20and%20Crisis%20(Sturgeon%20-%20Jun%202010).pdf) [2017, December 03].
- Sun, X., Hong, J. (2011). Exports, ownership and firm productivity: Evidence from China, *World Economy*, vol. 34, iss. 7, pp. 1199-121.
- The World Bank (2017). Global Value chain development report. Measuring and Analyzing the Impact of GVCs on Economic Development. *International Bank for Reconstruction and Development. Washington*, [online]. Available: https://www.wto.org/english/res_e/booksp_e/gvcs_report_2017.pdf [2017, December 02].

13. COPING STRATEGIES AND URBAN HOUSEHOLD FOOD INSECURITY

Abstract: Globally, the issue of food security has received significant attention by researchers. Furthermore several researchers indicated that rapid urbanization globally will pose new challenges towards food security. In this context the recent focus on food insecurity shifted to access, vulnerability and sustainability. Food insecurity can be defined as a state in which all people in households, at all times, have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life. The questions that arise are: How do food-insecure households in urban areas cope with food insecurity? How do they cope with food shortages? The purpose of this study is therefore to gain an understanding of food insecurity in urban areas, and how they cope with food insecurity. This knowledge may be important for policy makers and the management approach towards the problem of food insecurity. Several researchers in the field of food insecurity emphasized the fact global food security policies to address food insecurity may have gaps which may limit the potential impact, specifically with regards to urban food insecurity. Furthermore from a policy/management perspective current policies may lack a risk management perspective, since coping strategies used by households may increase the risk of malnutrition. A quantitative research method was employed whereby a stratified random sample of 600 households was taken from two low-income neighborhoods in South Africa. A linear regression model was used to determine the socio economic variables that may increase the likelihood of coping strategies employed by households. The study found that the use of coping strategies increase with respect to female headed households, unemployed heads of households and larger households. The study also shows that food insecure households use strategies that may impact negatively on their health. The study recommends from a public management perspective that urban food insecurity should be managed with a holistic management approach taking into account a management approach to mitigate the consequences of food insecurity. This study contributes to the existing knowledge on food insecurity from an urban management perspective.

Keywords: development economics, food insecurity, health economics, poverty, public management, urbanization.

JEL Classification: F 63, H 53, I 15, I 31, I 38, R 28, R 58

1. Introduction

Food security is a priority in many developing countries and is considered a fundamental human right (United Nations, 1976). International trends regarding, this phenomenon suggests that the problem of urban food insecurity is not unique to South Africa but is a global challenge (Crush, Frayne, 2011). Furthermore there were still 795 million people in the world who were undernourished in 2014 (FAO, 2015). In this context, food security is defined as “When all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food which meet their dietary needs and food preferences for an active and healthy life” (FAO, 1996). Furthermore, predictions are made that by 2030 more than 50 percent of residents in Africa will live in urban areas (Crush, Frayne, 2010). Urbanization will lead to new challenges for policymakers with regard to food insecurity and poverty alleviation in general. In this regard, more people may become vulnerable towards food insecurity, with the consequences of malnutrition. In this regard a more holistic management approach will be needed to address the growing problem of urban food insecurity. It is also a recognised fact that linkages between poverty and food insecurity exist (Kuku-Shittu et al., 2013).

Food insecurity exists when people do not have adequate physical, economic or social access to food (FAO, 1996). As a result, certain groups may be more vulnerable towards food insecurity.

When food shortages arises, households tend to use different coping strategies to maintain adequate access to food and these coping strategies normally reveal how severe household food shortages are (Wood et al., 2009). The question arises: How do food-insecure households in urban areas cope with food insecurity and to what extend may the use of coping strategies leads to less nutritional food with

¹ Wynand CJ Grobler Ph.D.; Hendrick Van Eck Boulevard, Vanderbijlpark, South Africa, Wynand.Grobler@nwu.ac.za

* Corresponding author

negative health consequences? The purpose of this study is to determine the extent of food insecurity in an urban area, to identify the socio economic variables that will predict the frequency of coping strategies used at the household level, and to identify coping strategies that may impact on the nutritional value of food consumed. This is done to gain a better understanding of the behaviour of food insecure households. The question can be asked: To what extent does the use of coping strategies increase the risk towards malnutrition and other negative health consequences? In this context Crush and Frayne (2011) argue that “in policy terms, regional, national and municipal government need to build on evidence from a comprehensive programme of research to create a new urban food security agenda” and “formulate city-specific food security plans”. Porvaznik, Ljudvigova and Vydrova (2017) based on evidence in Poland argue that holistic managerial competence may be necessary to address the problem of growing poverty and associated socio economic problems. The motivation for this study is therefore to determine which socio economic groups are more likely to be food insecure and which socio economic groups will use coping strategies to cope with food insecurity. This is done in the context to gain a better understanding of food insecurity in urban areas. The growing body of knowledge on urban food insecurity should guide the food security agenda and management approach.

2. Literature Review

The concept of food security can be traced back to the world food crises in 1972, however, the debate on food security started in 1974 with the World Food Conference in 1974 (FAO, 1996). In the 1990's the focus in food security studies shifted to access to food. In 1996, the Food and Agricultural Organization (FAO, 1996) includes the concept of access in the definition of food security as “food security exist when all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious foods which meets their dietary needs and food preferences for an active and healthy life”.

In this study the focus is on access and coping strategies used to overcome food shortages. The measurement of food insecurity is normally done via food consumption measurement, like the HFIAS (Maxwell, 1999). In the context of the study, researchers (Ghimere, 2014; Abdulla, 2015) approached the measurement of food insecurity from a coping strategy perspective. Wood et al. (2009) indicated that the diversity of coping strategies used by food insecure households reveals the severity of household food shortages.

Coping strategies can be defined as all strategically selected acts that individuals and households in poor socio-economic positions use to restrict their expenses or earn income to enable them to pay for basic necessities and not fall too far behind society's level of welfare (Snell, Staring, 2001). These coping strategies can be divided into “income soothing” and “consumption soothing” strategies (Davies, 1993). An income soothing strategy in this regard is income diversification and consumption soothing strategies are strategies involving limited consumption of food. This study is based on the coping strategies suggested by Maxwell and Caldwell (2008) and Mjonono, Ngidi and Hendriks (2009).

In a study by Wabwoba, Wakhangu and Omuterema (2016) using Pearson's chi-square tests, indicated a highly significant association between coping strategies and food insecurity. This association was tested in this study. Dare et al. (2013) indicated that a better understanding of food insecurity is needed at the household level, including coping strategies used to cope with food shortages.

Several studies (Ahmad, Farooq, 2010; Ruel, Garrett, 2004) focused on the requirements for successful urban programming towards food security in urban areas. In the study of Ruel and Garrett (2004) guiding principles for effective urban programming in the context of urban food and nutrition security are outlined. In a study by Crush and Frayne (2011) it is emphasized that policies and frameworks “have gaps” which may “limit their potential impact” with regard to urban food security. In this context Crush and Frayne (2011) indicated “the city is a critical development frontier and has particular dynamics and cross-scale linkages that need to be considered in order to understand-and ultimately address-the growing epidemic of urban food insecurity”. A study by Porvaznik, Ljudvigova and Vydrova (2017) shows how important holistic managerial competence is in sustainable development. In this managerial context no studies referred to the importance of risk management in managing food security. From a risk perspective households may skip meals, or buy less expensive food as a coping strategy to cope with food shortages which may lead to serious negative health consequences.

3. Methodology

3.1 Sample and Background of Study Area

In this study a total of 600 household heads were interviewed in two low-income neighborhoods in the Emfuleni municipal area, Southern Gauteng, South Africa in 2015. In order to determine the sample size that will provide statistically reliable results, that is representative of the population of the area, the study relied on the sample size and methodology used in similar surveys conducted in other similar locations in South African townships (Meyer, Nishimwe-Niyimbanira, 2016; Grobler, Larson, 2011). In this regard a stratified sample was used and only household heads were interviewed. The fieldworkers received training to interview respondents. Respondents were interviewed in their own language to prompt them about food security and coping strategies used in the household where food shortages existed. After cleaning the data a total of 580 questionnaires were used as part of the analyses. Bophelong and Sharpeville were randomly selected as low-income areas to be sampled in the Emfuleni Municipal area, Gauteng Province, South Africa. The population of Bophelong is 12,352 households of which 8152 households live in poverty and Sharpeville consist of 8,374 households of which 3609 households live in poverty (Statistics South Africa, 2011).

3.2 Measuring Instruments

In this study two different measuring scales were used namely the Household Food Insecurity Access Scale (HFIAS) and the Coping Strategy Index (CSI). The HFIAS was used to determine food insecurity at household level. The HFIAS was used to determine the prevalence of food insecurity at household level. . The HFIAS is a nine-question food-insecurity scale developed by Deitchler et al. (2010) with questions measuring anxiety around food supply, quality of food consumed, and experiences of hunger. On questions like “In the past four weeks did you worry that your household would not have enough food?” options available to respondents are, rarely, sometimes or often. The HFIAS measures food security status of a household on a continuum from 0 (food secure) to 27 (food insecure).The scale categorize households in a food secure, mildly food insecure, moderately food insecure and severely food insecure category. The HFIAS measures food insecurity and specifically access to food, however, vulnerability to food insecurity is not measured by this scale. Maxwell and Caldwell (2008) indicated that the CSI can be used to identify the vulnerable households, since the CSI take into consideration the behavior of households in a future context.

The CSI was used to identify the number of households vulnerable to food insecurity. In this context the frequency of coping strategies are perceived as a future predictor of food insecurity at household level. The CSI used in this study is based on the work of Maxwell and Caldwell (2008). In this regard the CSI measures the frequency and importance of different coping strategies used by households to cope with food shortages at household level. The CSI is a 12-item scale that measures the frequency of coping strategies used by a household. A respondent can indicate whether they use for example “limiting meals” on a daily basis, once a week, twice a week etc. The importance of the different coping strategies is then determined in focus groups and weighted to construct the Coping Strategies Index. In this study an adapted scale suggested by Mjonono, Ngidi and Hendriks (2009) was used. A multiple regression model with CSI as independent variable was used to identify the specific groups that may be vulnerable to food insecurity.

3.3 The Model

A multiple linear regression model (Field, 2015, p. 297) was used with the coping strategies index as dependent variable and household size, age of the head of the household, gender of the head of the household, marital status of the head of the household, employment status of the head of the household, income of the household and years schooling of the head of the household as independent variables. In this regard the frequency of use of coping strategies was used as a proxy for food insecurity at household level. In a study by Mjonono (2008) the CSI was used as a proxy for food insecurity at household level. In other words, a household with a high frequency of coping strategies to overcome food insecurity was regarded as more vulnerable towards food insecurity. The variables

selected in the model are based on similar studies done in Africa at the household level to determine food insecurity (Tefera, 2011).

The linear regression model is specified as follows:

$$CSI_i = \beta_0 + \beta_1 HouseholdSize_i + \beta_2 AgeHead_i + \beta_3 GenderHead_i + \beta_4 MaritalStatusHead_i + \beta_5 EmployStatusHead_i + \beta_6 Log IncomeHead_i + \beta_7 YearsSchoolingHead_i + \varepsilon_i$$

4. Results

4.1 Descriptive Statistics

A total of 580 households were analyzed in this study, to determine the food security status of the households. The minimum age of the household head is 22 years old with the oldest household head being 83 years of age. The mean age of households is 49.2 years with a standard deviation of 13.8. The minimum members per household are one member with the maximum members per household of 11. The mean size of households is 4.16 members per household with a standard deviation of 1.6. The mean number of years schooling are 9.49 years with a standard deviation of 3.6. The mean HFIAS score is 6.7 with a standard deviation of 6.9. The minimum household income is R 320, 00 and the maximum income R 35000, 00 with a mean income of R 7264, 20 and a standard deviation of R 5909, 10. The descriptive statistics of the sample is shown in table 1.

Table 1. Descriptive Statistics

Variable	N	Min.	Max.	Mean	Std. Dev.
Household Size	580	1.0	11.0	4.16	1.6
Age of Household head	580	22.0	83.0	49.4	13.8
Years of Schooling of Household head HFIAS Score	580	0	15.0	9.49	3.6
Household Income per month	580	0	27.0	6.7	6.9
Household Size	580	320.0	35000.0	7264.2	5909.1

Source: Own calculations

An analysis of the food security status of households based on the HFIAS score and categorization reveals a total number of 203 households in a severe food insecurity situation, or 35 percent of households in the sample. A total of 86 households or 14.83 percent are moderate food insecure while 64 households or 11.03 percent of the households are mildly food insecure. As a result 353 households can be considered food insecure in the sample of 580 households. A total of 227 households or 39.14 percent are food secure.

4.2 Coping Strategies Used by Households

The coping strategies used by the households in the sample to cope with food shortages are shown in Table 2. A total of 294 households in the sample indicated that they rely on less expensive food on a daily basis to cope with food shortages and at least 182 households use this strategy at least once a week. When Spearman's correlation coefficient is used this strategy is correlated with the HFIAS, a statistical significant positive correlation was found ($r=0.273$, $p<0.001$). This last group of 182 can be considered as vulnerable towards more severe food insecurity. A total of 163 households use the strategy to buy food on credit at least once a week. This strategy was statistically significant and correlates positively with the HFIAS ($r=0.332$, $p<0.001$). This group of 163 households can be considered vulnerable towards future food insecurity. A total of 274 households skip meals at least once a week. A statistical significant correlation exist between this strategy and HFIAS ($r=0.323$, $p<0.001$). This group of 274 households can be considered as vulnerable towards future food insecurity. At least 72 households limit portions on a daily basis, while a further 257 households limit portions at least once a week. A statistical significant correlation exist between this strategy and the HFIAS ($r=0.367$, $p<0.001$). A total of 284 households indicate that they buy only necessities on a daily basis to cope. This strategy was statistically significant and correlated with the HFIAS ($r=0.312$, $p<0.001$). A total of 261 households stick to their budget on a daily basis to cope with food shortages. This strategy was statistically significant and correlated with the HFIAS ($r=0.154$, $p<0.001$). A total of 192 households indicated that they maintain a food garden. This strategy was

statistically significant and correlated with the HFIAS ($r=0.181$, $p<0.001$). A total of 388 households indicated that they do not maintain a food garden. A total of 179 households indicated that they borrow from friends, while 401 households indicated that they do not borrow from friends. A total of 88 households send household members elsewhere to eat, while 492 households indicated that they do not use this strategy at all. A total of 106 households indicated that they restrict consumption of adults at least once a week in order for children to eat. This strategy was statistically significant and correlates positively with the HFIAS ($r=0.204$, $p<0.001$). A statistically significant positive correlation exist between this strategy and the HFIAS ($r=0.244$, $p<0.001$). A total of 173 households gather wild vegetables at least once a week. This strategy was statistically significant positive correlated with the HFIAS ($r=0.182$, $p<0.001$) However, it is important to note that the coping strategy to limit portions at meal times indicates the strongest correlation with the HFIAS score.

Table 2. Coping Strategies used by Households

Coping strategy	Daily	3-6 days/week	1-2 days/week	Once a week	Never	Mean	Correl. With HFIAS
Rely on less expensive food	294	41	31	110	104	4.178	0.273**
Purchase food on credit	14	20	54	163	329	0.076	0.332**
Skip meals	18	23	61	172	306	0.858	0.323**
Limited portion at meal times	72	29	67	161	251	1.562	0.367**
Buy necessities	284	66	64	86	81	4.325	0.312**
Stick to budget	261	65	56	62	136	3.989	0.154**
Maintain a food garden	75	20	42	55	388	1.277	0.181**
Borrow food from friends	15	14	34	116	401	0.563	0.281**
Sent household members to eat elsewhere	14	10	15	49	492	0.333	0.204**
Restrict consumption of adults in order for children to eat	14	10	30	52	474	0.391	0.244**
Sent household members to beg	12	17	6	31	517	0.281	0.158**
Gather wild vegetables	35	18	28	92	407	0.657	0.182**

***,**, and* denote significance at the 1%, 5% and 10% levels, respectively (two-tail test)

Source: Own calculations

The mean score in table 2 is determined by the number of days indicated by all heads of households in the sample, that they use a particular coping strategy

Table 3 illustrates the results of the multiple regression model. In the multiple regression model, household size, age of the household head, gender of the household head, employment status of the household head, marital status of the household head, years schooling of the household head and the income of the household were used as predictor variables and the Coping Strategies Index was used to represent the dependent variable. These socio-economic variables were used in the model to determine the vulnerability variables like gender, employment status, years schooling etc.

The multiple regression model, containing all the socio-economic variables as predictor variables was significant at the 1 percent level. The F-value of 57.409 was significant in the model ($p<0.001$). The multi-collinearity statistics in the model shows no multi-collinearity, with variance inflation factor (VIF) and tolerance values within specified limits. In this regard no VIF value is above 10, with an average of 1.551 (Pallant, 2013, p. 164). The adjusted R^2 value of 0.413 indicates that 40.6 percent of the variance in the coping strategies used can be explained by household size, gender of the household head, income of the household, marital status of the household head, age of the household head, employment of household head and years schooling of the household head. The coefficient of the household size in the model is positive meaning that an increase in members of a household will make a household more vulnerable towards food insecurity and lead to an increase in coping strategies used. The predictor household size was statistical significant in the model ($t=3.365$, $p<0.05$). The gender of the household head was statistical significant in the model ($t=3.159$, $p<0.05$). The coefficient of the predictor in the model is positive meaning that female-headed households are more vulnerable towards food insecurity thereby using more coping strategies than male counterparts. Gender was the second most important contributor in the model with an unstandardized B-value. The coefficient of employment status the household head was positive and the most important contributor

to the model with an unstandardized B-value of 14.054, meaning that unemployed members are vulnerable towards food insecurity, using more frequently coping strategies to cope with food shortages. Employment status as predictor was statistically significant in the model ($t=13.509$, $p<0.001$). Years schooling of the household head was statistically significant in the model, with a positive coefficient meaning that more years schooling do not necessary lower the vulnerability towards food insecurity, thereby increasing the number and frequency of coping strategies used to cope with food shortages ($t=2.219$, $p<0.05$). Income of the household was statistically significant in the model with a negative coefficient meaning that higher income lower the frequency of coping strategies used and as a result the vulnerability towards food insecurity ($t=-2.131$, $p<0.05$). Marital status and age of the household head were not statistically significant in the model. Thus, female-headed households, unemployed household heads and low-income households are more vulnerable towards food insecurity. In this context, these socio-economic groups will rely more frequently on coping strategies.

Table 3. Results of Model

Variable	B	Std. Error	β	t	Sig.
Constant	15.244	5.638.0		2.704	0.007
Log Income	-1.441	0.676	-0.098	-2.131	0.033**
Household Size	0.880	0.261	0.117	3.365	0.001***
Age of Head	0.007	0.037	0.008	0.203	0.839
Gender of Head	2.754	0.872	0.110	3.159	0.002***
Employment Status	14.054	1.040	0.563	13.509	0.000***
Marital Status	-0.533	0.959	-0.021	-0.556	0.578
Years Schooling	0.329	0.148	0.096	2.219	0.027**

***Significant at the 0.01 level, **Significant at the 0.05 level, *Significant at the 0.1 level
F-value significant at 0.01 level, F-value= 57.409, $R^2=0.413$

Source: Own calculations

Thus, female-headed households, unemployed heads of household and low-income households will be more vulnerable towards food insecurity and may limit meals or buy lower quality food as means to cope with food shortages at household level.

5. Conclusion and Managerial Implications

This study has determined that the prevalence of food insecurity in urban low-income areas in South Africa is a problem. Furthermore, almost all households rely on coping strategies at least once a week to cope with food shortages. In this regard a significant number of households make use of income soothing strategies. This includes coping strategies like rely on less expensive food. However this coping strategy may lead to households buying food with low nutritional value. From this perspective it may be important to educate households in this regard. This may also necessitate policies that include a more holistic view on food security. In this context a lack of income as a result on unemployment may not be the only problem. Households who indicate that they are food secure may also ensure food security by opting for less nutritional food. In this context a more holistic approach to food security management may be needed. An approach to mitigate the negative consequences of food insecurity must form part of a policy framework to manage food insecurity in low income communities effectively. An analysis of coping strategies used indicates that a significant number of households rely on less expensive food, buy only necessities, and stick to the budget. In this context, a positive correlation between consumption soothing strategies applied and food insecurity scores exist. Therefore, the use of strategies to limit meals, skip meals or rely on the basic food groups correlates directly with food insecurity status at household level. The study indicates that the use of coping strategies can be used to predict food insecurity at household level. The limitation of the study is that Household Dietary Diversity was not considered and this may form part of future research.

References

Abdulla, A.M. (2015), Determinants of Household Food Security and Coping Strategies: the Case of Bule-Hora District, Bomana Zone, Oromia, Ethiopia. *European Journal of Food Sciences and Technology*, vol. 3, iss. 3, pp. 30-44.

- Ahmad, M., Farooq, U. (2010). The State of Food Security in Pakistan: Future Challenges and Coping Strategies. *The Pakistan Development Review*, 49.4 Part II (Winter 2010), pp. 903-923.
- Crush, J.S., Frayne, G.B. (2011) Urban food insecurity and the new international food security agenda. *Development Southern Africa*. [online]. Available: <https://doi.org/10.1080/0376835x.2011.605571>. [2017, December 05].
- Crush, J., Frayne, B. (2010). The invisible crisis: Urban Food Insecurity in Southern Africa. *AFSUN series No 1*, Cape Town.
- Davies, S. (1993). Are Coping Strategies a Cop Out? *IDS Bulletin*, vol. 24, iss.4, pp. 60-72.
- Dare, A., Siaka, M., Adebayo, B.A., Clara, R.B.O, Adebayo, M.S. (2013). Food security and coping strategies in South-West Nigeria. *Food Security*, vol. 5, pp. 407-414.
- Grobler, W.C.J., Larson, O. (2011). Estimating a system of demand equations for low income households from a biased survey of expenditures. *Studia Oeconomica*, vol. 56, iss.3, pp. 3-29.
- Deitchler, M., Ballard, T., Swindale, A. Coates, J. (2010), Validation of a Measure of Household Hunger for Cross-Cultural use. *FANTA 2*, USAID.
- Field, A. (2015). *Discovering Statistics Using IBM SPSS Statistics*, SAGE.
- FAO (Food and Agricultural Organization). (1996). Rome Declaration on World Food Security. [online]. Available: <http://www.fao.org/dorep/003/w3613e/w3613e00>. [2017, May 10].
- Food and Agricultural Organization (FAO). (2015). *The State of Food Insecurity in the World*. Rome: FAO.
- Ghimere, D., R. (2014), Household Food Security and Coping Strategies: Vulnerabilities and Capacities in Rural Communities. *International Journal of Scientific and Research Publications*, vol. 4, iss. 9.
- Kuku-Shittu, O., Mathiassen, A., Wadhwa, A., Myles, L., Ajibola, A. (2013). Comprehensive Food Security and Vulnerability Analysis. [online]. Available: <http://dspace.africaportal.org/jspui/bitstream/123456789/34803/1/ifpridp01275.pdf>. [2017, May 10].
- Maxwell, D., Caldwell, R. (2008). *The Coping Strategy Index, Field Methods Manual*, Second Edition [online]. Available: http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp211058.pdf. [2017, May 10].
- Meyer, D.F., Nishimwe-Niyimbanira, R. (2016). The impact of household size on poverty: An analysis of various low-income townships in the Northern Free State region, South Africa. *African Population Studies*. vol. 30, iss. 2, pp. 2283-2295.
- Mjonono, M. (2008). *An Investigation of Household Food Insecurity Coping Strategies in Umbumbulu*, MSc Agric dissertation, University of Kwa Zulu Natal, Pietermaritzburg.
- Mjonono, M., Ngidi, M., Hendriks, S. (2009). Investigating household food insecurity coping strategies and the impact of crop production on food security using coping strategy index (CSI), *Proceedings of the 17th International Farm Management Congress*, July 2009, Illinois, USA.
- Porvaznik, J., Ljudviová, L., Vydrova, J. (2017). The Importance of Holistic Managerial Competence and Social Maturity in Human Crisis. *Polish Journal of Management Studies*. vol. 15, iss. 1, pp. 163-173.
- Ruel, M.T., Garrett, J. (2004). Features of Urban Food and Nutrition Security and Considerations for Successful Urban Programming. *Journal of Agricultural and Development Economics*, vol. 1, iss. 2, pp. 242-271.
- Snel, E., Staring, R. (2001). Poverty, migration and coping strategies: an introduction. *European Journal of Anthropology*, vol. 38, pp. 7-22.
- Statistics South Africa. (2011), *Census 2011*, Pretoria: Government Printers.
- Tefera, E.S. (2011). *Determinants and Dimensions of Household Food Insecurity*, PhD Theses submitted, University of Malawi.
- United Nations. (1976). *General Declaration of Human Rights of 1948*. Washington.
- Wabwoba, M.S., Wakhungu, J.W. Omuterema, S. (2016). Household Food Insecurity Coping Strategies in Bungoma County, Kenya. *International Journal of Nutrition and Food Sciences*, vol. 4, iss. 6, pp. 713-716.
- Wood, D.K., Shultz, J.A, Butkus, S.N., Ballejos, M.E. (2009). Patterns of food coping strategies among food pantry clients. *Journal of Hunger and Environmental Nutrition*, vol. 4, iss. 2, pp. 185-202.

Valentas Gružasuskas¹
Kaunas University of Technology
Lithuania
Sergej Vojtovič²
University of Alexander Dubcek
Slovakia
Valentinas Navickas^{3*}
Kaunas University of Technology
Lithuania

14. CYBER-PHYSICAL SYSTEMS IMPACT TO SUPPLY CHAIN COMPETITIVENESS

Abstract: The growing world population, increasing urbanization level, growing number of small and medium enterprises and consumer demand for high quality, and variety products, and Just on Time delivery has drastically effected the competitiveness environment. Today businesses loses their competitiveness advantage due to ineffective supply chain management, because the majority of supply chain management approaches were developed in a more stable environment. To effectively cope with the changing environment the supply chain must be flexible and maintain certain level of redundancy, which would help to maintain competitiveness in the long run. Researchers amplify the necessity for companies to collaborate and form logistic clusters in order to maintain competitiveness. However, the authors of the paper identified that the main problem of logistic clusters is slow decision making, which influences the loss of flexibility and redundancy when increasing the size of the logistic cluster. The identified problem reduces the ability of the logistic cluster to cope with disruptions i.e. decreases supply chain competitiveness. Therefore, the goal of the paper is to develop a logistic cluster methodology by involving cyber-physical systems for daily operation management. From one side, the growing complexity of the logistic cluster decreases supply chain resilience. On the other side, proper redundancy and flexibility level requires high information sharing abilities in the cluster. The authors of the paper developed a methodology of logistic clusters' formation by implementing cyber-physical systems to increase information quality and decision making speed. The methodology consist of 4 phases: computability, commitment, innovation implementation and cluster management and monitoring. The proposed methodology was based on empirical research of the food industry, however it can be applied to any industry which has a trend to work with low quantity and high variety products.

Keywords: competitiveness, cyber-physical systems, decision making, logistic clusters, supply chain.

JEL Classification: L15, O32, M15

1. Introduction

The current business environment has changed dramatically. Before consumers used to purchase products in local markets and did not require such variability in the choice. However, continuously decreasing costs and more open purchasing channels such as e-commerce has led to new consumer habits. Today consumers require cheap products, with high variety delivered directly to their doorsteps. This would not be a problem in a stable environment, however rapid population growth, traffic jams and other malfunctions are causing the current supply chain to be ineffective. In the past few years, the growth of research related to supply chain resilience has increased. Supply chain resilience is defined as “the ability of a supply chain system to reduce the probabilities of a disruption, to reduce the consequences of those disruptions once they occur, and to reduce the time to recover normal performance” (Falasca, Zobel, Cook, 2008). The problem is that previous supply chain management (SCM) strategies have been develop in a more stable environment (Christopher, Holweg, 2011). Before the supply chain used to deliver large quantities of products to processing plants, warehouses and retail stores. However, the trend for e-commerce has required the supply chain to

¹ Valentas Gružasuskas Ph.D Student; Gediminost. 50-501, Kaunas, Lithuania, valentas.gruzauskas@ktu.lt

² Prof. Sergej Vojtovič; Študentská 1639/2, Trenčín, Slovakia, sergej.vojtovic@tnuni.sk

³ Prof. Valentinas Navickas; Gedimino St. 50-501, Kaunas, Lithuania, valna@ktu.lt

* Corresponding author

change to small quantity and high variety product distribution. This problem has become an even bigger concern for the food industry. The current food supply chain is ineffective due to high wastage of food (FAO, 2015). The food wastage problem will become an even bigger problem when the world population will increase together with the urbanization level (United Nations, 2015). The trend for organic food requires decreasing the length of the supply chain to cope with the necessary lead times. However, the complexity of the food chain which is caused by small and medium farmers is complicating this issue seven more (Dani, 2015). The United Nations identified that small-scale farmers produce over 70% of the world's food needs (FAO, 2015). Researchers amplify that one of the SCM approaches is to promote collaboration and form logistic clusters to decrease the ineffectiveness of the supply chain and maintain competitiveness (Costa, Soares, De Sousa, 2016; Scholten, Schilder, 2015). The scientific literature defines three types clusters, in this paper we will focus on logistic clusters (Navickas et al., 2016). There are empirical evidence, which identify that logistic clusters decrease management costs and provide competitiveness. However, other research identify that there are problems related to logistic cluster activities in the long term (Fawcett et al., 2015). In some cases the cluster becomes too complex, which decreases the effectiveness of the cluster to maintain their activities after disruptions (Mari, Lee, Memon, 2015). These disruptions can be simple malfunctions or drastic force majors which are caused by weather conditions, terrorists attacks etc. (Institute Business Continuity, 2015). In other cases, the problems are related to the lack of trust and commitment of the logistic cluster members (Childerhouse, et al., 2016). However, the main cause of these different problems is the same – operational ineffectiveness. It is important for a logistic cluster to form long-term strategies by considering tactical and operational levels also. The main problem is related to the missing link between supply chain competitiveness and decision-making. The logistic cluster losses efficiency due to complexity, because daily decisions are still made by humans. The authors of this paper identify that by implementing innovative technologies in the formation and management of the logistic cluster long term competitiveness can be achieved. The majority of research done analysis the information technology impact to the supply chain competitiveness, however new innovative technologies has appeared which requires to drastically change the SCM approach (Lioukas, Reuer, Zollo, 2016). These innovative technologies are Big Data analytics, Internet of Things (IoT) and Cyber-physical Systems (CPS) (Navickas, Gruzauskas, 2016). CPS combines every aspect of these technologies (Biswas, Sen, 2016). The problem is that CPS implementation in SCM is a new concept, with a majority of research done in advanced manufacturing concept, however only a limited amount done in SCM (Klötzer, Pflaum, 2015). The authors of the paper identify that by defining the computability criteria, developing a commitment strategy and implementing innovative technologies in the logistic cluster long term competitiveness advantage can be achieved. The authors' previous empirical evidence indicate the benefits of this approach. An agent-based modelling approach was used to identify the impact of information sharing to logistic cluster activities (redundancy approach). The model compared individual demand forecasting with group demand forecasting and determined the benefits of information sharing in different contingents. The second model was a dynamic model of the European Union food supply chain. The model compared 3 types of distribution strategies. The paper focused more on how to achieve flexibility trough supply chain design. The model also compared individual trucks with autonomous vehicles. These two empirical studies has been submitted for publishing, but still is in review process. Based on these developed empirical evidence the authors proposes a logistic cluster methodology, which can be used to increase supply chain competitiveness. To accomplish this goal several objectives must be accomplished:

1. To analyse the singularities of the current business environment;
2. To identify ineffectiveness of the current supply chain management approaches;
3. To develop a logistic cluster formation and management methodology.

2. Contingent Resource-Based View of the New Business Environment

Current business environment has drastically changed during the last decade. Previously the environment was more stable. However, today due to the globalization and drastically decreased production costs the approaches to competitiveness advantage has changed. "One gap consists of a lack of available research on firm-level practices that make supply chains resilient in responding appropriately to supply chain disruptions" (Park, 2011). In this paper, we will amplify the resource-based

view of competitiveness advantage. The resource-aware view describes competitiveness advantage as the ability of the organization to use tangible or intangible resources to maintain advantage when compared to other organizations (Barney, 2001). Several issues are important to understand. Firstly, that the resources are not necessary tangible, but they can also be intangible such as specific abilities of the organization, which are closely related to their strategy. “These days, orthodoxy recognize resources the merits of the dynamic, knowledge-based capabilities underpinning the positions organizations occupy in a sector or market” (Serrat, 2009). The traditional resource-aware understanding used to work, however today to rapidly changing environment the organization must also learn how to adapt and quickly recover from disruptions (Brandon-Jones et al., 2014). Therefore, the contingent resource-based view can better explain how organization strategies should be developed. Today it is not enough to simply maintain a resource, which would provide a competitiveness advantage, but also its necessary to have the abilities to quickly change or adapt the resource to certain contingences. The importance to adapt to the contingences is related to the upcoming challenges of the changing business environment. Firstly, it is essential to understand the background of the business environment. The industrial revolution firstly begun to reduce production costs. The second industrial revolution begun when mass production was invented. The second revolution drastically increased productivity, which amplified the appearance of multi-national companies, which activities have been described in the paper “Nature of the firm”. The paper analysis how transaction costs at that time were high, that there was a need to have one accountant for three employees (Coase, 1937). After that, the technologies developed to assure production quality such as Toyota production or Lean Management. Later, the third industrial revolution begun which reduced transactions costs to practically zero due to information systems. Before the third industrial revolution, Porter amplified the necessity for companies to maintain competitiveness advantage through the economies of scale principles and stated that internet is merely a new tool with a new layer on the old economy (Porter, 2001). However, today we see that these statements were not true. The economies of scale amplify the benefits of mass production and advertising. The principles of economies of scale still work, but only partly, therefore there are additional rules which must be added. Andreessen describes the trends of internet and business process automation, which are drastically changing the business environment (Andreessen, 2011). Today we are moving even forward, it is a movement from the World Wide Web to Mobile Media Mode. These technologies allows the consumers to get instantaneous access to every producer around the globe.

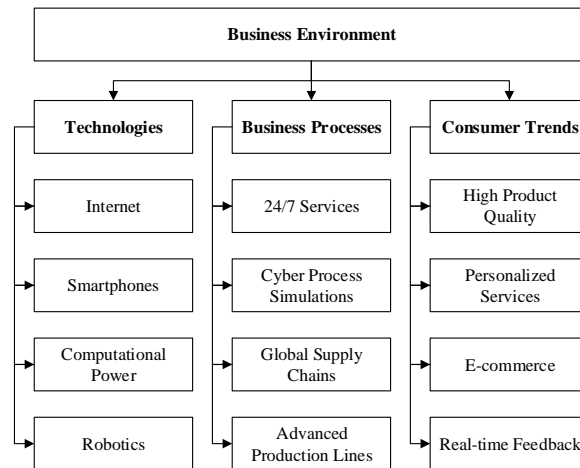


Figure 1. Technological development impact to the business environment

Source: Created by authors

Consumers started to demand more value added services such as customer service, direct delivery to the doorsteps etc. One of the most disturbance change developed because of mobile apps, which allows consumers to order products 24 hours, 7 days per week. Moreover, due to globalization the products can be ordered from any place in the world and the businesses' responsibility is to make the delivery at the lowest possible price. The development of the smartphones and social media increased the feedback of consumers related to product design, which requires the companies to constantly develop and change product assortment faster than before. Another key change due to technology

development is related to the testing of production or business processes. In the past, the business usually had to develop real simulations or product launch. Today due to simulations and high computational power, these tests can be done in cyber space. The simulations has also influenced drastically SCM, because possible decisions can be analysed virtually. In the past, the SCM decisions usually were based on experience and expertise, however now it is moving towards complete automation and analytics. The technological development has also effected the social demographic trends. Today the world population is rapidly growing and is estimated to reach 9 billion by 2050. Therefore, the current customer demand greatly exceeds traditional supply chain models. This problem is even a bigger concern for the food supply chain, which is ineffective and produces a lot of food waste (PICTET, 2014). Because of the trend for organic food, the wastage will even more increase, unless the SCM approaches will be changed. These trends require the industry to develop towards new approaches of management, which would increase the resilience in the system.

3. Rethinking the Supply Chain Management

In the past, the most efficient supply chain was to collaborate with wholesalers and retailers, which would provide convenient for consumers. However, now the convenience for consumers is the internet. Today consumers can purchase online from global market and expect delivery directly to their doorsteps. The traditional SCM approach is not suitable anymore, because low quantity orders causes ineffectivity and decreases competitiveness of companies. Many consumers tend to purchase products online or use traditional retail shops to simply see and touch the product, but then make the final purchase online. The world internet retailing market size in 2016 was 1.17 trillion USD and by 2020 it is estimated to grow to a size of 2.1trillionwith an AAGR of 13.33% (GMID, 2017).Because of this ineffectiveness, it is essential to shorten the supply chain. Today more and more companies removes wholesalers and retailers from their supply chain, and leaves only the production and logistics processes. Because of these changing trends new problems arises in the logistics context. „Most current SCM models emanate from a period of relative stability and, that there is considerable evidence that we will experience increasing turbulence in the future“ (Christopher, Holweg, 2011). Other researchers started to analyse the last mile delivery concept, which today is ineffective and takes about 30 percentage of total logistics costs (Lau, 2014). The ineffectivity of the last mile delivery is related to constant disruptions and growing urbanization levels around the globe. To decrease the negative effect of these disruptions several main strategies out of the literature analyse were determined. Based on the resource-based view the companies must have certain abilities, which would allow to maintain competitiveness and reduce then negative effect of disruptions (Brandon-Jones et al., 2014). Firstly, the supply chain must have the ability to be flexible, which requires to have visibility of the whole supply chain processes and speed to change current operations quickly (Ambulkar, Blackhurst, Grawe, 2015). Another approach is redundancy, which allows the companies to anticipate and be prepared for upcoming disruptions (Park, 2011). These strategies cannot be implemented in an individual organization without information sharing between other supply chain members (Scholten, Schilder, 2015). Therefore, many authors amplify the necessity to increase collaboration and form logistics clusters. The principal idea seams efficient and would increase competitiveness and resilience of the supply chain, however there is a constant report of low collaboration, lack of commitment (Pettit, Croxton, Fiksel, 2013). “Firms’ strategy and behaviour in supply chain collaborations are identified as the main reasons for supply chain failure” (Arvitrida, et al., 2016). Moreover, increased collaboration between the supply chain members, also increases complexity of the chain which limits the ability to cope with disruptions (Mari, Lee, Memon, 2015). The complexity of the logistic clusters creates negative effects, because there is a lack of decision making speed in the process. To decrease the limits of decision making speed new innovative technologies must be implemented in the logistic cluster. These innovative technologies mainly consist of CPS, which provides the ability to gather, analyse and utilize information. Authors amplify the benefits of IoT, Big Data Analytics, however the missing link in these approaches is information utilization. Large amount of data can be processed and useful insights can be provided, however the traditional SCM approaches still requires people to make decisions. The implementation of CPS in SCM processes could decrease the decision making speed. However, “CPS strongly rely on technological advancements, the creativity, flexibility and problem solving competence of human stakeholders is strongly needed for their operation“ (Frazzon et al., 2013).

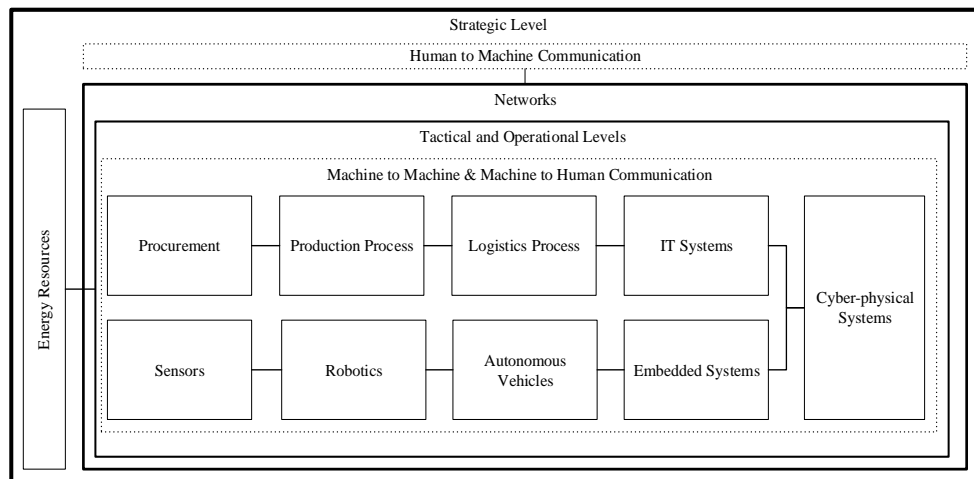


Figure 2. Cyber-physical systems usage in logistic clusters

Source: Created by authors

Figure 2 indicates the implementation area of CPS. IoT and Big data provides useful insights, while CPS is utilizing the information. These processes are done by machines and is using machine to machine or machine to human communication. The network represents a logistic cluster member. In each network, the technologies are considered as actors and each network should be operated independently, however have the possibility to connect to each other. The whole logistic clusters or network of networks should be controlled by a centralized station, which would allow the logistic cluster members to input strategic level decision for the CPS to allow the machines follow a previously designed strategy. In this case, the communication from the central management points to networks will be done through human to machine communication.

The authors of this publication has made several empirical studies regarding these approaches. One study analyse the information sharing impact to logistic cluster activities. The model used an agent-based approach and determined the benefits of collaborative demand forecasting. The model determined that information sharing could increase demand forecasting and optimize the inventory level. This model provided evidence of redundancy approach. The second model analysed the importance of selecting the right distributions strategies. The model consist of international freight forwarding, which was based on the European Union food industry. The model compared Just on Time, consolidation warehouses and partial freight gathering distributions strategies. It was determined that the most effective disruption strategy is to gather partial freight in the region and consolidate them in a central warehouse. Between the regions, multi-modal logistics methods can be used – trains or ships. The model also compared traditional trucks with autonomous vehicles it clearly showed the benefits of costs and minimal environment effect, which in the long run increased companies competitiveness advantage. „Shared autonomous vehicles could provide inexpensive mobility on-demand services“ (Krueger, Rashidi, Rose, 2016). The concept of information sharing will even more optimize tactical and operational strategies, because autonomous vehicles can be used to optimize route scheduling in an even higher level.

4. Methodology of Logistic Cluster Development

Based on the literature analysis and previously done empirical evidence a methodology of logistic cluster formation and management will be proposed. Because, „a supply chain's ability to collaboratively share information with its supply chain partners is one of the most important factors that enhance a supply chain's resilience“ (Gonul, 2015). The methodology consists of 4 phases such as computability, commitment innovation implementation and management and monitoring. Firstly, it is important to identify the computability issues when forming a logistic cluster. A logistic cluster is usually formed in a geographical convenience place, however today due to global supply chains and sourcing opportunities the formation does not necessary consist of only geographical criteria. It is also important to define correct industry type and activities. Before searching for possible partners for collaboration it is wise to use the international industry classification to preliminary, identify the

correct companies involved in a specific field. In our case, the empirical evidence was based on the food industry’s producers and suppliers. Some companies might use only train or ship transportation type and does not use land transportation. Other business models might require using air transportation. These aspects should be considered also when dealing with suppliers. In our case, the logistic cluster formation mostly focuses on reducing last mile delivery costs and design the supply chain for an e-commerce type of business model. Other important criteria is the complexity of the organization. Logistic clusters are usually formed to provide companies economies of scale benefits, which they could not achieve without the collaboration, therefore the model is more oriented for small and medium enterprises. The economy is moving towards entrepreneurship, therefore the methodology could be suitable to innovative business models.

Other aspect of logistic cluster formation is commitment. The majority of empirical evidence report consistent problem with lack of commitment. This problem is related with integrity and funding. Some members of the logistic cluster provide majority of funds when compared to other members of the cluster, however the benefits of the economies of scale are not shared equally. Moreover, some companies lack commitment and consistency in their activities. They form clusters however, does not maintain their role correctly in the process. Therefore, proper roles and capital investments must be discussed before forming a logistic cluster. Moreover, a precise plan to form operational, tactical and strategic level strategies must be formed. In the proposed methodology, CPS will accomplish the operational and tactical level activities. However, the strategic plan must be developed before and inputted as primary information for the CPS. Therefore, the logistic cluster members must plan their supply chain activities, capital investment and commitments.

The next phase of the methodology is innovation implementation. The main innovation implemented in the cluster is CPS. CPS allows maintaining high level of visibility in the logistic cluster, which provides insights for decision making. Big Data analytics possibilities were previously analysed in another publication (Navickas, Gružas, 2016).

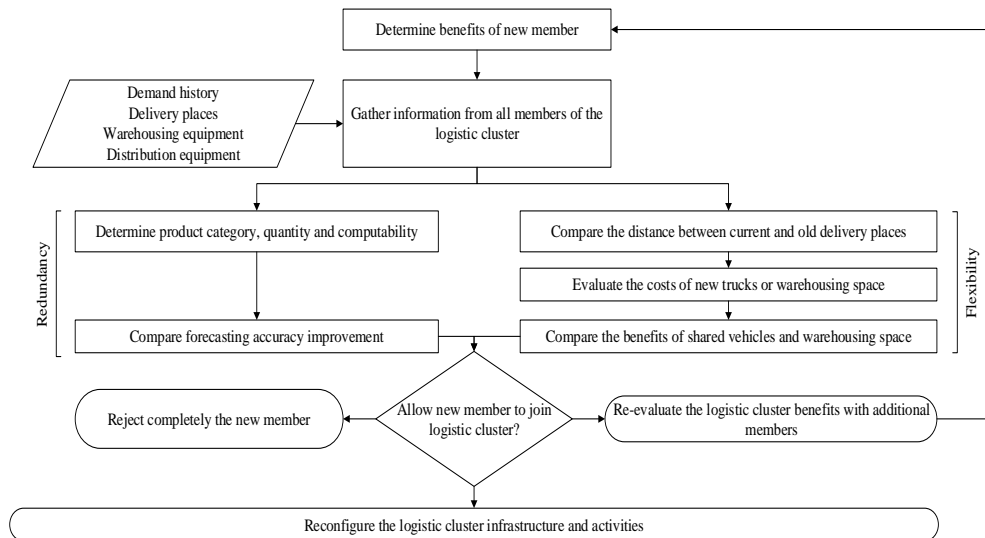


Figure 3. Decision making process of logistic cluster expenditure

Source: Created by authors

Other empirical evidence were done related with information sharing for collaborative demand forecasting and autonomous vehicles usage for shared vehicles concept or partial freight gathering. These both approaches identified that additional members in the logistic cluster can increase resilience and provide competitiveness to all members of the logistic cluster. However, there is a problem with complexity. Every new member joined in the cluster increases complexity and requires other members to consider not only their activities but also other members. This problem drastically increases complexity and limits the ability to cope with disruptions. Therefore, there is a limit of the size of cluster. The size of the logistic cluster must be determined individually. It is related with product assortment, organization size and market type in which the companies are working. Therefore, before forming a cluster information should be gathered from the companies and should be simulated the

possibility to use collaborative forecasting and shared vehicles concepts in the cluster. Only than it is possible to assure the benefits of the cluster and propose precise commitments and capital investments to the logistic cluster members. The decision process, which would allow evaluating correctly the benefits of every additional logistic cluster member is presented in figure 3.

The management aspect is related to key performance indicator and supply chain strategies. In the last phase, it is recommend to constantly measure redundancy and flexibility indexes to maintain long-term competitiveness and increase adaptively possibilities of the logistic cluster. Additional indicators such as costs, impact to environment could also be measured.

$$FI = \sum_t \sum_k 1 - \frac{(IO - AO) - (DOT - DL) + DO}{DOT - AO} \quad (1)$$

$$RI = 1 - \frac{RSCC}{ISCC} \quad (2)$$

Where: RSCC – Real Supply chain costs; ISCC – Ideal Supply chain costs

$$RSCC = \sum_t \left(\sum_k WHM(IL, AO) + \sum_k TC(D, DT, IO) \right) \quad (3)$$

$$ISCC = \sum_t \left(\sum_k WHM(IL, IO) + \sum_k TC(D, DT, IO) \right) \quad (4)$$

Where: AI - Available inventory; IO - Incoming orders; AO - Anticipated orders; DOT - Delivered on time; DL - Delivered late; DO - Delayed orders; t – Time period (day); k – index of cluster member

The key performance indicators of flexibility and redundancy can be used when deciding the jointment of the new member or for monitoring and management purpose.

5. Conclusion

The developed methodology shows how a logistic cluster can be formed and management by implementing cyber-physical systems (CPS) in the process. The contribution to supply chain management and clustering theory field is made from an in depth scientific literature analysis and previously done empirical evidence, which provided a better understatement of CPS benefits to supply chain resilience and logistic cluster formation. The advantages of the proposed methodology is related to adaptive abilities creation for the logistic cluster due to information utilization introduction in the daily operation management process. The limitations of the methodology is related to initial capital investment and requirement to make detail analysis before starting to effectively use information between logistic cluster members. The proposed methodology most effectively can be applied to increase urban logistics effectiveness by involving autonomous vehicles for product distribution. In the future, another simulation is planned to be done, which would compare traditional trucks with autonomous vehicles in urban logistics context and not only international logistics. There will be problems related with information gathering, storing and sharing when implementing autonomous vehicles in the supply chain management processes. Currently, autonomous vehicles can gather up to 2 gb/sec information, therefore it is necessary to determine which information is essential to gather in order to increase resilience of the supply chain. Moreover, efficient energy usage must also be considered, because large storage and processing servers consume a lot of electricity.

References

- Ambulkar, S., Blackhurst, J., Grawe, S. (2015). Firm's resilience to supply chain disruptions: Scale development and empirical examination. *Journal of Operations Management*, vol. 33-34, pp. 111-122.
- Andreessen, M. (2011). Why Software Is Eating The World. *Wall Street Journal*, [online]. Available: <https://www.wsj.com/articles/SB10001424053111903480904576512250915629460> [2017, September 20].
- Arvitrida, N. I., Robinson, S., Tako, A. A., Robertson, D. A. (2016). An agent-based model of supply chain collaboration: Investigating manufacturer loyalty. *Proceedings of the Operational Research Society Simulation Workshop 2016, SW 2016*, pp. 35-44.
- Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, vol. 27 iss. 6, pp. 643-650.
- Biswas, S., Sen, J. (2016). A Proposed Architecture for Big Data Driven Supply Chain Analytics. *The Iup Journal of Supply Chain Management*, vol. 8, iss. 3, pp. 7-33.

- Brandon-Jones, E., Squire, B., Autry, C. W., Petersen, K. J. (2014). A contingent resource based perspective of supply chain resilience and robustness. *Journal of Supply Chain Management*, vol. 50, iss. 3, pp. 55-73.
- Childerhouse, P., Kang, Y., Huo, B., Mathrani, S. (2016). Enablers of supply chain integration: interpersonal and interorganizational relationship perspectives. *Industrial Management & Data Systems*, vol. 116, iss. 4, pp. 838-855.
- Christopher, M., Holweg, M. (2011). Supply Chain 2.0: managing supply chains in the era of turbulence. *International Journal of Physical Distribution & Logistics Management*, vol. 41 iss. 1, pp. 63-82.
- Coase, R. H. (1937). The nature of the firm. *Economica*, vol. 4, pp. 386-405.
- Costa, E., Soares, A. L., De Sousa, J. P. (2016). Information, knowledge and collaboration management in the internationalisation of SMEs: A systematic literature review. *International Journal of Information Management*, vol. 36, iss. 4, pp. 557-569.
- Dani, S. (2015). *Food Supply Chain Management and Logistics: From Farm to Fork*, Kogan Page, Croydon, pp. 1 - 281.
- Fawcett, S. E., McCarter, M. W., Fawcett, A. M., Webb, G. S., Magnan, G. M. (2015). Why supply chain collaboration fails: the socio-structural view of resistance to relational strategies. *Supply Chain Management: An International Journal*, vol. 20, iss. 6, pp. 648-663.
- Food and Agriculture Organization (FAO). (2015). How to Feed the World in 2050, pp. 1-35.
- Falasca M., Zobel, C. W., Cook, D. (2008). A Decision Support Framework to Assess Supply Chain Resilience. *Proceedings of the 5th International ISCRAM Conference – Washington, DC, USA, May 2008*, Fiedrich, F., Van de Walle, B., (eds.), pp. 596-605.
- Frazzon, E. M., Hartmann, J., Makuschewitz, T., Scholz-Reiter, B. (2013). Towards socio-cyber-physical systems in production networks. *Procedia CIRP*, vol. 7, pp. 49-54.
- GMID, Euromonitor international pasport. (2017). Internet retailing market size, [online]. Available: <http://www.portal.euromonitor.com> [2017, September 28].
- Gonul, C. (2015). The Impact of Cloud Based Supply Chain Management on Supply Chain Resilience, Dissertation, University of North Texas, Denton, pp. 1-173.
- Institute Business Continuity. (2015). *Supply Chain Resilience Report 2015*, [online], Available: <https://www.riskmethods.net/resources/research/bci-supply-chain-resilience-2015.pdf> [2017, October 01].
- Klötzer, C., Pflaum, A. (2015). Cyber-Physical Systems (CPS) in Supply Chain Management – A definitional approach. *NOFOMA 2015 Post Conference Proceedings: Towards Sustainable Logistics and Supply Chain Management*, pp. 1-16.
- Lau, H. C. (2014). Collaborative Urban Logistics – Challenges, Current Practices and Future Research Last Mile Urban Logistics, [online]. Available: https://sis.smu.edu.sg/sites/default/files/sis/conference/lscs-urbanlog-ecom-sustain/speaker_slides/Collaborative_Urban_Logistics_-_Challenges_Current_Practices_and_Future_Research.pdf [2017, October 15].
- Lioukas, C. S., Reuer, J. J., Zollo, M. (2016). Effects of Information Technology Capabilities on Strategic Alliances: Implications for the Resource-Based View. *Journal of Management Studies*, vol. 53, iss. 2, pp. 161-183.
- Mari, S. I., Lee, Y. H., Memon, M. S. (2015). Adaptivity of Complex Network Topologies for Designing Resilient Supply Chain Networks Article. *International Journal of Logistics Systems and Management*, vol. 21, iss. 3, p. 365.
- Navickas, V., Baskutis, S., Gruzauskas, V., Kabasinskas, A. (2016). Warehouses Consolidation in the Logistic Clusters: Food Industrys Case. *Polish Journal of Management Studies*, vol. 14, iss. 1, pp. 174-183.
- Navickas, V., Gruzauskas, V. (2016). Big data concept in the food supply chain: Small markets case. *Scientific Annals of Economics and Business*, vol. 63, iss. 1, pp. 15-28.
- Park, K. (2011). *Flexible and Redundant Supply Chain Practices to Build Strategic Supply Chain Resilience: Contingent and Resource-based Perspectives*, Dissertation, The University of Toledo, Toledo, pp. 1-185.
- Pettit, T. J., Croxton, K. L., Fiksel, J. (2013). Ensuring Supply Chain Resilience: Development and Implementation of an Assessment Tool. *Journal of Business Logistics*, vol. 34, iss. 1, pp. 46-76.
- PICTET, (2014). Product Flash - Thematic Strategies News from the Advisory Board Agriculture: Cutting Food Waste From Farm To Fork, pp. 1-3.
- Scholten, K., Schilder, S. (2015). The role of collaboration in supply chain resilience. *Supply Chain Management: An International Journal*, vol. 20, iss. 4, pp. 471-484.
- Seitz, K. F., Nyhuis, P. (2015). Cyber-physical production systems combined with logistic models-a learning factory concept for an improved production planning and control. *Procedia CIRP*, vol. 32, pp. 92-97.
- Serrat, O. (2009). *Learning in strategic alliances*. *Knowledge Solutions*, [online]. Available: <http://www.adb.org/knowledgesolutions> [2017, October 26].
- United Nations. (2015). *World Population Prospects*, [online]. Available: https://esa.un.org/unpd/wpp/Publications/Files/WPP2017_KeyFindings.pdf [2017, October 10].

Tadeusz A. Grzeszczyk^{1*}
Warsaw University of Technology
Poland
Jacek Pelszyński²
Polish National Health Fund
Poland

15. BARRIERS TO IMPLEMENTATION OF SOCIAL SECURITY INFORMATION PROJECTS

Abstract: Until recently, exchange of Social Security Information (SSI) between public administration bodies in various countries of the European Union took place mostly in the form of traditional paper correspondence. In order to accelerate and improve these processes through new software and hardware solutions, development projects supporting their modern ICT-based transformation are implemented. These key projects include: Electronic Exchange of Social Security Information (EESSI) and Trans European Services for Telematics between Administrations (TESTA). Earlier projects related to SSI were not successful. The major objective of this paper focuses on identifying key multi-aspects barriers to implementation of public SSI projects. Considerations are carried out on strategic, tactical and operational levels. In this research, both participant and non-participant observation method, unstructured interviews, questionnaire survey among selected project stakeholders were used. The questionnaires are divided into three following sections: projects assumptions, project users and stimulants of effective actions. The study included medium (50-250 employees) and large organizations (over 250 employees) implementing investment ICT projects on the national scale. The examination results confirm slow progress in SSI projects implementation and significant barriers regarding motivating factors affecting performance of specialists implementing such projects. Future research may relate to extension of these results in various types of projects and above all they will serve development of public project evaluation systems in the important aspect of social efficiency estimating.

Keywords: information systems, project management, public project success, social security information projects.

JEL Classification: M15, O22, H43, D73, H83

1. Introduction

Development and public projects implemented in different European Union countries aim i.a. at increasing the scope of interoperable cross-border public administration services. Solutions implemented by these public institutions, allow for more effective realization of set social goals. The key to this is the implementation of a major EU principle on the free movement of citizens of all member states. Implementing this principle raises challenges among others in the fields of social security and IT systems supporting information exchange and decision-making. Big challenges and problems with SSI systems also occur in other developed countries in the world, e.g. in the USA (Yasar, 2009).

Up to now, the exchange of information between public administration bodies carrying out social security tasks, has taken place mainly in the form of traditional paper correspondence. As a result, the process of exchanging information was not optimal, especially about the time of servicing citizens. Because of identifying this problem, actions were taken to introduce more efficient forms of information exchange between public administration units. These actions consist of, among others, a number of development projects implementation in the EU members state, including two key projects called Trans European Services for Telematics between Administrations (TESTA) and Electronic Exchange of Social Security Information (EESSI).

The project to build a trans-European TESTA network linking EU agencies and public administration bodies in member countries is a way to achieving the strategic objectives set by the Council of the European Union and the European Commission. In the EU member states, this project is being implemented through the construction of the Wide Area Network (WAN), which is part of the

¹ Assoc. Prof. Tadeusz A. Grzeszczyk Ph.D. Ing.; ul. Narbutta 85, 02-524 Warszawa, Poland, tadeusz.grzeszczyk@pw.edu.pl

² Msc. Ing. Jacek Pelszyński; ul. Grojecka 186, 02-390 Warszawa, Poland, jacek.pelszynski@nfz.gov.pl

* Corresponding author

TESTA network. At the same time, using the existing Information and Communication Technologies (ICT) infrastructure, new cross-border IT systems (including EESSI) are being implemented to support processes for achieving sustainable growth, improving quality of life and ensuring social security.

It should also be noted that prior attempts to implement other ICT-related SSI solutions have not been successful. Non-participant observation, end-user's interviews, analyzes and evaluations of those projects may suggest that the likely causes of these failures could be the skeptical attitude of government officials and IT professionals to the projects being implemented and the lack of perception of their implementation as an opportunity for organizational or personal development.

The major objective of this paper focuses on identifying multi-aspects key barriers to implementation of public SSI projects. Considerations are carried out on strategic, tactical and operational levels. In this research, both participant and non-participant observation method, unstructured interviews, questionnaire survey among selected project stakeholders were used.

2. Literature Review

Project success research problems are widely deliberated in the literature e.g. (Koops et al., 2016; Prabhakar, 2008; Millhollan, Kaarst-Brown, 2016; Joslin, Muller, 2016). Identifying the essence of public project success is a more difficult task compared to commercial projects. Research results show a greater difficulty of managing public projects in comparison with managing other kinds of projects (Gasik, 2016). The research problem connected with barriers to public project implementation is important and current in view of the need for more and more complex projects under limited resources available. In the literature in this area, research results can be found, which confirm the validity and complexity of the problem of identifying main barriers of public project implementation and critical success factors (Brandenburg, 2014; Brandenburg et al., 2016). Expectations of often significantly diverse stakeholder groups with varied interests are difficult to understand and properly measured (Wirick, 2009, pp. 8-9).

The European Commission supports Corporate Social Responsibility Strategies (Martin-Ortega, Eroglu, 2009) and carries out many development projects by creating a strategy of responsibility for the following areas: employment, social affairs, counteracting the inclusion of social groups. Together with the Member States, the European Commission acts on the following topics: coordination and monitoring of national social policies, promoting and exchanging best practices in areas such as employment, poverty, social exclusion and pensions (Preotesi, 2016) as well as legislation and monitoring of law implementation in areas such as workplace law and coordination of EU social security systems based on fundamental value of solidarity (Martinovic, 2015).

The new EESSI information and communication technology system implemented by the European Commission together with the Directorate General for Information Technologies (DIGIT) enables the exchange of information via electronic media in the area related to the coordination of social security systems. This solution is based on a network infrastructure built by individual public administration bodies of EU member states, within the TESTA project. Based on ordinance of April 20, 2016 in Poland, the Ministry of Internal Affairs (MIA, in Polish: Ministerstwo Spraw Wewnętrznych) was the coordinating body in charge of conducting cooperation with authorities of other countries and institutions of the European Union in this area.

The TESTA network project was launched in 1996. The first stage of work was completed in 2000. The second generation, TESTA-II, was implemented between 2000 and 2006. This network is currently being used, inter alia, by the European Police Office (Europol). In turn, the third generation marked as sTESTA has priority tasks related to maintaining a high level of information and communication security. Between 2013 and 2020, a 4th generation TESTA-NG network is foreseen to facilitate cooperation between public administrations in different areas through secure, reliable and efficient data transmission. New challenges arise in the background of new advanced Big Data processing architecture and huge amounts of information which potentially might be used to provide better understanding of social security dynamics (Drewer, Miladinova, 2017).

Member States participating in the network building project are actively promoting the use of interoperable cross-border services among their public administrations – for example ePrescription and Patient Summary services (Katehakis, Pangalos, Prentza, 2016). These actions have allowed increasing the number of systems collecting and processing data. Currently the following are being

used (European Commission, 2017): about 80 IT services for different EU policies, mainly supporting exchanges between all EU countries, about 10 services at EU Member State level and about 15 services for other European bodies.

Interconnection of different systems via a single integrated network allows for the processing of geographically dispersed (located in different countries) data to increase the efficiency of the authorities using them – connections logical diagram of the regional network is shown in Figure 1.

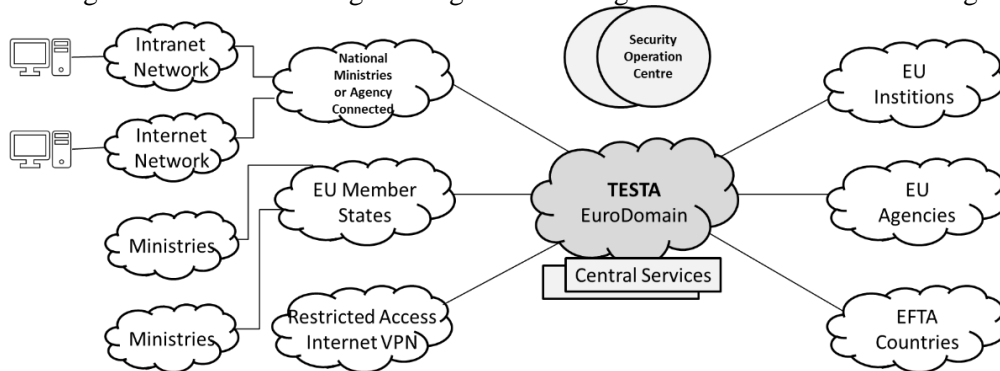


Figure 1. General wiring diagram of the institutions

Source: Own study on the basis of Wellens, Grech, 2014; MSWiA, 2015; Delgado-Azuara, Hilera-Gonzalez and Ruggia-Frick, 2012

In Poland, access to the TESTA network is provided by the MIA, which according to the so-called CIA triad standard ensures (EU Agency, 2017): confidentiality, integrity, availability of information in the network. To collect large amounts of data, the previously mentioned infrastructure is complemented by technologically advanced data center completed in December 2016. The following factors influenced the decision to build this data center (DIGIT, 2017):

- the necessity to provide its own independent and reliable infrastructure,
- the need to supply data to interoperable trans-European governance support systems in the single market,
- requirement of new financial and human resources systems to be launched for the European Commission,
- expectation of public administration authorities to strengthen the possibilities of data processing using cloud-based services,
- health requirements related to the necessity of shutting down the existing data center as a result of asbestos detection in the center's facilities in 2014.

A determining factor influencing the decision to launch an electronic information exchange project is the common practice of providing most of the information in paper form between national organizations, i.a. related to social security. Solutions of this kind should promote the integration of independent basic public services by social security organizations in different countries as well as reuse of data, information, knowledge, models, concepts, specifications, patterns and solutions (Delgado et al., 2013).

The purpose of the EESSI project is to ensure the electronic exchange of social security information. The exchange of this data is an important element in establishing cooperation between organizations implementing social security processes more effective. The main objective of this project is to increase the efficiency of cross-border communication and to improve cooperation between thirty-two national social security organizations. The group of countries participating in the EESSI project includes 28 EU Member States plus Iceland, Norway, Liechtenstein and Switzerland. The specific objectives of EESSI are to ensure the exchange of information within the framework of citizens' social security, considering all benefits related to social security: accidents at work, occupational diseases, family benefits, pension benefits, recovery of benefits and contributions, sick pay and health benefits and unemployment benefits.

In July 2017, the EESSI IT platform brought together some 15,000 social security organizations in different countries (Lonero, 2017). Integration of all organizations is planned to be completed by July 2019 in order to allow for a simple, fast and secure exchange of information.

Communication via EESSI on cross-border social security contracts allows the exchange of structured electronic documents. The data transmitted from one country is distributed via EESSI to a destination in another country. All organizations carrying out designated tasks shall carry them out in accordance with mutually agreed procedures.

Unification of the processes and principles of communication allow speeding up the exchange of information between EU Member States. Achieving such a defined goal will enable faster and more effective implementation of individual processes in organizations, including quicker calculation and payment of benefits due to citizens.

Summarizing the above, it can be pointed out that the specific aims related to the exchange of information between national public administrations include:

- standardization of electronic documents with translation into a selected national language in order to improve multilingual communication,
- introduction of safeguards to ensure correct and complete exchange of data, helping authorities to detect errors and fraud,
- optimizing the handling of cases, introducing standard electronic procedures, which will improve the correct use of social security coordination principles.

In turn, specific purposes related to the processing of personal data by public administration organizations include, are as following:

- using a common secure framework for cross-border data and information exchange between social security organizations,
- the exchange of information between national public administrations, without creating a centralized database gathering news and personal data. The content of the news will be accessible only to the pertinent institutions and EU member countries will remain responsible for ensuring a high level of data protection and safeguard, in line with EU legislation,
- compliance with modern and proven IT infrastructure security standards.

3. Research Methodology and Results

In addition to the unstructured interviews, the questionnaire survey was conducted among the selected project stakeholders. The surveyed group consisted of ICT specialists from medium (50-250 employees) and large organizations (over 250 employees) implementing ICT projects on the national scale. The respondents were directly connected with EESSI project or implemented other ICT projects. There were 53 participants, including 4 women (7.55% of respondents) and 49 men (92.45% of respondents).

On the basis of identified respondent's devices, a summary of operating systems and hardware platforms they used in the information exchange system was made. Results of the study indicate the advantage of mobile devices (52.83%) used for daily contacts, including answering questionnaires (Table 1).

Table 1. Devices used by respondents

No	Hardware platforms	Operating systems	Percentage
1	Desktop computer	Windows	47.17
2	Portable device		35.85
3	Apple mobile phone	iOS	7.55
4	Android mobile phone	Android	5.66
5	Microsoft Mobile	Windows Phone	3.77

Source: Own research

The survey was conducted in three stages in October 2017. The first stage involved the preparation of questions and the selection of the research group. The questionnaires are divided into three following sections: projects assumptions, project users and motivations of people implementing the project (stimulants of effective action).

It was assumed that the respondents should indicate the two most important criteria in each group and assign the weight on a 1-3 scale (1 - low severity, 2 - average void, 3 - high importance).

The second stage was to prepare an electronic version of the survey and conduct a pilot study to verify the functionality of the solution. In the third stage, the respondents were asked to fill in the questionnaire by e-mail. Respondents' activity was monitored using the number of responses received on a given day.

As a result of the survey the criteria on which people carrying out the project mainly focused have been identified. The most important ones were: realization of the main parameters of the project, the usefulness of the implemented project for the recipients and the ability to raise the qualifications of the person implementing the project.

Table 2. SSI projects evaluation criteria

Group	No	Criterion	Response Rate [%]	Average weight value
Criteria for successful project ending	1	Implementation of the main project parameters	48.11	2.76
	2	Timeliness of project implementation	24.53	2.65
	3	Implementation under the budget	16.04	2.65
	4	Quality objectives implementation	11.32	2.67
	Sum of values for a set of criteria			100.00
Criteria for relations with project recipients	5	Usability of the implemented project for recipients	41.51	2.73
	6	Acceptance of project effects by the recipients	33.96	2.75
	7	No negative impact of work on the environment	16.04	2.53
	8	Large number of project users (more than 100 users)	8.49	2.89
	Sum of values for a set of criteria			100.00
Criteria for motivating contractors	9	Possibility of qualification upgrading by the person implementing the project	39.62	2.79
	10	Gaining new competences	30.19	2.59
	11	Possibility of establishing new relations with other project participants	19.81	2.71
	12	Increasing prestige by participating in the project	10.38	2.64
	Sum of values for a set of criteria			100.00

Source: Own research

The least important criteria related to the implementation of the project have been identified by respondents as follows: achievement of quality objectives, a large number of project users (over 100 users) and raising personal prestige by participating in the project.

A comprehensive summary of the obtained results, considering the percentage of each response in a given set of questions, is presented in Table 2. The summary also includes information on the average values of weightings assigned to a given criterion.

In the survey, the respondents pointed out two most important criteria in each group and had the possibility to provide their own comments. Examples of comments are as follows.

- In my opinion, the implementation of ICT projects is complicated, consuming time and large amounts of money. That is why I stressed the need to implement the project in accordance with the budget and achieve its main parameters. Timeliness is important, too. A large number of project users is also an opportunity to establish new relations with other project participants.
- In ICT projects, it is necessary to create an interface that is simple, legible and unabsorbent for the user.
- Real time of project implementation is essential.
- Short project implementation time is important.

The graphical interpretation of the results is shown in Figure 2 The individual columns in the graphs correspond to points 1-12 in Table 2.

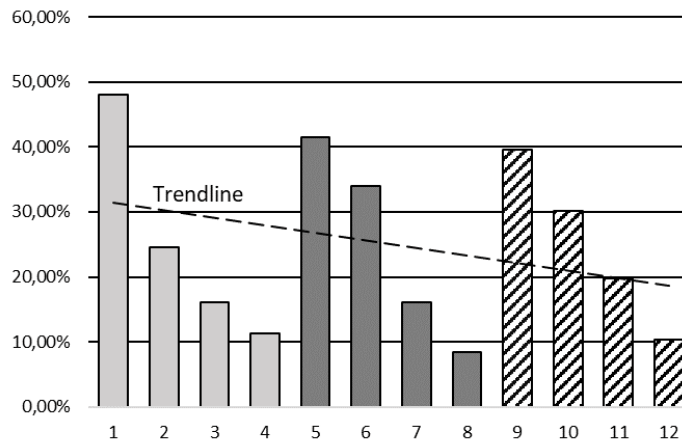


Figure 2. Survey results summary

Source: Own study

4. Main Barriers

The implementation of the aforementioned objectives related to the implementation of the EESSI project has a positive impact on the data and information exchange processes carried out by public administration bodies. Thanks to the implementation of projects in individual countries and the implementation of new ICT solutions, it is possible to observe an improvement in the broadly understood culture of the organization and the development of entities related to public administration. Undoubtedly, replacing a number of distributed applications with one system solution should reduce costs borne by organizations participating in the project and to streamline the stakeholder service process. However, the implementation of new projects using ICT solutions related to social security processes also faces certain barriers.

One of the important barriers related to ensuring access to the infrastructure is the process of connecting the organization to the TESTA network. The introduction of a peer-to-peer connection architecture significantly extends the process of accessing the network. The long waiting time for access to the network is associated with the use of paper-based applications in this process. Organizations that intend to join the existing ICT infrastructure must undergo a verification process before obtaining consent for connection to nodes administered by the MIA. It should be noted here that most of the organizations strive to transfer the tasks they execute on paper to the ICT system.

Key milestones for accessing infrastructure typically take several months, which is a relatively long process compared to other projects of similar complexity. These milestones are as follows:

- obtaining information about the nearest IT nodes of the MIA,
- obtaining permission to connect to a selected MIA node,
- collecting offers from telecommunication operators to make a link,
- announcement of a tender procedure to select the economic operator,
- obtaining consent for the performance of works by a contractor selected as a result of a tender,
- development of a data transmission link between the organization and the MIA node,
- link diagnostics, logical configuration, technical acceptance.

The process involved in physical integration of successive organizations into the existing infrastructure is time-consuming and costly. In many cases, two technical solutions need to be maintained for a long transition period.

During the interviews conducted with experts participating in social security projects, other barriers affecting the implementation of such projects were also identified. A tactical and operational problem occurring during the implementation of a distributed ICT system is the skeptical approach to implemented solutions at the level of local specialists. This problem is related to the management of their working time and responsibilities. Employees who carry out particular tasks have limited flexibility to act because of their involvement in the duties previously imposed on them. Implementation of the new solution is an additional task for them.

Another barrier is also constituted by habits associated with the processes implemented so far. Officers handling individual processes are used to implementing them on the basis of paper documentation. This barrier became particularly visible during earlier attempts to introduce

a distributed computer system. One of the factors negatively affecting the implementation was the limited use of graphical user interface (GUI). Examples of previous attempts can be identified as PROTECTUS with the former TESS pilot project. These projects formed the basis for identifying the main barriers related to the replacement of the new system, traditional solutions implemented by mass mailings and receiving paper correspondence (EESSI, 2017). In the current phase of the EESSI project, communication with public administration bodies is still dominated by the form of exchange of information in the form of paper correspondence.

In addition to the above-mentioned barriers, the following obstacles and potential causes of failures in the implementation of SSI public projects can also be mentioned:

- insufficiently developed qualitative assessment methods and systems (based on simplified quantitative parameters of the type of expenditure incurred and deadlines for implementation of individual project phases),
- lack of precise definition of the essence of success of individual ICT public projects,
- the built ICT systems are equipped with non-ergonomic interfaces which are unreadable and difficult to learn by users,
- the technologies proposed for deployment can sometimes be considered obsolete,
- the materials used may sometimes pose a significant threat to the environment and are incompatible with the idea of sustainable development,
- low prestige associated with participation in SSI projects and the related low interest among ICT specialists.

5. Conclusion

To reduce the existing barriers to implementation of SSI public projects, it is worth to consider undertaking further research related to the development of multifaceted methods of evaluating public projects, which should be examined in terms of both quantitative and qualitative criteria. These latter criteria are difficult to measure, but they have a strong impact on the results of the comprehensive evaluation. It is also necessary to reflect on the success of ICT public projects to facilitate evaluation research. Ensuring ergonomics, modernity and compatibility with the sustainability concept of the IT systems should be provided, as well as effective training for their future users. It is necessary to take action among ICT specialists to improve the prestige associated with participation in SSI projects.

In addition, it should be noted that the use of a graphical user interface, visualization of the operation process and visualization of relevant data are important for the efficient and effective functioning of the EESSI system and overcoming identified barriers. The visualization of processes using the time axis to illustrate the course of a given case must be carried out both in the current perspective and on the historical data base. It is also important to document the workflow between various organizational units in different countries. Currently, process visualization uses grouping of information, which is inspired by the solutions used in social networks. This solution is accepted by a specific user group. However, some users are critical of it, as it slows down the process of their adaptation to the new solution.

The assessment of the project's effectiveness also requires improvement, focusing mainly on the analysis of economic and financial factors as well as on the timeliness of execution of particular stages. It is also important that the elements related to the social and environmental impact are not analyzed in sufficient detail. In relation to drawing conclusions, it seems justified to carry out further studies with a multifaceted analysis. The aim of this research should be to optimize the costs incurred in order to achieve better social outcomes. The environmental impact aspect is also important, which can be implemented through the introduction of technologies limiting energy consumption, limiting radio radiation, reduction of noise by ICT devices and air conditioning.

References

- Brandenburg, H. (2014). The success of a public project and the conditions for its achievements – the results of the first phase of the survey. In H. Brandenburg, P. Sekuła. (Eds.), *Local and regional projects-best practice* (pp. 54-63). Katowice: University of Economics in Katowice.
- Brandenburg, H., Ficek-Wojciuch, K., Magdon, M., Sekuła, P. (2016). Public projects' stakeholders – success of public project according to the project management specialists. *Research Papers of Wrocław University of Economics*, vol. 418, pp. 41-51.

- Delgado, F., Oton, S., Ruggia R., Hilera J.R., Gutiérrez J.M. (2013). Proposal of an Interoperability Model for Social Security Information Systems. *Proceedings of the 15th International Conference on Enterprise Information Systems*, vol. 2, p. 454. Setubal: Institute for Systems and Technologies of Information, Control and Communication.
- Delgado-Azuara, F., Hilera-Gonzalez, J.R., Ruggia-Frick, R. (2012). Solutions for Electronic Exchange of Social Security Information in an International Context. *El Profesional de la Informacion*, vol. 21, iss. 4, p. 364.
- Directorate General for Informatics – DIGIT. (2016). *Inauguration of the European Commission's new Data Centre in Luxembourg*, [online]. Available: http://ec.europa.eu/newsroom/informatics/item-detail.cfm?item_id=51085 [2017, January 07].
- Drewer, D., Miladinova, V. (2017). The BIG DATA Challenge: Impact and opportunity of large quantities, of information under the Europol Regulation, *Computer Law & Security Review*, vol. 33, iss. 3, p. 307.
- European Commission. (2017). *A data communication network service, operated by the European Commission*, [online]. Available: https://ec.europa.eu/isa2/solutions/testa_en. [2017, September 07].
- European Commission. (2017). *Electronic Exchange of Social Security Information*, [online]. Available: <http://ec.europa.eu/idabc/en/document/7189/5637.html>. [2017, October 19].
- European Union Agency for Network and Information Security. (2016). *Guidelines for SMEs on the security of personal data processing*, [online]. Available: https://www.enisa.europa.eu/publications/guidelines-for-smes-on-the-security-of-personal-data-processing/at_download/fullReport. [2017, September 15].
- Gasik, S. (2016). Are Public Projects Different than Projects in other Sectors? Preliminary Results of Empirical Research. *Procedia Computer Science*, vol. 100, pp. 399-406.
- Joslin, R., Muller, R. (2016). The Relationship between Project Governance and Project Success. *International Journal of Project Management*, vol. 34, iss. 4, pp. 613-626.
- Katehakis, D.G., Pangalos, G., Prentza, A. (2016), Research note: A European ehealth space for moving cross-border eprescription and patient summary services forward. *Transforming Government: People, Process and Policy*, vol. 10, iss. 3, pp. 478-504.
- Koops, L., Bosch-Rekveltdt, M., Coman, L., Hertogh, M., Bakker, H. (2016). Identifying perspectives of public project managers on project success: Comparing viewpoints of managers from five countries in North-West Europe. *International Journal of Project Management*, vol. 34, iss. 5, pp. 874-889.
- Lonero, G. (2017). *Complete the setup of the Electronic Exchange of Social Security Information*, [online]. Available: <https://ec.europa.eu/futurium/en/egovernment4eu/pillar-2-15-eessi-electronic-exchange-social-security-information>. [2017, September 08].
- Martin-Ortega, O., Eroglu, M. (2009). The European Corporate Social Responsibility Strategy A pole of excellence? In J. Orbie, L. Tortell (Eds.), *European Union and the Social Dimension of Globalization - How the EU Influences the World Book* (pp. 166-185). Abingdon Oxford: Routledge.
- Martinovic, A. (2015). Solidarity as Key Determinant of Social Security Systems in the EU. *Revija za Socijalnu Politiku*, vol. 22, iss. 3, pp. 335-352.
- Millhollan C., Kaarst-Brown M. (2016). Lessons for IT Project Manager Efficacy: A Review of the Literature Associated with Project Success. *Project Management Journal*, vol. 47, iss. 5, pp. 89-106.
- Ministry of Digital Affairs. (2015). *Connect to the system. Technical requirements*, [online]. Available: <http://www.cepik.gov.pl/documents/19372/19468/Wymagania+techniczne+CEPIK+2.0/66ed5e13-fa48-4332-bc60-6e10fdea45d6>. [2017, January 07].
- Prabhakar, G.P. (2008). What is project success: A literature review. *International Journal of Business and Management*, vol. 3, iss. 9, pp. 3-10.
- Preotesi, M. (2016). Groups and Needs: Response of the Social Protection System in Nowadays Romania. *Revista de Cercetare si Interventie Sociala*, vol. 55, pp. 139-157.
- Wellens, P., Grech, A. (2014). *Interoperability Solutions for European Public Administrations*, [online]. Available: https://www.enisa.europa.eu/publications#c5=2007&c5=2017&c5=false&c2publicationDate&reversed=on&b_start=0 [2017, September 14].
- Wirick, D.W. (2009). *Public-Sector Project Management: Meeting the Challenges and Achieving Results*. Hoboken, NJ: John Wiley & Sons.
- Yasar, Y. (2009). It's the Prices, Stupid: The Underlying Problems of the U.S. Social Security System. *Journal of Economic*, vol. 43, iss. 4, pp. 843-865.

16. EMPLOYER BRANDING AND RESPONSIBILITY FOR EMPLOYEES IN CSR PRACTICES IN POLAND

Abstract: A CSR concept is more and more popular in Poland, too. The enterprises take care about their environment and each groups of stakeholders more often, including employees. But Polish economy still grows up and is still adapting rules from Western Europe or more developed countries. This article shows data of own research in area the CSR and responsibility of enterprises for employees. The objective of this research is to determine activities of enterprises to the staff and its perception in two groups: employers and employees. The surveyed persons were asked about use the CSR rules in practice, and also about all actions, which enterprises undertake for the employees. The studies were conducted in the period 2011-2013 across 800 employees and in the 2013-2015 across 180 enterprises in a form of a survey research, in Silesia and Lesser Poland provinces in Poland. Unfortunately, the results prove that situation in Poland is not too good and need improvement. Polish enterprises care about safety, but do not take any other actions for personnel. Employees evaluate negatively, among others, adherence to equality policies in the workplace, and even level of human rights observance. There are also large discrepancies in the answers of both groups to individual questions. The results are a part of a wider research effort conducted by the author in CSR practices in Poland.

Keywords: CSR, corporate identity, Employer Brand Proposition, employer branding, Employer Value Proposition.

JEL Classification: M31

1. Introduction

Initially, corporate identity was synonymous with organizational nomenclature, logos, company house style and visual identification, but the understanding of corporate identity has gradually broadened (Olins, 1978; Birkight, Stadler, 1980). Nowadays, corporate identity has been defined as "essential and central features that differentiate the organization and make it unique" (Pérez, de Bosque, 2012) or as a way in which the organization's identity is revealed through the behaviour, communications, as well as through the symbolism to internal and external audiences.

The corporate identity was defined also as the mix of elements, which gives the organizations their distinctiveness. The most important elements are, for example: culture (with staff seen to have an affinity to multiple forms of identity), strategy, structure, history, business activities and market scope (Balmer, 2001). For many practitioners and researches, a corporate identity refers to an organization's unique characteristics, which are rooted in the behaviour of members of the organization. According to them, the management of an organization's identity is of strategic importance and requires a multidisciplinary approach (van Riel, Balmer, 1997). This approach is also in line with Creating Shared Value (CSV) - the latest management concept (Porter, Kramer, 2006; 2011), according to which the shared value can be defined as policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates (Porter, Kramer, 2011; Crane, et al., 2014).

The objective of corporate identity management (CIM) is to establish a favourable reputation with an organization's stakeholders, which will be transformed by them into a propensity to buy that organization's products and services, to work for or to invest in the organization (Balmer, 1995; van Riel, 1995). It is similar to the aim of the Corporate Social Responsibility (CSR).

The subject of corporate social responsibility has continuously been discussed. Although there are numerous theories and empirical analyses on CSR constructs (Margolis, Walsh, 2001; McWilliams, Siegel, 2001; Wang, Choi, 2013), there is still scant theoretical research that links corporate social

¹ Honorata Howaniec Ph.D.; Pisarska 82b, 43-300 Bielsko-Biala, Poland, hhowaniec@ath.bielsko.pl

* Corresponding author

responsibility and corporate identity with the employer branding. The importance of existing employees as internal stakeholders has been recognized in the literature a few years ago. Because employees are central to corporate brand management, internal branding and employer branding have been introduced to the branding literature (Foster, Punjaisri, Cheng, 2010). While internal branding focuses largely on the adoption of the branding concept inside organization to ensure that employees deliver the brand promise to the external stakeholders, employer branding offers a way of ensuring that an organization recruits the right people in the first instance. However, the relationship between corporate branding, internal branding and employer branding are yet to be fully explored in the corporate branding literature. Therefore, this contribution aims at filling a gap by examining the employer branding and responsibility for employees in Polish conditions. The studies show the perception of the companies' activities in this area among two groups: employed and employers. In the article, the author assumes that enterprises operating in Poland undertake activities for employees, however, these steps are insufficient in the reception of the staff.

2. Corporate Social Responsibility vs. Employer Branding

According to the European Commission (2001) the CSR is a concept whereby companies voluntarily take into account social and environmental protection in their strategies and activities and when dealing with stakeholders. Ferrell and Geoffrey (2000) define CSR as the corporate behaviour in relation to the business ethics' fulfilment that includes the corporate obligations and commitments to the society. Daft describes it similarly (2003) as an extension of business ethics and management morality that should not only meet legal regulations, but also respond to public pressure and social expectation. In the Polish literature, we can meet different definitions, too. For Wołowiec (2004), the CSR is a philosophy of doing a business, according to which business entities take into account building a stable, transparent relationship with all stakeholders, what leads to achieving the competitive advantage by them. For other authors, the CSR is an effective management strategy in enterprises, which contributes to their competitiveness, building the reputation and the development of favourable conditions for social and economic growth (Gasparski et al., 2003).

According to the concept of CSR, a corporation is seen as serving the interests of a wide group of actors co-creating it (Post, Preston, Sachs, 2002) and its stakeholders as partners who collaborate with the company, creating both - social and economic value (Halal, 2001; Carroll, Buchholtz, 2014).

The groups, which are interested in the activity of enterprises, include: customers, employees, suppliers, media, the public administration and the local community. The customers look at a company by the prism of its market activities, brands, products, services, prices, promotion, publicities etc. The employees are interested in good working conditions and facilities in a workplace. The suppliers expect honesty in cooperation and possibilities of common development of business; they are interested in the rate of profits of cooperation from certainty of coming orders. Media evaluate the companies by the prism of social business and administration personnel activities. The public administration perceives the firm as a subject creating workplaces and paying taxes. The local community, meanwhile, expects responsibility understood widely, in economic, social and charitable terms (Howaniec, 2015; Howaniec, Waszkielewicz, 2013).

Balmer and Gray (2003) write that a strong, favourable corporate brand is a powerful “navigational tool” to a variety of stakeholders, which include not only existing employees and stakeholders, but also potential stakeholders including forthcoming employees. This underlines that effective corporate brand management needs to balance an external orientation with an internal orientation.

Ambler and Barrow (1996) state that an employer brand is “the package of functional, economic, and psychological benefits provided by employment, and identified with the employing company”. Moroko and Uncles (2008) suggest that an employer brand can be regarded as a psychological contract between employers and employees. It is similar to the concept of the corporate branding according to which the brand is a promise from an organisation to all stakeholders, including customer and employees. For this promise to be successful in an employment context (as it would in a product/service context), the employer brand propositions should be established to ensure that the rational and emotional benefits are congruent with existing and potential employees' expectations (Mosley, 2007). Moroko and Uncles (2008) argue that the consumer, corporate, and employer branding share similar characteristics. This means that the brand has to be noticeable, relevant and resonant, and unique.

According to Martin (2008), work on the employer branding begins with the creation of the so-called employer brand image and communicating the whole package of functional, economic and psychological benefits that employees can obtain while working in this organization.

The so-called brand promise or employer value proposition (or employee value proposition), in short EVP, is the value or benefit an employee obtains through employment. But the EVP is often referred to as the Employer Brand Proposition. This value proposition should identify unique policies, processes and programs that demonstrate the organization's commitment to i.e., employee growth, management development, ongoing employee recognition, etc. General reasons that people will choose to commit themselves to an organization are contained within the value proposition.

The care for the employee, especially the respect for all human rights, the elimination of all violations of human rights by organizations or non-discrimination in employment are also elements of the CSR strategy.

In practice, the companies do not only take care about employees but they also undertake added initiatives towards the staff and potential employees, for example they offer facilities for mothers of new-born babies or employees' children, they offer an increased healthcare for the employees, they care about their development (by organizing training or courses), etc.

2. Benefits for employees and the Responsibility of Enterprises in Poland – Data of Research

2.1. Data and Research Methodology

This study is part of a wider and ongoing research effort conducted by the author in CSR's area. Studies were conducted among two groups: 800 employees in the period 2011-2013 and 180 enterprises in 2013-2015, in both cases, in Silesia and Lesser Poland provinces.

The first sample contains normal citizens, who are employed and buy products as customers. The structure of the sample reflects the distribution of characteristics of the society in Poland (quota sampling). The second sample contains both public and private companies. The companies represent various lines of business.

In both group a survey research was used. In the first group, after rejecting of invalid responses, 502 questionnaires were the basis for the calculation. The sample characteristic is presented in Table 1.

Table 1. Employed – the sample characteristic [%]

Sex		Female		Male	
[%]		57,4		41,2	
Age (in years)	≤ 25	26 - 35	36 - 45	46 - 55	≥ 56
[%]	49,0	17,3	12,2	12,2	9,4
Education	Primary/Middle school	Vocational school	High school education	A university degree	
[%]	2,4	9,8	53,6	32,7	
Place of residence	City of over 100 thousand. residents	City from 25 to 100 thousand. residents	City to 25 thousand. residents	Village	
[%]	14,5	20,3	22,7	42,4	
Monthly net income per family member	≤ 500 PLN	500 - 1500 PLN	1500 - 2500 PLN	≥ 2500 PLN	
[%]	8,8	51,6	25,7	10,6	
Status	Student	A working person	An unemployed person	Pensioner	
[%]	45,2	45,2	9,4	7,6	

Source: Own study based on empirical research; N = 502

In the second group the study was conducted in the form of a structured interview. In the research a convenient choice was used. After rejection of invalid responses, 150 questionnaires were the basis for the calculation. The sample characteristic is presented in Table 2.

The analyses of data were carried out using a qualitative approach.

Table 2. Employers – the sample characteristic [%]

Organizational position	Chief executive officer / Managing Director / Company owner	Chief marketing officer / Marketing department manager	Sales director / Sales manager	CSR specialist	Other
[%]	48,7	10,7	22,7	0,7	17,3
Formal status and structure of the company	Enterprise branch	A one-company enterprise	Multi-company enterprise	Capital group	
[%]	10,7	70,0	12,7	6,7	
Financial condition	Very favourable	Favourable	Average	Difficult	
[%]	7,3	57,3	29,3	6,0	
Employment	0-9	10 - 49	50 - 249	≥ 250	
[%]	48,0	29,3	10,0	12,7	
Form of company ownership	Private	The State		Cooperative	
[%]	93,3	4,7		2,0	

Source: Own study based on empirical research. N = 150

2.2. Result of researches

The both groups – the employees and the employers have a good opinion about the activity of enterprises in these areas of CSR which are connected with employment and personnel, but employers have a better one.

Employers indicate that they promote and respect the human rights – 96%, haven't any kind of discrimination of employees – 89%, try to respect the freedom of associations – 81% and eliminate all violations of human rights by organizations – 73%.

Meanwhile, only two-third of employees (66%) believe that employers promote and respect human rights. About 60% believe that employers respect the freedom of associations and 31% – that companies do not discriminate employees. In each case, it is much less than in the group of entrepreneurs. The largest discrepancy in responses occurs in case of the discrimination and violation of human rights. Only 35% of respondents said that enterprises in Poland eliminate all violations of human rights by organizations and 31% – that they don't use any discrimination practices (Figure 1).

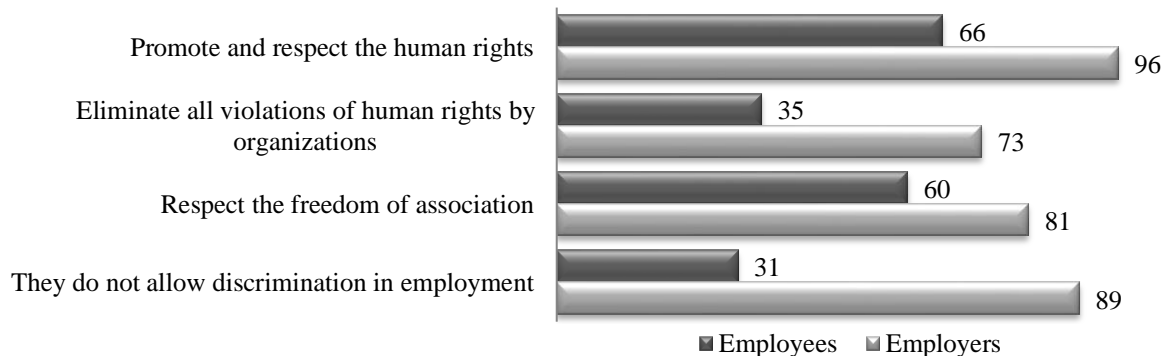


Figure 1. The implementation of CSR principles in employment area according to the research [%]

Source: Own study based on empirical research

In opinion of employees, they are not the most important group for the companies. Only 19% of respondents believe that employees are very important to businesses; 34% believe that they are an important group, and 25% answered that they are rather important. The answers are different to replies of employers. According this group, employees are a very important group for companies – 54% or – at least – important – 37%. Few surveyed perceived this group as less important or completely invalid (Figure 2).

The practice is very interesting to the evaluation of the proceedings of employers. In this case, both groups of respondents have different opinions too. The employers evaluate their activities better than other workers.

In their own opinion, employers take care about staff and undertake many initiatives for employees. Especially, they adhere to safety standards – 91%, they respect the rights of the employees – 89%, they maintain the good working conditions – 85%, they improve the safety in the workplace – 62% and they provide appropriate training to employees – 62%. Many respondents indicated such answers like: equal treatment of women and men during the decision making to dismiss – 54%, the policy of gender equality in career development – 51%, meetings of employees – 48% or a dialogue with representatives of employees – 26%. Few surveyed have any facilities for employees' children – 15% or for the mothers – 12%.

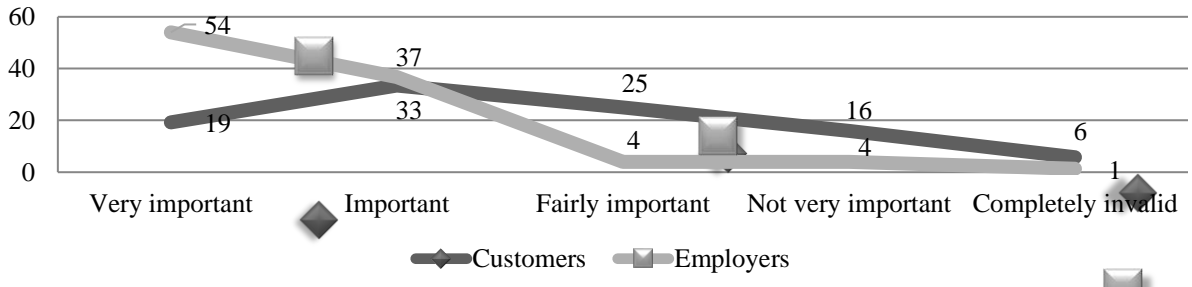


Figure 2. The importance of employees for the enterprises according to research [%]

Source: Own study based on the empirical research

In the meanwhile, employees perceive first of all the compliance of entrepreneurs with the rules of occupational health and safety and care for the health and safety - 56% answers. Many surveyed persons believe that entrepreneurs improve the safety in the workplace (49%). A considerable part of employers positively evaluates training programs for employees - 46% and integration meetings - 44%. Unfortunately, only 36% of respondents believe that businesses respect the rights of the workers and less than 31% believe that companies maintain a dialogue with the representatives of employees, e.g. labour unions. Only 27% of respondents said that employers provide good working conditions. A similar number of respondents said that employers are not guided by prejudices in relation to gender during deciding to dismiss. Unfortunately, fewer respondents believe that the policy of equality is applied in the planning and promotion of professional development - 20%. Very few people positively evaluate activities for children of employees - 16%, and even less - action taken towards mothers - 7%. A relatively large group also believes that entrepreneurs do not take special measures for employees - 19% (Figure 3).

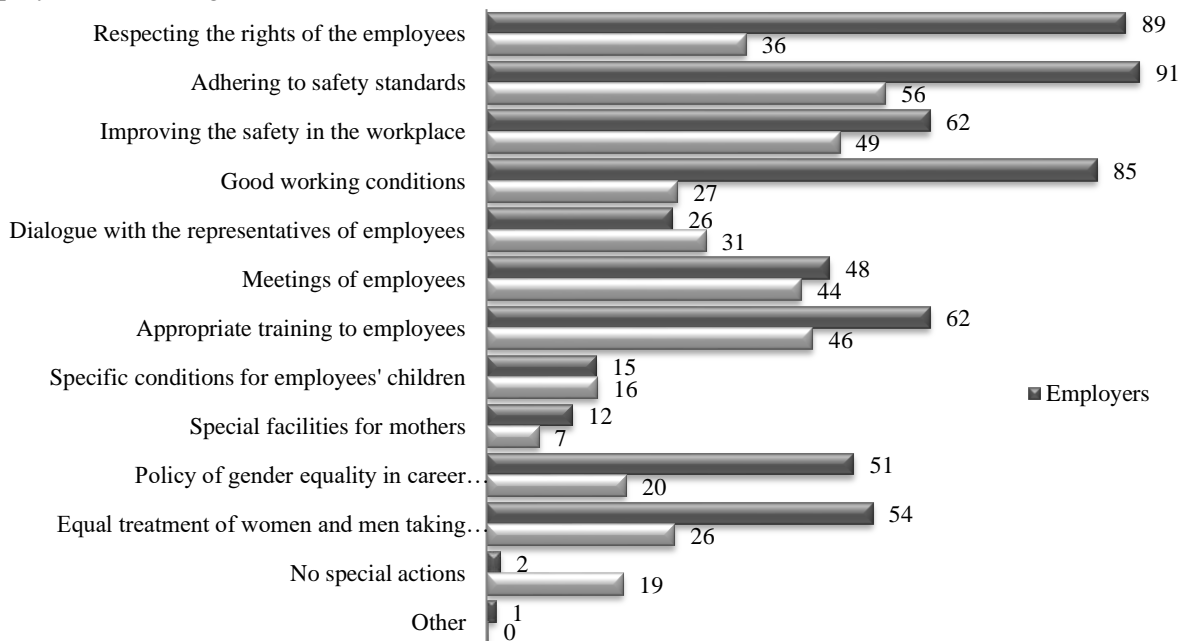


Figure 3. The company's activity for employees according to the research [%]

Source: Own study based on the empirical research

The research results show that the actions taken for employees are currently not optimal. To a large extent, entrepreneurs focus on meeting the requirements set by the law and they rarely undertake additional activities that would constitute significant support or additional benefits for employees or their families. The analysis of the data allows to identify areas that particularly need the improvement as their evaluation by the staff is very low (Figure 4). This applies, among others, to the equal treatment of sex in access to advancement or when making decisions about dismissals. Entrepreneurs may also think about additional benefits for employed, which did not appear in the research

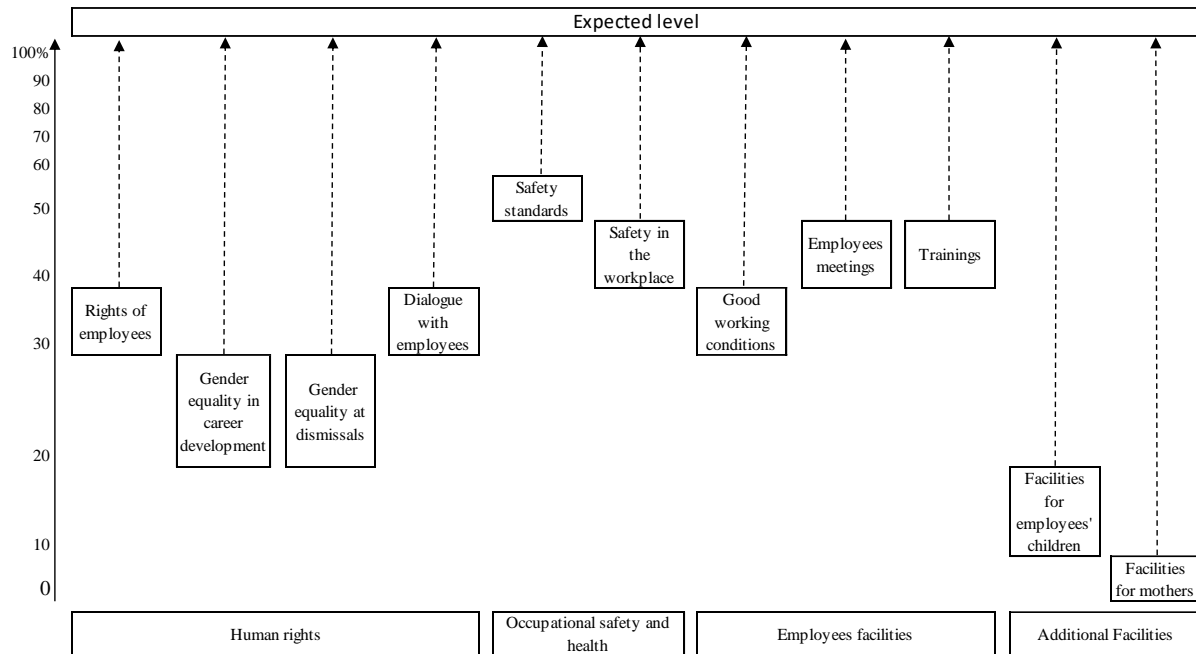


Figure 4. The company's activity for employees according to the research [%]

Source: Own study based on the empirical research

3. Conclusion

Popularization of the CSR concept derives not only from its publicity, but also from the introduction of programs supporting the implementation of CSR in enterprises operating in Poland. All this has led to the increase of the number of enterprises applying the principles in business practice.

The degree of responsibility of Polish enterprises is relatively high. The priority is to ensure an adequate level of occupational health and safety, which is primarily required by restrictive laws and numerous inspections of authorized services. Positive responses of both groups in this area are therefore not a surprise.

The implementation of the corporate social responsibility practices and activities in the field of employer branding is something more than the principles of health and safety. Meanwhile, the research confirms a significant discrepancy between the responses of entrepreneurs and potential employees in such issues as the discrimination of employees, promoting and respecting the human rights and elimination of all violations of human rights by organizations. In each of these cases, they demonstrated much worse evaluation of the compliance with these rules by businessmen who – contrary - evaluated the application of these principles very high. This means that the employees see the situation in which these rules are not respected. Employees do not perceive themselves as a group which is very important for employers. They believe that they are important, moderately important and even less important for enterprises. It also confirms that there are no enterprises in the surveyed group that attach particular importance to employees, whether they shape the employer's brand in a conscious way, striving for a positive reception of actions taken in the group of current and future employees.

An important discrepancy is also present in most of detailed responses. The employees rated lower in particular the following issues: respecting the rights of employees, the adherence to safety standards, the maintenance of good working conditions, offering training to employees, the policy of gender and the equality in the career development and the equal treatment of women and men in the employment and their careers.

One-fifth of employees answered that employers do not take any special actions directed to them.

This paper has not featured all of the contributions related to the CSR and the employer branding. However, the scope of this paper has been reached. The link between the CSR and the employer brand could appeal to business practitioners themselves, as responsible behaviour of entrepreneurs may bring significant improvements to their firms, especially in the area of the employment and finance.

Obviously, there are diverse contexts across various industry sectors and states that influence the implementation of the corporate social responsibility practices. Notwithstanding, it may prove difficult to quantify the tangible and intangible benefits of the corporate responsibility, including the growth of the brand equity, by the improvement of the employer branding. The future theoretical and empirical research may address these challenging issues, in further detail.

References

- Ambler, T., Barrow, S. (1996). The employer brand. *Journal of Brand Management*, vol. 4, pp. 185-206.
- Balmer, J.M.T. (1995). Corporate branding and connoisseurship. *Journal of General Management*, vol. 21, no. 1, Autumn, pp. 22-46.
- Balmer, J.M.T. (2001). Corporate identity, corporate branding and corporate marketing - Seeing through the fog. *European Journal of Marketing*, vol. 35, iss. 3/4, pp. 248-291.
- Balmer, J.M.T., Gray, E.R. (2003). Corporate brands: what are they? What of them? *European Journal of Marketing*, vol. 37, no. 7/8, pp. 972-97.
- Birkight, K., Stadler, M.M. (1980). *Corporate Identity. Grundlagen, Funktionen, Fallspielen*. Landsberg an Lech: Verlag Moderne Industrie.
- Carroll, A.B., Buchholtz, A.K. (2014). *Business and society: Ethics, sustainability, and stakeholder management*. Nelson Education.
- Crane, A., Palazzo, G., Spence, L.J., Matten, D. (2014). Contesting the value of “creating shared value. *California management review*, vol. 56, iss. 2, pp. 130-153.
- Daft, R.L. (2003). *Organization theory and design*. Cincinnati: South-Western College Publishing.
- European Commission (2001). *Green Paper for Promoting a European Framework for Corporate Social Responsibility*, Brussel: COM 366 final.
- Ferrell, O.C., Geoffrey, H. (2000). *Business: A changing world*. New York: McGraw-Hill.
- Foster, C., Punjaisri, K., Cheng, R. (2010). Exploring the relationship between corporate, internal and employer branding. *Journal of Product & Brand Management*, vol. 19, no. 6, pp. 401-409.
- Gasparski, W., Lewicka-Strzałecka, A., Rok, B., Szulczewski, G. (2003). Europejskie i światowe standardy etyki i społecznej odpowiedzialności biznesu. In W. Gasparski (Ed.), *Europejskie standardy etyki i społecznej odpowiedzialności biznesu*. Warsaw: Wydawnictwo Wyższej Szkoły Przedsiębiorczości i Zarządzania im. Leona Koźmińskiego.
- Halal, W.E. (2001). The collaborative Enterprise. A stakeholder Model Uniting Profitability and Responsibility, *The Journal of Corporate Citizenship*, vol. 2, pp. 27-42.
- Howaniec, H. (2015). Postrzeganie CSR w Polsce w kontekście zaangażowania przedsiębiorstw w poszczególne grupy interesariuszy. In J. Kaczmarek, W. Szymła, (Eds.) *Teoria i praktyka zarządzania w obliczu nowych wyzwań* (pp. 221-229). Cracow: Foundation of the Cracow University of Economics.
- Howaniec, H., Waszkielewicz, W. (2013). Marketing concepts during systemic changes in Poland. In J. Teczke, N. Terblanche (Eds.), *Management science In transition period In South Africa and Poland* (pp. 227-241). Cracow– Stellenbosch: International Management Foundation, Cracow University of Economics.
- Margolis, J.D., Walsh, J.P. (2001). *People and profits?: The search for a link between a company's social and financial performance*. New York: Psychology Press.
- Martin, G. (2008). Employer branding – time for some long and ‘hard’ reflections? In *Employer branding, The latest fad or the future of HR?*, London: Chartered Institute of Personnel and Development Research Insight.
- McWilliams, A., Siegel, D. (2001). Corporate social responsibility: A theory of the firm perspective. *Academy of management review*, vol. 26, no. 1, pp. 117-127.

- Moroko, L., Uncles, M.D. (2008). Characteristics of successful employer brands, *Journal of Brand Management*, vol. 6, no. 3, pp. 160-175.
- Mosley, R.W. (2007). Customer experience, organizational culture and the employer brand. *Brand Management*, vol. 15, no. 2, pp. 123-34.
- Olins, W. (1978). *The Corporate Personality: An Inquiry into the Nature of Corporate Identity*. London: Thames and Hudson.
- Pérez, A., del Bosque, I.R. (2012). The role of CSR in the corporate identity of banking service providers. *Journal of Business Ethics*, vol. 108, iss. 2, pp. 145-166.
- Porter, M.E., Kramer, M.R. (2006, December). Strategy & Society: The link between competitive advantage and corporate social responsibility. *Harvard Business Review*, pp. 78- 92.
- Porter, M.E., Kramer, M.R. (2011, January-February). CSV: How to reinvent capitalism – and unleash a wave of innovation and growth. *Harvard Business Review*, pp. 62-77.
- Post, J.E., Preston, L.E., Sachs, S. (2002). *Redefining the Corporation. Stakeholder Management and Organizational Wealth*, Stanford: Stanford University Press.
- van Riel C.B.M., Balmer J.M.T. (1997). Corporate identity: the concept, its measurement and management. *European Journal of Marketing*, vol. 31, iss. 5/6, pp. 340-355.
- van Riel, C.B.M. (1995). *Principles of Corporate Communication*, Hemel Hempstead: Prentice-Hall.
- Wang, H., Choi, J. (2013). A new look at the corporate social–financial performance relationship the moderating roles of temporal and interdomain consistency in corporate social performance. *Journal of Management*, vol. 39, no. 2, pp. 416-441.
- Wołowicz, T. (2004). Społeczna odpowiedzialność przedsiębiorstwa nową formułą zarządzania. *Ekonomika i Organizacja Przedsiębiorstw*, vol. 3, pp. 3-11.

17. IDENTIFYING THE FACTORS INFLUENCING THE NATIONALITY OF A COMPANY

Abstract: Today, the outstanding role of large companies is indisputable, thus it is essential to identify the nationality of international companies. It is important not just in economics but in management, too. There is no unified view of the definition of the nationality of a company. The concept of 'nationality' is used almost exclusively for individuals. Uncertainties had arisen with regard to the nationality of a company. Moreover, in our accelerated world, and concerning the growing connectedness among countries, markets and companies, to identify an international company's nationality has become increasingly difficult. The main objective of the research was to explore the main features which influence the nationality of a company. The work was based on literature review and qualitative methods as it was a conceptual analysis. As a result the research identified seven main features which characterizes the nationality of an international company. These are: Human Resource, Finance, Governance, Suppliers, Innovation, Market, Culture and Perception. The outcomes can be useful for managers and also for academic people. Further research will examine international companies according to these features, and based on those data, the nationality of a company could be better defined.

Keywords: company, complexity, nationality.

JEL Classification: F21, F53, M10, M21

1. Introduction

The markets and enterprises have become complex and global which increases the managers' burden. Anyone could experience the acceleration of outsourcing and offshoring. Firms are expanding internationally for the same reasons e.g. labour costs, market access and resources. Usually large companies employ more people and sell more products and services outside their home economies than within. Moreover, they operate under tax rules that are often more favourable than their own. Because of these features, there is not a single method how someone can identify the nationality of a company.

At the level of a product ('made in' labels) nationality is often misleading. What can then determines the nationality of a company? The state of incorporation? The company's headquarter? The nationality of the senior managers or the shareholders? The country where most of the business activity is taking place? Are there any more influencing features?

According to Geoffrey (2006) technological advances allows different parts of the value chain to operate in different places. Managers, shareholders and customers can be scattered, at the same time – Geoffrey claim – the nationality of global companies have become clearer. Is this statement still relevant? In this paper the author is undertakes to gain and systematise the relevant literature. Although, the literature on nationality of a company is quite sparse, the author introduces some engrossing case, when the factor in question is appeared in real life situation. This research could have important implications for managers, for academics and also for policy-makers.

2. Methodology of Research

An extensive literature review has been conducted in order to investigate the literature surrounding the nationality of a company and its influencing factors. The aim is to conduct a conceptual analysis, in order to systemise and create a framework for further examination. The research started with the emergence of the question and with the gathering of relevant concepts (Figure 1). The strategy of research was based on keywords search for these concepts on the title, keywords and abstract in

¹ Hilda Hurta Ph.D.; Ludovika tér 2, H-1083 Budapest, Hungary, Hurta.Hilda@uni-nke.hu

* Corresponding author

Scopus, Web of Science, EBSCOhost, JSTORE and ProQuest. In order to select the article, apart from the keywords, the author has sorted out the article by reading their abstracts. This has enabled her to ensure the appropriateness of articles. Author has also conducted backward strategy, i.e. finding articles from the references of main article. In total, the author has found more than 30 relevant articles in the research. The systematization based on the work of Reich (1990) and Lloyd, Kopyay and Sanchez (2012), but it was extended and complemented by the opinions of many.

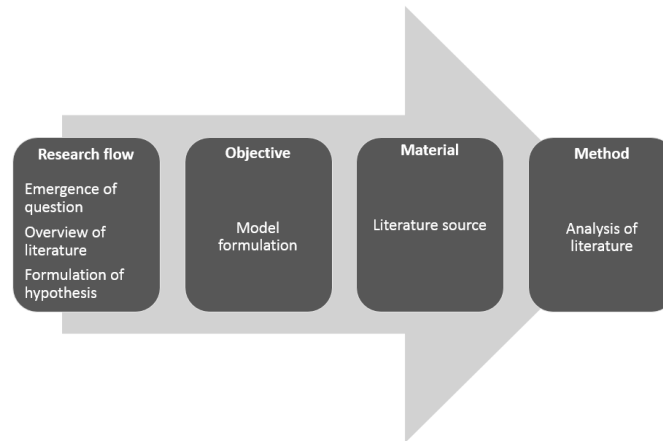


Figure 1. Context of objectives flow of research, assigned sources and methods

Source: Own compilation

3. Identifying the Factors Influencing the Nationality of a Company

Before World War I. entrepreneurs could easily cross frontier and there were innumerable businesses that crossed national borders. After the World War II. people began to be interested in nationality (Geoffrey, 2006). Since then for various reasons, its importance is increasing.

First, in this section, examine the terms that many mix up: international, multinational, transnational and global firms. One may think they refer to a company doing business in different countries. According to Hines (2007) international companies are importers and exporters, they have no investments abroad however multinationals do have. The latter wants to adapt its products and services to local markets (e.g. restaurant chains). Global companies do not try to adapt their products, they offer a homogenous product (e.g. Coca-Cola), so they concentrate on economies of scale. Transnational companies are more complex companies. They give decision-making, R&D and marketing powers to different national markets. From the point of view of the article the latter three are significant. The author use them as synonyms (as she uses the terms: nationality and citizenship synonyms) in the sense that they are the representatives of the international business (and representatives of a nation).

International businesses – a significant management area – could be a source of ideas, growth, capital, technology and jobs. These companies possibly conduct more research and development, may provide more added value than not international ones, and they can improve the performance of local firms and workers. Trade can bring new products and services at a lower price for consumers. At the same time the global trading system is not perfect, moreover written rules (WTO rules) lag behind today's business realities (González, Draper, 2017). One of its aspects is the question of nationality.

In the next part of this section the author summarises the latest publications on corporate nationality. As a result of the systematization the author identified seven main features that characterizes the nationality of an international company.

3.1. Human Resource

Mitchell (2011) describes that in America 200 years ago a corporation was considered as an “invisible, intangible and artificial being” (Mitchell, 2011 p. 38.). Those day the question of affiliation were determined on the basis of the citizenship of all the corporate shareholders. Since then trading made it nearly impossible to establish the citizenship/location of all the shareholders. Sanchirico (2015) also highlighted the problem of enumeration, moreover he found that in America the reporting system was not designed to reveal the owners nationality and the author suppose if someone wants to remain

anonymous, it can be possible. In most cases even the companies themselves do not know their foreign ownership share. Sanchirico (2015) well-founded opinion is that US multinationals are largely foreign-owned. But there are another questions. Are a corporation mere personal property of shareholders? Is it possible that a company's citizenship is more (or less) than the citizenship of every real person who owns the property?

An *Economist* (2014) article discusses exactly this problem, as it examines the nationality of large international businesses, based on the shares of sales (weighted 30%), staff (weighted 30%), owners (weighted 30%), and the boss's nationality (weighted 10%). For example the CEO of Coca-Cola and most of its shareholders are from America, but most of its sale and staff are from outside of the country. It turns out that the overwhelming majority of shareholders nationality provides for Coca Cola, in this calculation, that it is 62% American. But, is the nationality of a company equal to the stakeholder's nationality? According to the Barcelona Traction case the answer is: no. The Barcelona Traction was controlled by Belgian shareholders but incorporated under Canadian law. After a 12-year-long process the Court stated that the company did not possess Belgian nationality (Tams, Tzanakopoulos, 2010). Sanchirico (2015) agrees with this and claim nationality is not equal to the interests of shareholders, others should be taken into account e.g. employees and suppliers.

Another consideration, regarding human resources, is the nationality of key executives. Lakshman and Jiang (2016) had the same question in their research. They conducting interviews with 30 executives of French subsidiaries located in Singapore and China. Their findings revealed that most French multinationals use significant numbers of parent-country nationals (French) instead host-country nationals (Chinese) for key positions. But the average conceals the differences. In their research they pointed out that the aim can determine the selection. For example when a project is huge, or when the goal is transferring knowledge and take something under control they prefer parent-country nationals. And when they try to gain legitimacy in the local environment, or when they want to use the local market knowledge they prefer host-country nationals. This can be the reason why they employ more host-country nationals among middle managers. And loyalty can be a reason why they employ more parent-country nationals among top managers. But can someone claim, for example, in the case of Ford to be American on the basis of the nationality of its CEO? Estélyi and Nisar (2016) found just conversely. According to them shareholder heterogeneity are key determinants of nationality diversity on corporate boards. So can we specify the nationality of a company exclusively from the nationality of their CEOs? Another consideration could be where the CEO is located? Where they hold their meetings?

In the context of human resource labour force also have to be mentioned. International assignments, expansions, outsourcings play an essential role in large companies. These movements are often explained by cost-benefit or profit-making reasons. If a company is operating with labour force located outside of the country, has it any impact on the company's nationality?

Reich (1990) wondered 'which is more important to the economic future of a nation? The location of headquarter along with the nationality of managers and shareholders or the nationality of employees, the location of R&D along with the location of manufacturing? Which can be considered national, which foreign? Reich (1990, 1991) answered the question, according to him the only thing that matters is labour force. So one can better determine the nationality of a company by the nationality of employees than depending on where the head office is located. A foreign-owned corporation, with its R&D and manufacturing presence and its reliance on workers are more important factors, than issues of ownership, control and national origin. He suggests to open borders to investors from around the world, because that would revitalize the competitive performance of a national economy.

The author assumption is – with great respect for Reich's work – that in the 21st century there could be more important factors than labour force.

3.2. Finance

The next feature that can affect nationality is: finances. First of all: taxation, which is salient question in developed nations. Baucus (2013) summarized the American situation as follows. As it's easy for corporations to shift profits to low-tax countries to avoid U.S. taxes, the number of foreign subsidiaries owned by U.S. corporations has quadrupled. And U.S. investment overseas has multiplied by 85, while aggregate investment in tax havens (such as Ireland, the Netherlands, and Bermuda) has

multiplied by 570. The reason is the higher tax rate. The result – in long run - is lower competitiveness and slower economic growth in the US (Sanchirico, 2015; Baucus, 2013). To change companies' practice is not easy, so it is still central issue how they can solve the problem (Hatch, 2017). Some well-known examples are: Microsoft (61 billion USD), Apple (40 billion USD) and Google (33 billion USD) (Sanchirico, 2015) who shift their profits. Companies claim it is the intense globalised competition that force them to such movements (see Hopkins and Bowers, 2017 about Apple's case how lawyers found the next location with little or no corporation tax after Ireland). But it is just their short-run interest. Does it mean that a company with migration can change its nationality? If yes, then there is no question about that they are not any more belong to their former nation, and they do not pay tax there.

Among financial questions subsidies have to be mentioned. Where major subsidies coming from to the company? Usually, there is a huge contradiction in this issue. Because national governments are generally subsidise the companies owned by a citizen. At the same time, it is necessary to analyse where the support is going to migrate in this case. According to Reich (1990) the multinational companies happily accept these subsidies and then spread it to their affiliates all over the world. In these cases the policy ignores the reality, so achieves an opposite effect.

The author assumption is that taxation could be one of the main influencing factors in formulation of nationality as it is strategic management question for the company concerning the top priority: profit making.

3.3. Governance

In America, in the mid-1800s, since in those days the companies were considered as artificial entities, they announced that the place of incorporation should be the state of citizenship (Mitchell, 2011). That meant, for more than a century, that the „state of birth” determined the affiliation (Geoffrey, 2013). A corporations could be dual citizens by being born in one state and conducting their principal business in another.

Another question also emerges: the importance of the location of headquarter. Moran (2013) is dealing with this problem in connection with IT security. The author analyses the 'Huawei-case', when Huawei in 2013 declared that his company is 'not interested in the US market anymore'. This statement was the answer to 'techno-nationalism' American politicians have engaged in (Vaitheeswaran, 2013). Huawei's response was considered as a national IT security threat in US telecommunications networks and the House Intelligence Committee had been warning against the use of Huawei-made equipment. But besides of the security questions there are economic/management questions also arose (Moran, 2013). Moran and Oldenski (2013), in another study, on the bases of China's GDP for the years of 1988 and 2007, estimated that Chinese investment in the United States was approximately 50% lower than what other economic parameters would predicted. This policy from the US can discourages other valuable inward investment from other countries also (Moran, 2013). Further question whether anyone can singling out particular companies by nationality of their headquarters? Or can a government dictate which international vendors are welcomed or not to sell goods within their economy? Can they block business transactions? Can a government block an administrative seat transfer? Yes, it happened with Daily Mail, Centros and Cartesio (Hansen, 2013; Petronella, 2010). *Economist* (2014) reported a case when the French government tried to block foreign takeover in their "strategic" industry, but finally GE acquired Alstom (GE, 2015). But according to the *Economist's* (2014) measure only one third of the Alstom were French, so they judge according to just the headquarters' location. The same happened to AstraZeneca (headquarter location: Britain) when British people considered it domestic company although mere 12% were that according to *Economist* (2014). It did not even paid British tax in the previous year.

Mitchell (2011) examined the „principal place of business” and introduced an American test called „nerve centre” for determining a corporation's principal place of business. „Nerve centre” means the true centre of control, the centre of direction and coordination. Geoffrey (2006) claim that overseas subsidiaries often had few links to parent-company. For example local subsidiaries typically manufactured distinctive products. It is a very complex question since some corporations may divide their command and coordinating functions among managers who work at several different locations. Sawyer (2014) concluded in her paper that applying this test to atypical corporate structures and activities are also problematic.

In 1990 Ohmae claim that the place of incorporation, and the place of headquarter does not matter, more over the products are denationalised, so the large corporations are ‘placeless’ (Ohmae, 1990. p. 94). But in many legal systems, the state of incorporation is still the main determinant of the nationality of a corporation (Mitchell, 2011).

The author assumption is that governance is not among the main influencing factors of nationality from the economic/management point of view.

3.4. Suppliers

The earlier mentioned ‘Huawei-case’ reflects to another nationality question. Whether a supplier can have an impact on the nationality of the original company. In 2009 the National Security Agency (NSA) told AT&T - the world's largest telecommunications company – to exclude Huawei from its tendering procedure if they wanted to maintain their contracts with the US government. And the same happened in the case of Sprint Nextel. Moran (2013) highlighted that most of the IT companies (e.g. Lucent-Alcatel, Samsung, Cisco, Siemens-Nokia) outsource the manufacture of components. It is because of economic rationality, namely cost-effectiveness. If they exclude suppliers can cause that the product in question became more expensive. For example – at the time of the article – in 2013, 4G wireless network for mobile phones in Europe cost about 2.50 USD/Gb; in the United States, the same service cost 7.50 USD/Gb. So excluding a Chinese supplier had negative effect on American consumers.

Can a company/a sector/a country remain competitive if it excludes certain suppliers? Does it really matter what is the nationality of a supplier? William (2005) and Fernández (2017) stress that with increased levels of globalisation it is important that governments be able to maximise the impact which foreign direct investment (FDI) makes upon the economy of their countries.

The author assumption is that suppliers appeared as an influential factor and do have an impact on companies’ nationality.

3.5. Innovation

Firms are not black boxes responding to external factors e.g. government’s policies. They are inventors, they create products, technologies and value. The management knows, that the high costs of innovations and the rapid change in technology make ‘innovation’ area critical. Reich (1990) claim the only thing is matter where the R&D activity is done i.e. where they are located, because it supports that country where the employees are. So, within a country, government-financed help for research and innovation should be available to any corporation, regardless of the nationality of its owners, as long as the company undertakes the R&D in the home-country, because they employ national scientists and researchers. Unfortunately, in most cases governments supports domestic-owner, which could be counterproductive.

Nachum (2003) had an interesting observation. According to him, it is likely that multinational corporations implement higher value-added activities (e.g., R&D) in the home country and transfer overseas lower value-added activities, because home countries would influence their competitiveness to a greater degree compared to when the geographic configuration of their value-added activity differs.

Moreover, over the past five decade, income from intellectual property has become much more important in the world economy. Reich (1991) thought that in the 21st century a nation’s primary assets would be its citizens’ valuable skills, knowledge and experience. Today, any management is aware of the fact that a company depends on its ability to innovate.

The author assumption is that innovation and new technology could determine the nationality.

3.6. Market

Markets are becoming more and more important as companies expand globally, a greater proportion of revenue arises from sources other than the country of incorporation (FTSE Russell, 2017). Estrin, Nielsen and Nielsen (2017) has observed that Emerging Market Multinational Companies in more urbanized countries with stronger R&D capabilities would pay relatively more strategic attention to the home market over international markets. The authors also emphasize the importance of including home country contextual factors in models predicting multinational corporation internationalization. Reich, already in 1990, considered market as an influencing factor of corporate nationality.

The most frequently used measure of international diversification is foreign sales divided by total sales. Barakat, Cretoiu and Ramsey (2011) found firms with a higher degree of internationalization to be more satisfied with foreign sales, sales growth, higher percentage of foreign profits and market share. So firms may see the internationalization strategy as a way to enhance foreign performance. But is this indicate that markets can influence the nationality of a company?

The author assumption is that market is considerable, but it is not among the main influencing factors of nationality of international companies.

3.7. Culture and Perception

Nachum (2003) attempted to identify the impact of nationality of ownership on the competitiveness of multinational companies in the service industry. The author's findings show that the impact of nationality does not disappear, as a set of home-country characteristics possesses a certain explanatory power. Furthermore, in most of their analyses, the variation in competitiveness between the firms studied is explained mostly by these variables. Their findings have implications also for the analysis of competitors and suggest a need to distinguish between competitors of the same nationality and those of other nationalities. So a firm's advantages are likely to differ from those of competitors originated in other countries.

Geppert and Williams (2006) introduce that recent globalization approaches stress that globalization is also driven by a convergence of business culture and policies. Can a global corporate culture replaces the national home and host country identities? The authors claim that there are continuous impact of different national business practices on multinationals, but because of their relative weakness of international institutions compared with the institutional framework of the nation-state, it makes very unlikely that national business practices will lose their influence on most of the internationally operating companies.

To sum up it is important to deal with the question of nationality, because nationality-conceptions can influence the course of business interactions and negotiations by contributing, or not, to cultural matching and sympathy-building. Positive conceptions can have a positive effect on the realization of business attempts (e.g. FDI), or dislike based on nationality may lead to a perception of higher risk and ultimately the failure of attempted business movements. Bandelj (2011) has an example when an American investor AmeriCo, was trying to acquire a Slovenian electronics appliances manufacturer, Slovan, but people were so strongly against the acquisition that they withdrew from their attempt. An interesting twist happened in less than a year later, when a third of Slovan was acquired by a German multinational. The source of the negative impact was the presence of an Italian manager from AmeriCo. So the result can be traced back for historical conflict between Slovenians and Italians, and because its manager AmeriCo was perceived as Italian. If cultural perceptions work in this way in micro level and have direct link to economic and management actions, we should see their manifestations at macro level also.

The author assumption is that culture and perception is considerable, but they are not among the main influencing factors of nationality.

4. Discussion

The author in the beginning of her paper noted that the concept of 'nationality' is used almost exclusively for individuals. However, we are more and more often encountered with expressions like 'corporate citizenship' or 'nerve centre' which is pointing in that direction that a company also need to have a nationality like an individual do. But corporate citizenship is different from humanoid status as it may an everlasting life right on earth. Moreover, this personalization of companies raises more questions (e.g. Can have a company the right of freedom of speech?) (Mitchell, 2011).

In the 1990's authors claimed that large multinational firms were becoming stateless global webs (Ohmae, 1990; Reich, 1991). Stateless means that they integrate various technology, management, production and finance from different parts of the world with the help of IT equipment, but in the same time they not belong to anywhere. In the 2000's Geoffrey's (2006) opinion was that the nationality of a company is equal to the nationality of the home country. But a decade after Geoffrey how can we determine the nationality of a company?

In this paper the author collected and systemised the seven main features that can characterise a company's nationality. These characteristic are: Human Resource, Finance, Governance, Suppliers,

Innovation, Market, Culture and Perception. These features can form a model, in which one can identify the nationality of a company. [In the research of Lloyd, Kopyay and Sanchez (2012), however the grouping of the features were different, one can calculate the importance of each factor, these are in their order (HR) 16%, (Finance) 26%, (Governance) 17.5%, (Suppliers) 4.5%, (Innovation) 4.5 %, (Market) 11.5%, (Culture and Perception) 13%.]

According to Reich (1990, 1991) the only thing that matters is highly skilled labour force. This former idea leads to a very interesting result in the 21st century: new technology (e.g. artificial intelligence) could determine the nationality. Europe and USA have a terrible backlog in this area behind China. According to IEEE (2017), the world's largest technical professional association in the field engineering, computing, and technology information, they have 423,000 members in over 160 countries. At the same time China had 4,7 million science, technology, engineering and mathematics graduates in 2016; India, another academic powerhouse, had 2,6 million while the U.S. had 568,000 (McCarthy, 2017). So the centre of gravity of knowledge and innovation has moved from the West to the East. Through this process, that China produces huge knowledge, and taking into account that China is the largest market today, managements and international companies soon should consider to be present in China. It is possible that China will try to conquer them over time. Other possibility is that international companies won't even recognize this process – through the role of highly skilled engineers and researchers; and through the role of China's market – and initially the companies' characteristic and then their nationality will change unnoticed to them. 10 years ago China copied, but today they have a leading role. So is it possible that in the long run China could start to dominate nationality colour?

5. Conclusion

It is hard to specify the nationality of a company. One may say that as it was two hundred years ago, in terms of nationality, the companies are still invisible. Maybe there are not national product, national technology, national company, national industry and national economy any more. But somehow we have to characterise a company.

From the economic and management point of view the question is which nation's competitiveness is increased by a certain company? The author identified not one, but seven dimensions in relation with nationality. These are: Human Resource, Finance, Governance, Suppliers, Innovation, Market, Culture and Perception. According to the current state of the research the author can state that there is no single way of determining the nationality of a company; it depends on what patterns and aspects one choose to emphasize. Moreover nationality can depend on different factors among different circumstances. The relative importance of these factors needs further investigation.

The author is aware of that the interest of different views (legal or economic/management) results in different outcomes on nationality of a company. In this paper the author concentrated on economic/management considerations. The author formed her hypotheses: The nationality of a company is largely depends on where the company pays tax.

Acknowledgements

This paper was supported by New National Excellence Program of the Ministry of Human Capacities [UNKP-17-4-1-NKE-29] and it would not have been possible without the comments and suggestions of Prof. T. Kopyay and Prof. P. Halmal.

References

- Bandelj, N. (2011). Relevance of nationality in cross-border economic transactions, *Nationalities Papers*, vol. 39, no. 6, pp. 963-976.
- Barakat, L.L., Cretoiu, S.L., Ramsey, J.R. (2011). UNCTAD's Degree of Internationalization and Its Effect on Subjective and Objective Performance: Evidences from Brazilian TNCs, Paper presented at the *Associação Nacional de Pós-Graduação e Pesquisa em Administração (XXXV Encontro da ANPAD)*. 4-7 September 2011, Rio de Janeiro, Brazil.
- Baucus, M. (2013). *Summary of Staff Discussion Draft: International Business Tax Reform*, [online]. Available: <https://www.finance.senate.gov/imo/media/doc/Chairman's%20Staff%20International%20Discussion%20Draft%20Summary.pdf> [2013, November 19].
- Economist (2014). Flags of inconvenience. *Economist*, vol. 411, iss. 8887, pp. 61-62.

- Estélyi, K.S., Nisar T.M. (2016). Diverse boards: Why do firms get foreign nationals on their boards? *Journal of Corporate Finance*, vol. 39, pp. 174-192.
- Estrin, S., Nielsen, B.B., Nielsen S. (2017). Emerging Market Multinational Companies and Internationalization: The Role of Home Country Urbanization. *Journal of International Management*, vol. 23, pp. 326-339.
- Fernández, M.L. (2017). Challenges of Economic Globalization. *Revista de Relaciones Internacionales, Estrategia y Seguridad*, vol. 12, iss. 1, pp. 23-50.
- FTSE Russell (2017). *The Global Sales Ratio, Global and Domestic Firms*, [online]. Available: https://www.ftserussell.com/sites/default/files/the-global-sales-ratio_-global-and-domestic-firms-final_0.pdf [2017, May 1].
- GE (2015). *Powering a sustainable energy future: GE Acquires Alstom's Power and Grid Businesses*, [online]. Available: <https://www.gepower.com/about/alstom-acquisition> [2015, November 2].
- Geoffrey, J.G. (2006). The Rise of Corporate Nationality. *Harvard Business Review*, vol. 84, iss. 10, pp. 20-22.
- Geoffrey, J.G. (2013). *Entrepreneurship and Multinationals*. Northampton: Edward Elgar Publishing.
- Geppert, M., Williams K. (2006). Global, national and local practices in multinational corporations: towards a sociopolitical framework. *The International Journal of Human Resource Management*, vol. 17, no. 1, pp. 49-69.
- González, A., Draper, P. (2017). *5 reasons not to give up on global trade*, [online]. Available: <https://www.weforum.org/agenda/2017/07/global-trade-can-be-inclusive/> [2017, July 5].
- Hansen, J.L. (2013). The Vale Decision and the Court's Case Law on the Nationality of Companies. *European Company & Financial Law Review*, vol. 10, iss. 1, pp. 2-17.
- Hatch, O. (2017). *Hatch Announces Hearing on Reforming Business Tax Code*, [online]. Available: <https://www.finance.senate.gov/chairmans-news/hatch-announces-hearing-on-reforming-business-tax-code> [2017, September 12].
- Hines, A. (2007). *Get Your International Business Terms Right*, [online]. Available: <https://www.cbsnews.com/news/get-your-international-business-terms-right/> [2007, August 20].
- Hopkins, N., Bowers, S. (2017). *Apple secretly moved parts of empire to Jersey after row over tax affairs*, the Guardian [online]. Available: <https://www.theguardian.com/news/2017/nov/06/apple-secretly-moved-jersey-ireland-tax-row-paradise-papers> [2017, November 24].
- IEEE (2017). *About IEE*, [online]. Available: https://www.ieee.org/about/about_index.html [2017, November 24].
- Lakshman, S., Jiang, C. (2016). Nationality choices regarding executives in subsidiaries: evidence from French multinationals in Asia. *Asia Pacific Journal of Human Resources*, vol. 54, iss. 4, pp. 498-517.
- Lloyd, D., Kopyay, T., Sanchez, L., The Nationality of a Company, *American Society of Engineering Management (ASEM)*, Virginia Beach, USA, 2012.
- McCarthy, N. (2017). *The Countries with the Most STEM Graduates [Infographic]*, Forbes, [online]. Available: <https://www.forbes.com/sites/niallmccarthy/2017/02/02/the-countries-with-the-most-stem-graduates-infographic/#4575d9c1268a> [2017, February 2].
- Mitchell, J.T. (2011). Home Is Where the Nerve Center Is: Locating a Corporation's Principal Place of Business. *GPSolo - A Publication of the American Bar Association*, vol. 28, no. 7, pp. 36-39.
- Moran, T.H. (2013). Dealing with cybersecurity threats posed by globalised it suppliers. *Policy*, vol. 29, no. 3, pp. 10-14.
- Moran T.H., Oldenski L. (2013). *Foreign Direct Investment in the United States: Benefits, Suspicions, and Risks with Special Attention to FDI from China*. Washington DC: Peterson Institute for International Economics.
- Nachum, L. (2003). Does nationality of ownership make any difference and, if so, under what circumstances? Professional service MNEs in global competition. *Journal of International Management*, vol. 9, no. 1, pp. 1-32.
- Ohmae, K. (1990). *The Borderless World: Power and Strategy in the Interlinked Economy*. New York: Free Press.
- Petronella, V. (2010). The Cross-Border Transfer of the Seat after Cartesio and the Non-Portable Nationality of the Company *European Business Law Review*, vol. 21, iss. 2, pp. 245-265.
- Reich, R.B. (1990). Who Is Us? *Harvard Business Review*, vol. 90, no. 1, pp. 53-64.
- Reich, R.B. (1991). *The work of nations: Preparing ourselves for the 21st century capitalism*. New York: Vintage books.
- Sanchirico, C.W. (2015). As American as Apple Inc.: International Tax and Ownership Nationality. *Tax Law Review*, vol. 68, iss. 2, pp. 207-274.
- Sawyer, C. (2014). Don't dissolve the "nerve center": A status-linked citizenship test for principal place of business. *Boston College Law Review*, vol. 55, iss. 2, pp. 641-685.
- Tams, C.J., Tzanakopoulos, A. (2010). Barcelona Traction at 40: The ICJ as an Agent of Legal Development. *Leiden Journal of International Law*, vol. 23, iss. 4, pp. 781-800.
- Vaitheeswaran, V.V. (2013). *You can't fire me, I quit*. The Economist, [online]. Available: <https://www.economist.com/blogs/schumpeter/2013/04/telecoms> [2013, May 1].
- William, D. (2005). Supplier linkages of foreign-owned manufacturing firms in the UK: The influence of entry mode, subsidiary autonomy and nationality. *European Planning Studies*, vol. 13, iss.1, pp. 73-91.

Manuela Ingaldi^{1*}

Czestochowa University of Technology
Poland

Marta Kadłubek²

Czestochowa University of Technology
Poland

Szymon T. Dziuba³

Wroclaw University of Economics
Poland

18. KANO MODEL AS AN INSTRUMENT OF TOTAL QUALITY MANAGEMENT

Abstract: Product design which takes into account all of its important characteristics, production of that product according to the design and customers' requirements is a process that requires a lot of attention. The Kano model which is one of the instrument used in TQM can be very useful in such occasions. It allows to find connection between the development of product's characteristics and the level of customers' satisfaction. Customers in a properly constructed questionnaire indicate the level of satisfaction or dissatisfaction, in case of presence and absence of different characteristics. It allows to indicate the characteristics that are necessary in the product (must be quality), those whose level of satisfaction affects the level of their satisfaction (one-dimensional quality) or the ones that the customers do not want (reverse quality). The Kano model can be used both during design and evaluation of the quality of various products and services. The purpose of the paper is to evaluate the quality of the service of chosen e-shop on the basis of the customer feedback with use of the Kano model. The customers who made shopping in the research e-shop were asked to fulfil the survey with 28 different statements. According to customers' answers all these attributes were divided into the three groups: "must-be's" (17 attributes), "one-dimensional" (10 attributes) and "attractive" (1 attribute). An important recommendation for the enterprise is to care for "must be" attributes because they determine popularity of the shop.

Keywords: Kano model, product management, quality, satisfaction, service.

JEL Classification: D20, L15, L80, M11

1. Introduction

TQM is oriented at the achievement of the highest effectiveness of utilization of the resources. One of the methods is to improve the processes in all the areas of enterprise operation (Kotus et al., 2013; Brozova, Pustejovska, Jursova, 2015; Futas et al., 2017). The TQM concept assumes manufacturing of products and providing best services with highest quality and lowest costs possible. The main aim of the TQM is to strive for meeting all the needs and satisfying customers in order to increase the competitiveness of enterprise products (Bendell, Boulter, 2000; Nowak, 2009; Balashova, Gromova, 2017).

Adequate designing of a product and taking into consideration their all attributes at an adequate level, production of products according to the project or customer's order with high quality represent the process that needs much attention. At the product design phase, the QFD method is used to choose its parameters. It allows for taking into consideration the attributes which are indicated by customers (Wolniak, Skotnicka, 2008; Fiorenzo et al., 2017). Prevention of the problems in the production process and the product is supported by the FMEA method. Based on the risk of occurrence of individual non-conformities, one should implement preventive measures to avoid such problems in the future (Krzemień, Wolniak, 2004; Piątkowski, Kaminski 2017). However, a very important tool which is often neglected during determination of the level of product quality and indication of the most

¹ Ing. Manuela Ingaldi Ph.D.; Al. Armii Krajowej 19 B, 42-200 Częstochowa, Poland, manuela@gazeta.pl

² Ing. Marta Kadłubek Ph.D.; Al. Armii Krajowej 19 B, 42-200 Częstochowa, Poland, martakadlubek@wp.pl

³ Ing. Szymon T. Dziuba Ph.D.; ul. Komandorska 118-120, 53-345 Wrocław, Poland, szymon.dziuba@ue.wroc.pl

* Corresponding author

important attributes is the Kano model. Customers, using a dedicated questionnaire, provide information about the level of satisfaction or dissatisfaction in the case of presence or absence of a specific attribute. This helps indicate which attributes are the most important from the customer's standpoint (Lampa, Mazur, 1996; Violante, Vezzetti, 2017).

The purpose of the paper is to evaluate the quality of the service of chosen e-shop on the basis of the customer feedback with use of the Kano model. The customers who made shopping in the research e-shop were asked to fulfill the survey. The results of the survey are summarized in tabular form, which facilitated the division of all attributes of analyzed service into different types. The satisfaction and dysfunction factors were also calculated.

2. Literature Review

The Kano model allows for the examination of the relationships between the attributes of products or services and the level of customer satisfaction. It was developed in 1980 by a Japanese professor Noriaki Kano. He proposed the Attractive Quality theory, with its major assumption being the concept of the division of attributes or features of products and services that are perceived and appreciated by the customer (Conti, 2004; Kano et al., 1984). According to this professor, not all components of products are similarly important from the customer's standpoint. Noriaki Kano categorized attributes into six groups (Lampa, Mazur, 1996; Kowal, 2014; Antony, Preece, 2002; Webber, Wallace, 2007). "Must-be" attribute have to be contained in the product and service as a standard. Lack of these features can lead to losing the customer. "One-dimensional" attributes have the greatest importance to customer satisfaction. It is critical that meeting this type of attributes is almost proportional with the level of customer satisfaction, which can translate into the frequency of purchasing the products or using the services. "Attractive" attributes have to attract the customer to a product or service. Popularity of these attributes is short-term and can be turned into the "must-be's" or disappear. Their lack does not have an effect on customer satisfaction but it may lead to the lack of his or her interest. "Reverse" attributes occur when the customer prefers absence of the attribute and does not like its presence. More such attributes in the service or product leads to a greater customer dissatisfaction. "Indifferent" attributes do not impact on customer satisfaction. "Contradiction" occurs in the case of the Kano method. It is the attribute which was assessed as functional or non-functional in both forms of questions.

Therefore, the analysis should be conducted to indicate the attributes of a product or service which are important for customers, cause their satisfaction or dissatisfaction and those which are neutral. A traditional approaches to quality used to assume that customer satisfaction is directly proportional to product functionality i.e. the less functional the product, the more satisfied the customer and, the more functional product, the less satisfied the customer. This characteristic is one-dimensional. The "must-be" attributes point to the aspects where the customer is more dissatisfied if the product is less functional but when the customer satisfaction never increases above neutral, regardless of how the product functions. Furthermore, in the case of "attractive" attributes it is indicated that the customer is more satisfied if the product has a particular characteristic but is not dissatisfied if the product lacks an attribute (Keshavarz, 1993; Ingaldi, 2016; Shen, Tan, Xie, 2000; Sauerwein et al., 1996; Nieckuła, 2002).

The Kano method is used in the form of a dedicated questionnaire. The questionnaire contains positive and negative versions of statements/questions that refer to the attributes of a specific problem. The Kano questionnaire, both in the case of positive and negative statements, is based on the most common scale (Wolniak, Skotnicka, 2008; Velikova, Slevitch, Mathe-Soulek, 2017) and was presented in Table 1 with its results interpretation.

It is claimed that the Kano model is dynamic, thus not subjected to the continuous evolution while this concerns in particular the "attractive" attributes as they become a standard after some time (Nilsson-Witell, Fundin, 2005). Customers tend to get accustomed to good products and their attributes. Therefore, it is necessary that the enterprise should invest in research and development so that innovative solutions will endear the enterprise to loyal customers.

This method can be used both for evaluation of products and services. It can be used to design new products as a supportive element and a method to evaluate quality of products offered. However, it should be remembered that this will be reflected by the results since in the case of evaluation of the quality of current products, there will not be many "reverse" attributes. The interpretation of the results is also different. In the case of the designed products, customers indicate the most desired attributes

which can determine the future choice of product. Furthermore, in the case of final products, they indicate which attributes led to customer satisfaction and which determined the decision of the product purchase or using a specific enterprise.

Table 1. Type of attribute in the Kano method

	Negative				
	a) I like it	b) That's the way it has to be	c) I don't mind	d) I can put up with it	e) I don't like it
Positive	a) I like it	Q	A	A	O
	b) That's the way it has to be	R	I	I	M
	c) I don't mind	R	I	I	M
	d) I can put up with it	R	I	I	M
	e) I don't like it	R	R	R	Q

Notes: A – attractive; O – one-dimensional; M – must-be; I – customer was indifferent to the attribute; R – customer did not like the attribute; Q – there was a contradiction.

Source: Kreier, Łuczak, 2002; Wolniak, Skotnicka, 2008

The assessment given by the customers in the Kano questionnaire can be used to calculate customer satisfaction and dissatisfaction indices. These indices are given by (Keshavarz, 1993):

$$\text{satisfaction index} = \frac{A + O}{A + O + M + I} \quad (1)$$

$$\text{dissatisfaction index} = -\frac{O + M}{(A + O + M + I)} \quad (2)$$

The minus sign is added to the dissatisfaction indices (equation 2) in order to emphasize the negative effect on customer perception if the product quality is not met. The satisfaction index is in the range of (0; 1). If the value is close to 1, customer satisfaction is very high. It is also important that negative values of satisfaction (dissatisfaction index) should be examined. If the value is close to -1, customer dissatisfaction is very high. If the positive factor is higher, this means situation when customer satisfaction increases due to the "attractive" and "one-dimensional" attributes. If the negative factor is higher, this means the situation when customer satisfaction decreases (dissatisfaction increases) due to "one-dimensional" and "must-be" attributes. This interpretation is used in the case of product design. The interpretation in the case of the evaluation of the quality of the current product is similar. If the positive index is higher, it reflects how much the customer satisfaction rose in the case of the occurrence of a specific attribute and in the reverse direction (Keshavarz, 1993).

3. Methodology

The survey was conducted in an online shop which sells products for children. The headquarters of the shop are located in Czestochowa, Poland. The Kano method was used for the evaluation of the quality of services provided by the online shop. The survey allowed for determination of the most important attributes of the services provided by the enterprise. This helped indicate the areas of the service-providing operations of the enterprise i.e. the attributes which have to be paid more attention to. In order to conduct the examinations, the Kano questionnaire was created specifically for the enterprise. The questionnaire contained 28 statements. Table 2 presents all the statements used in the questionnaire, both in the positive and negative versions.

The questionnaire presented in Table 2 is original, because it was created for purpose of the research e-shop presented in the article. However, it can be used by other e-shops with or without changes so it can be treated as very universal instrument. The survey examined 117 customers from the enterprise studied. They were expected to evaluate all the positive statements contained in the questionnaire and negative statements by means on the previously presented scale. The survey was conducted in June and July 2017. After completion of the survey questionnaires, the customer's answers were collected in tables with positive and negative responses. Next, also in tables, type of attribute was determined for each pair according to the table. Individual types of characteristics for each attribute were added (number of answers in a category) and the final assessment was made according to the total of the types of attributes. Satisfaction and dissatisfaction indices were also computed for individual attributes.

Table 2. Kano questionnaire for the online shop surveyed

No.	Positive statement	Negative statement
1	The online shop has a well organized and comprehensible website.	The online shop does not have a well organized and comprehensible website.
2	Information contained in the website is updated and comprehensive.	Information contained in the website is not updated and comprehensive.
3	The online shop's website contains its contact data.	The online shop's website does not contain its contact data.
4	The online shop's range of products is updated.	The online shop's range of products is not updated.
5	Categories are comprehensible and logical.	Categories are not comprehensible and logical.
6	Information about products is complete and the photographs are legible.	Information about products is not complete and the photographs are illegible.
7	Shop's rules and terms are available and clear.	Shop's rules and terms are not available and clear.
8	The purchasing procedure is described in detail in the website.	The purchasing procedure is not described in detail in the website.
9	The website contains a user-friendly search engine.	The website does not contain a user-friendly search engine.
10	The website has an option of search results filtering.	The website does not have an option of search results filtering.
11	The website has an option of shopping cart memory.	The website does not have an option of shopping cart memory.
12	Ordering options are clear and easy to use.	Ordering options are not clear and easy to use.
13	Recording in the online shop is not required for shopping.	Recording in the online shop is required for shopping.
14	Customer can choose between various payment options.	Customer cannot choose between various payment options.
15	Customer can choose between various shipment options.	Customer cannot choose between various shipment options.
16	Customers can contact the customer service department in order to obtain additional information about the products.	Customers can experience problems with contacting the customer service department in order to obtain additional information about the products.
17	Customers can contact the customer service department in order to explain any doubts.	Customers can experience problems with contacting the customer service department in order to explain any doubts.
18	Customers can withdraw a purchase before execution of an order.	Customers cannot withdraw a purchase before execution of an order.
19	Deliveries are completed according to the deadlines declared on the website.	Deliveries are not completed according to the deadlines declared on the website.
20	Customers can track their parcels.	Customers cannot track their parcels.
21	Parcels are delivered at time convenient to customers.	Parcels are not delivered at time convenient to customers.
22	Customers can refuse to accept the parcel in the case of inadequacies.	Customers cannot refuse to accept the parcel in the case of inadequacies.
23	Financial transactions connected with shopping in the online shop are processed without problems.	Financial transactions connected with shopping in the online shop are not processed without problems.
24	After the purchase, customers can add opinions.	After the purchase, customers cannot add opinions.
25	The online shop collects information about execution of orders by couriers.	The online shop does not collect information about execution of orders by couriers.
26	Customers can return the products which they did not like.	Customers cannot return the products which they did not like.
27	Customers can return and exchange the products damaged during transport.	Customers cannot return and exchange the products damaged during transport.
28	Customers do not have problems with guarantee repairs of the damaged product.	Customer cannot repair the product under guarantee.

Source: Own study

4. Results

Due to their number, only the final comparison of the results was presented, containing the number of answers for individual categories provided by customers, and the final assessment of the attribute. The sums of answers concerning individual categories of attributes according to the customers' opinions

and the final evaluation of individual attributes were also recorded. The results are presented in Table 3. Furthermore, the table contains satisfaction and dissatisfaction indices.

Table 3. Kano questionnaire results for the online shop surveyed

No.	Attribute	Number of answers in the category						Assessment of the attribute	Satisfaction index	Dis-satisfaction index
		A	M	O	I	Q	R			
1	Comprehensibility of the website	15	54	36	11	1	0	M	0.44	-0.78
2	Topicality of information on the website	6	63	39	9	0	0	M	0.38	-0.87
3	Contact data on the website	19	54	26	17	0	1	M	0.39	-0.69
4	Topicality of the range of products offered on the website	7	62	33	13	1	1	M	0.35	-0.83
5	Division into categories	46	24	41	5	0	1	A	0.75	-0.56
6	Complete information about products	33	21	47	16	0	0	O	0.68	-0.58
7	Accessible and comprehensible shopping rules	19	27	42	29	0	0	O	0.52	-0.59
8	The shopping process is described	26	15	38	36	1	1	O	0.56	-0.46
9	Available search engine	37	57	23	0	0	0	M	0.51	-0.68
10	Option of search result filtering	13	61	36	7	0	0	M	0.42	-0.83
11	Option for saving the shopping cart	28	18	41	29	1	0	O	0.59	-0.51
12	Easy ordering options	10	26	56	25	0	0	O	0.56	-0.70
13	Signing up is not required	26	31	58	0	1	1	O	0.73	-0.77
14	Payment options are available	31	46	39	0	1	0	M	0.60	-0.73
15	Shipment options are available	17	51	20	27	2	0	M	0.32	-0.62
16	Contact with the customer service department concerning additional information is possible	0	76	41	0	0	0	M	0.35	-1.00
17	Contact with the customer service department concerning inadequacies is possible	0	83	33	0	1	0	M	0.28	-1.00
18	Customers can withdraw a purchase	15	12	61	29	0	0	O	0.65	-0.62
19	Transactions are processed on time	12	53	15	37	0	0	M	0.23	-0.58
20	Customers can track parcels	28	33	51	5	0	0	O	0.68	-0.72
21	Convenient delivery times	12	63	37	5	0	0	M	0.42	-0.85
22	Customers can refuse to accept the parcel	8	84	23	0	1	1	M	0.27	-0.93
23	Problem-free financial transactions	11	72	34	0	0	0	M	0.38	-0.91
24	Option of adding the opinion on shopping	21	17	64	15	0	0	O	0.73	-0.69
25	Information about execution of the order by courier	7	6	83	20	1	0	O	0.78	-0.77
26	Option of returning the product	8	83	21	5	0	0	M	0.25	-0.89
27	Option of exchanging the product damaged during transport	9	85	22	0	1	0	M	0.27	-0.92
28	Option of repairing the damaged product	7	96	14	0	0	0	M	0.18	-0.94

Source: Own study

Analysis presented in Table 3 reveals that the answers of the respondents in certain cases were varied. It should be stressed that the survey was conducted for the online shop with products for children, which means a small group of customers, i.e. young parents. Nowadays, young people have high expectations of the services provided by online shops, which is reflected by the results of the survey. Most of the attributes in the online shop analysed in the study are the "must-be's" (17 attributes). These attributes of the online shop were expected by the customers who preferred purchasing products for children using online shopping. They determined the choice of the services provided by the shop. An important recommendation for the enterprise is to care for these attributes so that they are ensured. They will continue to determine popularity of the shop.

Other 10 attributes are "one-dimensional" i.e. those which determine customer satisfaction or dissatisfaction. The more the attribute is met, the more satisfied the customer. These attributes are not

"must-be's", i.e. their absence should not impact on the purchasing decisions in the online shop but only on the satisfaction from the purchase. Only one "attractive" attribute was mentioned by the customers. This was attribute 5 (Division into categories). However, this type of attribute was not prevailing substantially (46 indications) as 41 customers considered this attribute as "one-dimensional". This situation is interesting as most online shops use the division of their products into categories in a more or less complex manner and customers are accustomed to such divisions. Perhaps this attribute is not important enough to the customers to treat it as a "must-be" attribute. It is possible that division into categories is presented in a more accurate or more interesting way than in other online shops. Interestingly, contradictions were found in the case of several attributes. This concerned the attributes: 1 (Comprehensibility of the website), 4 (Topicality of the range of product offered on the website), 8 (The shopping process is described), 11 (Option of saving the shopping cart), 13 (Signing up is not required), 14 (Payment options are available), 15 (Shipment options are available), 17 (Contact with the customer service department concerning inadequacies is possible), 22 (Customers can refuse to accept the parcel), 25 (Information about execution of the order by courier) and 27 (Option of exchanging the product damaged during transport). In all these cases, customers answered "I like it" in both positive and negative versions of these statements. This could have resulted from the mistake connected with failure to understand the statements or careless filling in the questionnaires as these were individual cases.

In the case of some attributes, several customers chose the answers which meant that they did not like certain attributes. These included such attributes as: 3 (Contact data on the website), 4 (Topicality of the range of products offered on the website), 5 (Division into categories), 8 (The shopping process is described), 13 (Signing up is not required) and 22 (Customers can refuse to accept the parcel). There were few such answers, which did not have much effect on the general outcome of the examination.

Analysis of the indices leads to the conclusion that in the case of the satisfaction index, the highest value was recorded in the case of the attribute 5 (Division into categories). The value of the index was 0.75. This is a relatively high value, meaning the high level of satisfaction with this attribute. A high value of this index was also obtained for the attributes 12 (Signing up is not required) and 24 (Option of adding the opinion on shopping), reaching 0.73. None of the attributes was assessed as 1. The lowest index was recorded in the case of the attribute 28 (Option of repairing the damaged product) and was only 0.18. An interesting situation was recorded in the case of dissatisfaction. For two attributes, the value of this index was -1, meaning full dissatisfaction. These were attributes 16 (Contact with the customer service department concerning additional information is possible) and 17 (Contact with the customer service department concerning inadequacies is possible). It should be emphasized that many attributes were characterized by the index close to -1. All these attributes were "must-be's" according to the customers.

Table 4. Interpretation method

Distribution of response	XY Pair	Location on the graph of the point
All attractive	0;1	Top left corner
All one-dimensional	1;1	Top right corner
Evenly split between attractive and one-dimensional	0.5;1	Middle of the top, halfway between attractive and one-dimensional - point A
All must-be	1;0	Bottom right corner
Evenly split between one-dimensional and must-be	1;0.5	Middle of right edge, halfway between one-dimensional and must-be - point B
All indifferent	0;0	Bottom left corner
Evenly split between must-be and indifferent	0.5;0	Middle of bottom edge, halfway between must-be and indifferent - point C
Evenly split between indifferent and attractive	0;0.5	Middle of left edge, halfway between indifferent and attractive - point D
Evenly split among attractive, one-dimensional, must-be and indifferent	0.5;0.5	Exact middle of graph - point E
Evenly split between attractive and must-be	0.5;0.5	Exact middle of graph, halfway between attractive and must-be, without an influence of one-dimensional or indifferent - point E
Evenly split among attractive, one-dimensional and must-be	0.67;0.67	Equally spaced between attractive and must-be, but influenced by one-dimensional - point F

Source: Keshavarz, 1993

A two-dimensional matrix was created to show the types of attributes of the online shop studied, with the axis X related to the dissatisfaction indices for individual attributes in absolute terms whereas the axis Y represented the satisfaction indices. Interpretation of the matrix is presented in Table 4. The matrix of the results for the shop studied was presented in Figure 1. As shown in Figure 1, none of the attributes is a neutral or "attractive" attribute. All the points are located in the right part of the matrix. There are no corner points, which means that none of the attributes is clearly a "must-be" or "one-dimensional" according to the customers. As already shown in Table 3, the answers pointed to this pattern.

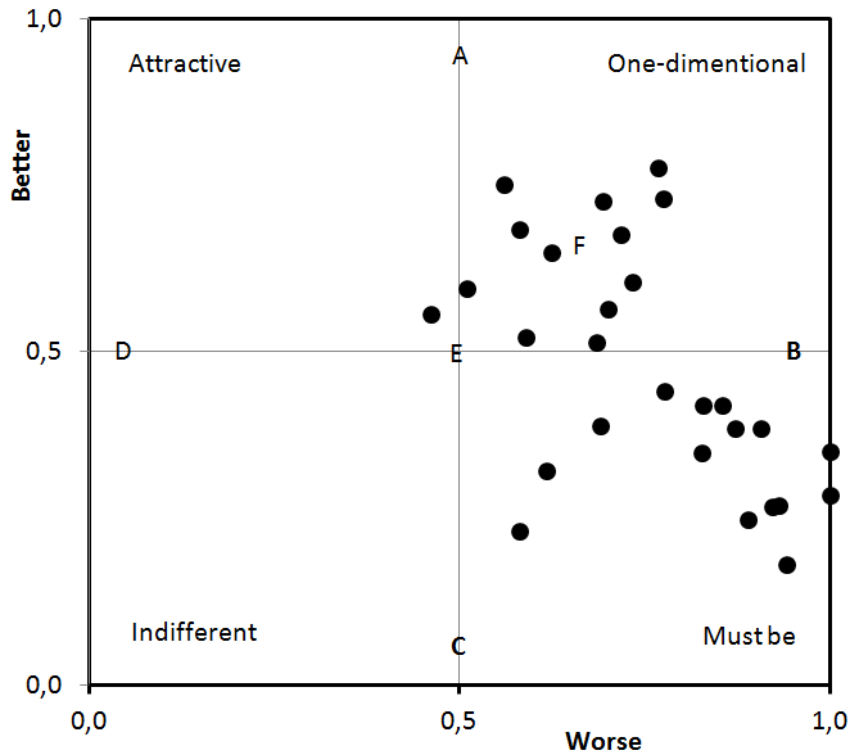


Figure 1. Map of attributes according to the Kano questionnaire for the online shop analysed in the study

Source: Own study

4. Conclusion

The paper provided the analysis of attributes of the services offered by the selected research object. The object studied is an online shop selling products for children, with its headquarters located in Czestochowa. The survey was based on the Kano questionnaire. The questionnaire contained 28 different characteristics of the services offered by the shop and was completed by 117 customers.

The attributes were divided into the three groups: "must-be's" (17 attributes), "one-dimensional" (10 attributes) and "attractive" (1 attribute). However, it should be emphasized that the answers were very varied. Therefore, these attributes do not belong clearly to the above groups. The most important group was "must-be's". They have to be included in the service, whereas their lack impacts on customer dissatisfaction and, consequently, the online shop can risk losing customers. Therefore, this group of attributes should be indicated as a group that requires a broader and more accurate analysis and, if necessary, the improvement.

The Kano model is a new way to define customers' value. It should be underlined that it can identify the most important customer product features, it shows what should be provided and what should be avoided so as to keep customers satisfied. All "must be's" must be fulfilled, the enterprise should be competitive with regard to one-dimensional requirements and stand out from the rest as regards attractive features. The Kano model can help to identify the product features for which customers have problem and hence the dissatisfaction with the product. It can be used both for material products and services, by the enterprises of different type and shapes.

There are some disadvantages of the Kano model. The questionnaire should be prepared accurately and carefully. It should be also remembered that it is fulfilled by customers. Different customers can have different approach to the product features so there can be a difficulty to see what is really important.

References

- Antony, J., Preece, D. (2002). *Understanding, Managing and Implementing Quality. Frameworks, techniques and cases*. London and New York: Routledge.
- Balashova, E.S., Gromova, E.A. (2017). TQM as one of the Drivers of Russian Industrial Sector. *Quality-Access To Success*, vol. 18, iss. 159, pp. 50-53.
- Bendell, T., Boulter, L. (2002). *Benchmarking*. Kraków: Wydawnictwo Profesjonalnej Szkoły Biznesu.
- Brozova, S., Pustejovska, P., Jursova, S. (2015). Methods and technologies of some electronic waste processing. *Energy and clean technologies, Book Series: International Multidisciplinary Scientific GeoConference-SGEM*, pp. 715-722. Albena.
- Conti, T. (2004). *Qualità un'occasione perduta?* Milano: Etas.
- Fiorenzo, F., Maurizio, G., Domenico, M., Luca, M. (2017). Ordinal aggregation operators to support the engineering characteristic prioritization in QFD. *International Journal of Advanced Manufacturing Technology*, vol. 91, iss. 9-12, pp. 4069-4080.
- Futas, P., Pribulova, A., Fedorko, G., Molnar, V. (2017). Influence of Steel Scrap in the Charge on the Properties of Gray Cast Iron. *ISIJ International*, vol. 57, iss. 2, pp. 374-379.
- Kowal, K. (2014). *Model Kano i cechy idealnego produktu*, [online]. Available: <https://oditk.pl/pl/wiedza/artykul/zobacz/model-kano-i-cechy-idealnego-produktu/> [2016, January 10].
- Ingaldi, M. (2016). Wykorzystanie metody Kano do oceny jakości przedsiębiorstwa produkcyjno-usługowego. In A. Hutny, M. Warzecha (Eds.), *Inżynieria procesów produkcji. Wybrane aspekty*. pp. (71-79). Częstochowa: Wydawnictwo Wydziału Inżynierii Produkcji i Technologii Materiałów Politechniki Częstochowskiej.
- Kano, N., Seraku, N., Takahashi, F., Tsuji, S. (1984). Attractive quality and must-be quality. *Hinshitsu, Quality. The Journal of the Japanese Society for Quality Control*, vol. 14, no. 2, pp. 39-48.
- Keshavarz, A. (1993). Kano's Methods for Understanding Customer-defined Quality. *Center for Quality of Management Journal*, vol. 2, no. 4, pp. 2-30.
- Kotus, M., Holota, T., Paulicek, T., Petrik, M., Sklenar, M. (2013). Quality and Reliability of Manufacturing Process in Automation of Die-Casting. *Materials, Technologies And Quality Assurance, Book Series: Advanced Materials Research*, vol. 801, pp. 103-107.
- Kreier, E., Łuczak, J. (2002). *ISO 9000. Łatwy i skuteczny sposób uzyskania certyfikatu jakości. T. 1-2*. Poznań: Forum.
- Krzemień, E., Wolniak, R. (2004). *Zarządzanie jakością w sektorze usług finansowych*. Bielsko-Biała: Wyższa Szkoła Bankowości i Finansów.
- Lampa, S., Mazur, G. (1996). *Bagel sales double at Host Marriot*. Michigan: The Eighth Symposium on Quality Function Deployment.
- Nieckuła, J. (2002). *Odzwierciedlenie wymagań klienta w technicznej specyfikacji wyrobu*. ISO Guide 2002 - Polscy liderzy jakości. Hoppenstedt Bonnier.
- Nilsson-Witell, L., Fundin, A. (2005). Dynamics of service attributes: a test of Kano's theory of attractive quality. *International Journal of Service Industry Management*, vol. 16 no 2, pp. 152-168.
- Nowak, E. (2009). Zarządzanie kosztami jakości a koncepcje TQM i Kaizen. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, no. 53, pp. 94-100.
- Piątkowski, J., Kaminski, P. (2017). Risk Assessment of Defect Occurrences in Engine Piston Castings by FMEA Method. *Archives Of Foundry Engineering*, vol. 17, iss. 3, pp. 107-110.
- Sauerwein, E., Bailom, F., Matzler, K., Hinterburger, H. (1996). The Kano Model: How to delight your customers. *Preprints Volume I of the IX. International Working Seminar on Production Economics, Innsbruck/Igls/Austria, February 19-23 1996*, pp. 313 -327.
- Shen, X.X., Tan, K.C., Xie, M. (2000). An integrated approach to innovative product development using Kano's model and QFD. *European Journal of Innovation Management*, vol. 3, no. 2, pp. 91-99.
- Velikova, N., Slevitch, L., Mathe-Souleik, K. (2017). Application of Kano model to identification of wine festival satisfaction drivers. *International Journal Of Contemporary Hospitality Management*, vol. 29, iss. 10, pp. 2708-2726.

Violante, MG., Vezzetti, E. (2017). Kano qualitative vs quantitative approaches: An assessment framework for products attributes analysis. *Computers In Industry*, vol. 86, pp. 15-25.

Webber, L., Wallace, M. (2007). *Quality control for dummies*. Hoboken: Wiley Publishing Inc.

Wolniak, R., Skotnicka, B. (2008). *Metody i narzędzia zarządzania jakością. Teoria i praktyka*. Gliwice: Wydawnictwo Politechniki Śląskiej.

Eva Ivanová^{1*}

Alexander Dubček University in Trenčín
Slovakia

Marcel Kordoš²

Alexander Dubček University in Trenčín
Slovakia

19. INNOVATION PERFORMANCE OF SLOVAK REGIONS WITHIN THE INNOVATION PERFORMANCE OF EU

Abstract: In the context of global changes and shifts of production factors, the position of Slovak Republic, as a country with competition advantage as a cheap labor force, is unsustainable for a long period of time. The determinant of future sustainable prosperity of SR, as a small open economy, must be the ability of economy to respond flexibly to global change and demand and to find appropriate strategies of sustainability, but above all, how to enhance the competitiveness of an economy. In the long run, innovation ensures technological changes and initiates new economic and technological cycles. Innovation improves the socio-economic situation of companies, regions and entire countries. Therefore, innovation activities of companies' management, by means of clusters need to be enhanced. The aim of this paper is to assess the development and changes within the innovation performance of Slovak regions, occurring under the global processes and changes in the innovation performance of EU regions. The basic methods being used are the comparative analysis method and the time series analysis of regional innovation performance development and its impact on the competitiveness of economy. The EU innovation performance and the innovative performance of national economies depend on innovation performance of regions. To enhance the competitiveness of regions is based on the ability to innovate. The EU innovation policy is an important tool how to enhance the economic performance as it affects structural policies and structural changes in national economy management, having a multiplication effect on the competitiveness of an economy.

Keywords: competitiveness, innovation performance, regional innovation enhancement.

JEL Classification: E20,O31,O32

1. Introduction

Innovation is a complex concept purposeful, dynamic development processes, resulting in a positive change aimed at improving reproductive process and better meet the needs of consumers. Innovation can relate to products, technologies, means of production, the professional and qualification structure of workforce, and organizational organization of a company. That can be both quantitative and qualitative changes, changes with positive and negative socio-economic consequences. (Doloreux, Dionne, 2008; Hamilton, Wepster, 2009; Dicken, 2007). It is the key not only to creating more jobs, building a greener society and improving our quality of life, but also to maintaining our competitiveness in the global market. Innovation has been placed at the heart of the EU's strategy to create growth and jobs (Korec, Polonyová, Lehocký, 2012; Urbančíková, Burger, 2010). EU countries are encouraged to invest 3% of their GDP in R&D by 2020 (1% public funding, 2% private-sector investment) – this is expected to create 3.7 million jobs and increase the EU's annual GDP by nearly €800 billion (European Commission, 2018). The EU initiative Innovation Union focuses Europe's efforts – and its cooperation with non-EU countries – on the big challenges of our time: energy security, food security, climate change, ageing population and others. It uses public sector intervention to stimulate the private sector and remove bottlenecks that prevent ideas from reaching the market – including lack of finance, fragmented research systems and markets, under-use of public procurement for innovation and slow standard setting (Hájek, Novosák, Hovorková, 2011; Staab, 2013). The EU is also managing to create a single European Research Area, where researchers will be able to work anywhere in the EU and cooperation across borders will be supported and encouraged.

¹ Ing. Eva Ivanová Ph.D.; Študentská 2, 911 50 Trenčín, Slovakia, eva.ivanova@tnuni.sk

² Ing. Marcel Kordoš Ph.D.; Študentská 2, 911 50 Trenčín, Slovakia, marcel.kordos@tnuni.sk

* Corresponding author

The paper aim is to assess the development and changes within the innovation performance of Slovak regions, occurring under the global processes and changes in the innovation performance of EU regions.

2. Theoretical Background

EU Innovation policy along with other EU policies such as industrial, regional, competition, energy, trade, and others being managed by European Commission is providing us with crucial synergy effects that need to be used effectively to secure high living standards and social and economic development of EU as an economic superpower within the international economy. The main component how EU is putting the innovation into action is the Horizon 2020 being the biggest EU Research and Innovation program ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. Innovation policy is the interconnection of research, technological development and industry. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the laboratory to the market. It also focusses on improving competitiveness, jobs, growth, and tackling societal challenges (Bieling, 2015; Zemanova, Drulakova, 2016). As the main targets we can mention - the innovation output indicator measures the extent to which ideas from innovative sectors are able to reach the market, providing better jobs and making Europe more competitive. By innovation, we understand the creation and adaptation of new or improved products, processes and services. The EU has set itself the target of investing 3% of its GDP in research and development by 2020 - 1% public funding, 2% private-sector investment. Horizon 2020 is the financial instrument managing and implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness (Kačirková, 2016; Zaušková, Madleňák, 2016). By coupling research and innovation, Horizon 2020 is helping to achieve this with its emphasis on excellent science, industrial leadership and tackling societal challenges. The goal is to ensure Europe produces excellent science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation (Obadi, Korcek, 2016; Vojtovič, 2016).

Innovation Union is the EU strategy to create an innovation-friendly environment that makes it easier for great ideas to be changed into products and services. The Innovation Union is one of the seven flagship initiatives of the Europe 2020 strategy for smart, sustainable and inclusive growth (Klímová, 2014). Innovation policy generates new knowledge, increases investment efficiency, expands innovation through networking of partnerships, and stimulates the business sector to create new products, processes and services. The Innovation Union plan contains over twenty eight actions points, with the aim to do three things: to make Europe into a world-class science actor; to remove obstacles to innovation – such as expensive patenting, market fragmentation, slow standard-setting and skills shortages – which nowadays prevent ideas getting quickly to market; and to revolutionize the way public and private sectors work together, notably through Innovation Partnerships between the European institutions, national and regional authorities and business (Lipkova, Braga, 2016).

Regarding the goals of research and innovation policy the open innovation, open science and open to the world are the 3 main policy goals for EU research and innovation. They were set by Commissioner Moedas in 2015. In professional circles, the concept of Open Innovation has been often discussed (Đuricová, 2015; Neumann, 2015). Open innovation has become one of the most pertinent topics in innovation management studies as an alternative way of combining and integrating ideas, knowledge, and resources into business innovation processes. Open innovation means opening up the innovation process to people with experience in fields other than academia and science. By including more people in the innovation process, knowledge will circulate more freely (Fojtíková, 2016; Baculakova, Harakalova, 2017). This knowledge can then be used to develop products and services that can create new markets. This approach suggests that firms use ideas and knowledge inflow and outflow purposefully in their innovation processes in order to foster internal innovation outcomes and expand markets. Open science is an approach to the scientific process that focuses on spreading knowledge as soon as it is available using digital and collaborative technology (Ravenhill, 2011; Baldwin, Wyplosz, 2009). This is a change from the standard practice of publishing results in scientific publications only at the end of the research process. Finally, Open to the world means promoting international cooperation in the research community. Doing this will allow Europe to access the latest knowledge worldwide, recruit the best talent, tackle global challenges and create business opportunities in emerging markets (Jovanovic, 2014; Krugman, Obstfeld, Melitz, 2014; Mitchel, Muysken, Van Veen, 2006).

3. Paper Objectives and Methodology Processing

The goal of this article is to assess the innovative performance of Slovak regions in the wider context of EU regions innovation performance. Within the innovation performance, assessment the secondary data in the form of composite synthetic indicators were used as being published by international organization such as European Union (European Commission). Such synthetic composite indexes, which are made up from a number of macroeconomic indicators, make it possible to describe the multidimensional nature of innovative development of economies over the time and in comparison. The Regional Innovation Scoreboard was the key source for our analysis, and will be used as a benchmark for analyzing the Slovakia's regional innovation performance within selected EU countries. The Community Innovation Survey and national statistics were also used in our analysis.

In addition to secondary data, we used primary data obtained from a questionnaire survey conducted in 2017 in Slovakia at NUTS 3 level (8 regions) so that: Bratislavský (kraj) region is individual, West Slovakia consists of: Trnavský region (TT), Trenčianský region (TN) and Nitra Region (NR), Central Slovakia consists of: Zilina Region (ZA), Banskobystrický Region (BB), Eastern Slovakia consists of Prešovský Region (PO), Košický region (KE). The European Union, in terms of country-by-country data compatibility, shows regional innovation performance at NUTS 2 level through the Regional Innovation Scoreboard.

We assume that there is a significant correlation between the R&D expenditure and the R&D implementation outputs in individual regions of SR. Based on the research and analysis of R&D expenditure and R&D results in the form of implementation outputs in individual regions of SR, we have identified the following hypotheses:

H1: We expect that there will be a statistically significant difference between the average R&D expenditures within the various regions of SR.

H2: We expect that there will be a statistically significant difference between the average R&D implementation outputs within the various regions of SR.

To assess the paper's goal and to achieve the goal of this scientific study the following mathematical and statistical methods have been used: Shapiro-Wilkov test of normality, variance analysis, Tukey's HSD test, and Kendall correlation coefficient as used by authors such as Balaz, Hamara (2016); Fojtíková (2014); De Castro, Hnát (2017); Mynarzova, Stverkova (2015); Tauser, Cajka (2014); Mura, Machova (2015); Haviernikova, Jaskova, Krajnakova (2016). We used the Shapiro-Wilkov Normality Test for a detailed normality analysis of R&D expenditure and implementation outputs within Slovak regions. By the variance analysis we assessed whether there is a statistically significant difference within the average R&D expenditures and implementation outputs in Slovak regions. By means of Tukey's HSD test, we assessed within which subgroups (regions) there is a statistically significant difference in the variables being evaluated.

4. Findings

At the global level, the EU is less innovative than Australia, Canada, Japan, South Korea, and the United States. Performance differences with Canada and the United States have become smaller compared to 2010, but those with Japan and South Korea have increased. Japan has improved its performance more than three times as much as the EU, and South Korea has improved its performance more than four times as much as the EU. The EU maintains a performance lead over China, but this lead is decreasing rapidly with China having improved more than seven times faster than the EU. Regarding the trend comparison of the EU with its main competitors, at the global level, the trends observed in recent years can be expected to continue, with the EU catching up with the United States in two years' time, while the EU's performance gap towards Japan and South Korea would increase and its lead over China decrease further. The EU's performance lead over Brazil, India, Russia, and South Africa is considerable. Based on their average performance scores as calculated by a composite indicator, the Summary Innovation Index, Member States fall into four different performance groups. Denmark, Finland, Germany, the Netherlands, Sweden, and the United Kingdom are Innovation Leaders with innovation performance well above that of the EU average. Austria, Belgium, France, Ireland, Luxembourg, and Slovenia are Strong Innovators with performance above or close to that of the EU average. The performance of Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Slovakia, and Spain is below that of the

EU average. These countries are Moderate Innovators. Bulgaria and Romania are Modest Innovators with performance well below that of the EU average.

Bratislavský region is a Strong Innovator, and innovation performance has increased significantly over time. The data shows the normalized scores per indicator and relative results compared to the country and the EU. It shows relative strengths compared to Slovakia and the EU, highlighting relative strengths (e.g. International scientific co-publications) and weaknesses (e.g. EPO patent applications). The table below shows data highlighting possible structural differences. For instance, the region is more densely populated, with higher employment shares in services and public administration, and much higher than average GDP per capita. Western Slovakia is a moderate innovator, and innovation performance has increased over time. The data shows the normalized scores per indicator and relative results compared to the country and the EU. It shows relative strengths compared to Slovakia and the EU, highlighting relative strengths (e.g. Employment in MHT manufacturing and KIS services) and weaknesses (e.g. Sales of new innovations). The table below shows data highlighting possible structural differences. For instance, the region has higher than average employment shares in manufacturing and agriculture and lower than average share in public administration. Central Slovakia is a moderate innovator, and innovation performance has remained stable over time. The data shows the normalized scores per indicator and relative results compared to the country and the EU. It shows relative strengths compared to Slovakia and the EU, highlighting relative strengths (e.g. Employment in MHT manufacturing and KIS services) and weaknesses (e.g. EPO patent applications). The table below shows data highlighting possible structural differences. For instance, the region is somewhat less urban, with higher employment share in public administration, and lower than average GDP per capita. Eastern Slovakia is a moderate + innovator, and innovation performance has increased significantly over time. The table shows the normalized scores per indicator and relative results compared to the country and the EU. It shows relative strengths compared to Slovakia and the EU, highlighting relative strengths (e.g. Non-R&D innovation expenditures) and weaknesses (e.g. Lifelong learning). The table below shows data highlighting possible structural differences. For instance, the region has higher employment shares in utilities & construction and public administration, and considerably lower than average GDP per capita.

Table 1. Regional Innovation Scoreboard 2017 – relative performance to EU in 2011

	2009	2011	2013	2015	2017
EU 28	97.3	100.0	101.5	101.9	102.6
Bratislavský region	100.4	92.6	107.2	106.7	106.9
Western Slovakia	63.7	64.9	73.7	68.1	71.5
Central Slovakia	62.2	67.3	71.1	63.6	67.8
Eastern Slovakia	68.1	60.1	65.1	69.2	73.7

Source: http://ec.europa.eu/growth/industry/innovation/facts-figures/regional_sk [2018, January 06]

The first step of the research is a detailed analysis of regional R&D expenditure deployment in Slovak Republic, which serves to verify the H1 hypothesis. Subsequently, we will analyze R&D implementation outputs in Slovak regions, by which we verify the H2 hypothesis. Total R&D expenditure is a sum of expenditures from enterprise sources, state budget sources, and other sources, including foreign sources and university sources. Each of these entities wants to have the inputs recovered in form of innovation as the basis for their competitiveness.

Total R&D expenditure in SR grew annually with the exception of the crisis year in 2009 and in 2017 has reached 669634 thous. Eur. Regarding their regional deployment, Bratislava region has the highest share of total R&D spending. Its share increased from 47.0% in 2005 to 56.8% in 2013, falling to 46.5% in 2014 and moving up to 55.5 in 2017.

In other regions in Slovakia, R&D expenditure was much lower than in Bratislava Region and had fluctuating development in monitored period but generally with increasing trend. Significant improvement can be observed mainly in Žilinský and Košický regions after 2009. In Trenčín region, R & D expenditures were developing positively in particular until 2010, in the following years there was a significant decline, and in 2014 and especially in 2017 it can be seen as a significant increase, the same as in Nitra and Trnava regions. The Prešov Region lags behind the other regions during the monitored period.

We have started a more detailed analysis of R&D expenditure values by Shapiro-Wilkov Normality Test, the results are shown in Table 2. We have chosen Shapiro-Wilkov test because of its suitability with respect to file size and good reporting ability compared to other alternative tests. Using Shapiro-Wilkov test, we wanted to find out whether a parametric correlation coefficient (Pearson coefficient) or a non-parametric coefficient (Spearman's or Kendall coefficient) was appropriate for the subsequent correlation analysis.

Table 2. Shapiro-Wilkov test on R&D expenditure in Slovak regions

	BA	TT	TN	NR	ZA	BB	PO	KE
p-value	0.163166	0.364658	0.363269	0.000215	0.038961	0.185620	0.291846	0.120653
alfa	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
normal division	yes	yes	yes	No	no	yes	yes	yes

Source: Own calculations

From the Shapiro-Wilkov test of normality it follows that for most regions, data on the amount of R & D expenditure has a normal distribution. Only in Nitra and Zilina regions the data does not have a normal distribution. Subsequently, we analyzed the scattered analysis for R&D expenditure. The results are shown in Table 3.

Table 3. The scattered analysis on R&D expenditures in Slovak regions

Variability Source	SS	df	MS	F	p-value	F crit	RMSSE	Omega Sq
Among selections	$3.01 \cdot 10^{11}$	7	$4.3 \cdot 10^{10}$	37.83459	$1.11 \cdot 10^{-21}$	2.139656	1.945111	0.763203
Within selections	$8.18 \cdot 10^{10}$	72	$1.14 \cdot 10^9$					
Total	$3.83 \cdot 10^{11}$	79	$4.85 \cdot 10^9$					

Source: Own calculations

By the scattering analysis method, we have confirmed that the expenditure average differs statistically among each region, as the $p (1.11 \cdot 10^{-21}) < \alpha (0.05)$. Based on this, we can say that the H1 hypothesis, “we assume that there is a statistically significant difference within the average R&D expenditures among Slovak regions”, was confirmed.

In the next step, it was necessary to identify within which subgroups there was a statistically significant difference. For this comparison we used the Tukey's HSD test. It proved that the difference is caused only by Bratislava region, where compared to other most successful region – Košický, the value is $p (1.11815 \cdot 10^{-6})$, and thus less than $\alpha (0.05)$. Bratislava region is distinctive from the other regions showing significantly higher values of minimum, maximum and average R&D expenditures compared to other regions of SR.

The R&D implementation outputs analysis within the Slovak regions

The goal of R&Ds is to transform their results into implementation outcomes, which can find application in different forms of innovation in practice. In order to evaluate the results of research and development, we use the indicator R&D outputs, where tangible and intangible realization outputs are included. As in case of R&D expenditures, Bratislava Region has the most significant share in R&D outputs. The share of this region in 2005 was 36.8%, it gradually increased and in 2012 up to 69% and 2017 reached more than 80%, as the number of R&D outputs this year increased sharply in this region. The gap between the other regions from Bratislava region is particularly significant in 2011-2014.

After Bratislava Region, the highest number of R&D outputs was achieved by Banskobystrický Region. This region achieved the best results in 2005, 2006 and 2013. It is followed by Zilina, region which was successful especially in 2013, 2009, 2010 and 2014. The fourth place is Košický region, which recorded the most achievements in 2014, 2005 and 2017. Prešov Region is lagging behind the other regions. A detailed analysis of R&D implementation outputs values in Slovak regions has been started with the normality check by using Shapiro-Wilkov normality test. The results are shown in Table 4.

Table 4. Shapiro-Wilkov Test of R&D outputs in Slovak regions

	BA	TT	TN	NR	ZA	BB	PO	KE
p-value	$4.78 \cdot 10^{-5}$	0.640315	0.856957	0.019036	0.297107	0.530313	0.033832	0.235244
Alfa	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
normal division	no	yes	yes	no	yes	yes	no	yes

Source: Own calculations

Based on the result of Shapiro-Wilkov normality test, it can be concluded that the data has normal deployment in Trnava, Trenčiansky, Žilinský, Banskobystrický and Košický regions. In Bratislavský, Nitrianský and Prešov regions the data are not normally distributed. In ANOVA program we subsequently analyzed the dispersion of R&D outputs in Slovak regions. The results are shown in Table 5.

Table 5. The scattered analysis on R&D outputs in Slovak regions

Variability Source	SS	df	MS	F	p-value	F crit	RMSSE	Omega Sq
Among selections	3352375	7	478910.7	6.532159	5.66·10⁻⁶	2.139656	0.808218	0.326175
Within selections	5278741	72	73315.84					
Total	8631116	79	109254.6					

Source: Own calculations

We can say that the hypothesis H2: We assume that there is a statistically significant difference between the average R&D outputs among Slovak regions, was confirmed.

In the next step, it is necessary to identify in which subgroups there is a statistically significant difference. For this comparison, we used Tukey's HSD test. The result of this test showed that the difference is caused only by Bratislava region, where compared to the second most successful region - Banskobystrický, the value is p (0.000267), and thus less than α (0.05). There is no statistically significant difference among other regions, where Bratislava region is significantly different from the other regions. It is obvious that Bratislava Region shows significantly higher minimum, maximum and average numbers of R&D outputs compared to other Slovak regions. Comparing the other regions of Slovakia, it is obvious that the average values of R&D outputs are very similar here.

5. Discussion and Conclusion

The results of our research show that there are significant differences among Slovak regions in financing of R&D expenditures. Most spending on R&D is heading to Bratislava region, where spending exceeds several times the spending on R&D in other regions of SR. The main reason for these differences is that there is a strong concentration of scientific research institutions in Bratislava region supported by government, as well as the concentration of higher education institutions raising funds for R&D from private sector. There are also significant differences among other regions except Bratislava. Prešov Region has the lowest R&D expenditure values being several times lower than in other regions (eg in Trnava and Trenčín regions). Other regions with higher values in this indicator are Košický and Žilinský. Košice Region has a similar position in the east of Slovakia as the Bratislava Region in the west.

In R&D outputs area the situation is comparable to that of R&D funding. The best values are again reported by Bratislava Region. Apart from Bratislava region, there are quite large differences in R&D outputs among the other regions. Second is Banskobystrický, followed by Žilinský and Košický regions, the worst again is Prešov region.

Regarding the study limitations we had to deal with the issue of different EU regional policy management approaches as EU assess regions on NUTS II levels, Slovak government assess regions on NUTS III levels, making our research more complicated. In our next research studies we will draw the line between those two approaches and assess them separately.

Entities entering funds into R&D are doing so in order to capitalize them on the greatest possible number of outputs that should be transformed into innovation. If this is not the case, the funds are not effectively spent, which is the result of ineffective innovation policy management in a country. The ineffectiveness of innovation policy management has a negative multiplier effect in various areas of socio-economic development in a country: innovation performance, competitiveness, economic performance, employment, income, standard of living, differences in economic and social development of regions, and so on.

As a negative issue in Slovak Republic we consider that there is not a sufficiently developed a cooperation network of scientific research centers and business sphere. All of those spheres are to be managed by government and local authorities much more effectively. The main task of scientists' collaborating with companies' managements is to verify and apply their own scientific results, but also to obtain sources of funding for further R&D and to support the financial sustainability of scientific

projects. For businesses, the benefits from using knowledge transfer and technology from academic research institutions is to gain access to unique research and development results.

Acknowledgements

This paper was supported by the Slovak Ministry of education Scientific grant agency Vega under project: “Social and economic development dimensions and factors of Vysehrad 4 countries’ regions” [Reg. No. 1/0233/16].

References

- Baculakova, K., Harakalova, L. (2017). Creative industries in the EU: factors influencing employment. *Economic Annals-XXI*, vol. 164, iss. 3-4, pp. 40-44.
- Balaz, P., Hamara, A. (2016). Export Dependency of Slovakia on German's Economy. *Politicka Ekonomie*, vol. 64, iss. 5, pp. 573-590.
- Baldwin, R., Wyplosz, Ch. (2009). *The Economics of European integration. 3rd edition*. Berkshire UK: McGraw-Hill Higher Education.
- Bieling, H.J. (2015). *The Political Economy of the European Union*. New York: Open Society Foundations.
- De Castro, T., Hnát, P. (2017). Czech FDI Performance: Between Global Value Chains and Domestic Reforms. *Foreign Direct Investment in Central And Eastern Europe: Post-Crisis Perspectives Book Series: Studies in Economic Transition*, pp. 51-75.
- Dicken, P. (2007). *Global Shift. 5th edition*. London: SAGE Publications Ltd.
- Doloreux, D., Dionne, S. (2008). Is regional innovation system development possible in peripheral regions? Some evidence from the case of La Pocatière, Canada. *Entrepreneurship & Regional Development: An International Journal*, vol. 20, iss.3, pp. 259-283.
- Đuricová, V. (2015). Faktory ovplyvňujúce tvorbu inovácií vo firmách v krajinách EÚ. *Ekonomika Management Inovace*. vol. 7, iss. 3, pp. 83-92.
- European Commission. (2018). *Research & innovation*. [online]. Available: https://ec.europa.eu/info/topics/research-and-innovation_en; https://europa.eu/european-union/topics/research-innovation_en. [2018, January 06].
- Fojtíková, L. (2014). Performance and growth of the Eurozone export. *17th International conference Enterprise and competitive environment 2014 Book Series: Procedia Economics and Finance*, vol. 12. pp. 154-163.
- Fojtíková, L. (2016). Trends in the revealed comparative advantages of the EU member states. *Economic Annals-XXI*, vol. 161, iss. 9-10, pp. 7-11.
- Hájek, O., Novosák, J., Hovorková, Z. (2011). Inovace a region: klastry a regionální inovační systém Zlínského kraje. *E + M Ekonomie a Management*, vol. 14, iss. 2, pp. 31- 43.
- Hamilton, L., Wepster, Ph. (2009). *The International Business Environment*. New York: Oxford University Press.
- Haviernikova, K., Jaskova, D., Krajnakova, E. (2016). The Evaluation of Regional Competitiveness in the Context of Cluster Potential. *Proceedings of the 3rd International Conference on European Integration 2016 (ICEI 2016)*, pp. 326-334.
- Jovanovic, M.N. (2014). *The Economics of European Integration. 2nd revised edition*. London: Edward Elgar Pub.
- Kačírková, M. (2016). Univerzitné vedecké parky a výskumné centrá ako základňa inovácií na Slovensku. *Working Papers*, n. 89, Bratislava: Ekonomický ústav SAV.
- Klímová, V. (2014). Regionální inovační systémy a faktory jejich úspěchu. *Sborník příspěvků XVII. mezinárodní kolokvium o regionálních vědách, Hustopeče*. Brno: Masaryková univerzita, pp. 201- 208.
- Korec, P., Polonyová, E., Lehocký, F. (2012). Konkurenceschopnosť regiónov: teoreticko-metodologické poznámky. *Geographia Cassoviensis*, vol. VI, iss. 2, pp. 68-77.
- Krugman, P.R., Obstfeld, M., Melitz, M. (2014). *International Economics: Theory and Policy (10th Edition)*. Prentice Hall: Pearson Series in Economics.
- Lipkova, L, Braga, D. (2016). Measuring Commercialization Success of Innovations in the EU. *Marketing and Management of Innovations*, iss. 4, pp.15-30.
- Mitchel, W., Muysken, J., Van Veen, T. (2006). *Growth and Cohesion in the European Union (The Impact of Macroeconomic Policy)*. Cheltenham UK: Edward Elgar.
- Mura, L., Machova, R. (2015). Evaluation of the Innovation Performance of Business Networks. *CERS 2014: 5th Central European Conference In Regional Science, International Conference Proceedings*, pp. 634-642.

- Mynarzova, M., Stverkova, H. (2015). Public Support as an Important Factor for Competitiveness of SMEs in the European Union. *Aktualne problemy podnikovej sfery 2015*, pp. 452-461.
- Neumann, P. (2015). The impact of structural changes in national economies on globalization character. *Globalization and its socio-economic consequences, PTS I AND II*, pp. 498-504.
- Obadi, S.M., Korcek, M. (2016). The "Revealed" Comparative Advantage and Competitiveness of the EU's International Trade visa vis the USA. *Ekonomicky casopis*, vol.64, iss. 5, pp. 397-422.
- Ravenhill, J. (2011). *Global Political Economy 4th Ed.* Oxford: Oxford University Press.
- Staab, A. (2013). *The European Union Explained: Institutions, Actors, Global Impact. Third Edition.* Indiana University Press.
- Tauser, J., Cajka, R. (2014). Hedging techniques in commodity risk management. *Agricultural Economics-Zemedska Ekonomika*, vol. 60, iss. 4. pp. 174-182.
- Urbančíková, N., Burger, P. (2010). Miera regionalizácie inovačných politík a jej vplyv na inovačnú výkonnosť regiónov. *E + M Ekonomie a management*, vol. 13, iss. 1, pp. 23-36.
- Vojtovič, S. (2016). The Impact of the Structural Funds on Competitiveness of Small and Medium-Sized Enterprises. *Journal of Competitiveness*, vol. 8, iss. 4, pp. 30-45.
- Zaušková, A., Madleňák, A. (2016). Uplatnenie konceptu otvorenej inovácie v Slovenskej republike. *Ekonomika Management Inovace*, vol. 8, iss. 1, pp. 26-41.
- Zemanova, S., Drulakova, R. (2016). Making Global Goals Local Business In V4 Countries: V4 Entrepreneurs And The Un Global Compact. *Globalization And Its Socio-Economic Consequences, 16th International Scientific Conference Proceedings, PTS I-V*, pp. 2490-2497.

20. QUALITY OF MANAGEMENT FROM PATIENT PERSPECTIVE – PILOTAGE RESEARCH BASED ON PROVINCIAL HOSPITAL IN BIELSKO-BIALA

Abstract: Quality of management is an important issue in management of contemporary organization. It could concern every aspect of management. In case of hospital, quality of management should be created by managers and medical staff. Level of this quality determines level of offered medical services. Quality of management is a part of wider concept Total Quality Management, which puts strong emphasis on quality of services and its improvement. Presented article has theoretical-empirical character. Main purpose of it were analysis and assessment of selected attributes defining quality of medical services in analyzed hospital, in order to verify level of quality of management of those services. Paper consists of following parts: description of quality of management (Total Quality Management), characteristic of medical services and results and conclusions of conducted research. Empirical part of the article was based on questionnaire research realized in provincial hospital in Bielsko-Biala. Interviewees were patients of chosen ward (population – 50 patients). Research had pilotage character. Thanks to research, author received relevant information about technical part of its realization and feedback concerning suggested attributes defining quality of analyzed services. Research verified correctness of selected attributes and let assess them. Research will be continued and population will be extended. It will give wider look at quality of management in chosen organization.

Keywords: customer, medical service, TQM.

JEL Classification: L15, L32

1. Introduction

Quality constitutes a key factor to a success of an organization. There are two reasons for this. First, organizations create a separate function devoted exclusively to the management of quality. Second, high quality services could bring an organization a considerable competitive edge. Good quality reduces costs of rework, waste, complaints and returns and, most importantly, generates satisfied customers. Managers believe that, in the long perspective, quality is the most important single factor affecting an organization performance relative to its competitors (Slack, Chambers, Johnston, 2007).

Following paper consists of two parts, theoretical and practical, presenting its merit structure. The theoretical part of it concerns presentation of system quality management in case of analyzed services and characteristic of medical services quality (attributes of quality). The practical part of the paper shows results and conclusions of conducted research, based on questionnaire research realized in provincial hospital in Bielsko-Biala. Interviewees were patients of selected ward and research had pilotage character (the author could not announce the type of the ward, but its choice did not limit realization of the research). Research will be continued with extended population in the future. Research verified correctness of selected attributes of medical services quality and let assess them. The main purpose of the article were analysis and assessment of selected attributes defining quality of medical services in analyzed hospital, in order to verify level of quality of management of those services. The purpose was achieved by realization of theoretical and practical parts of the paper.

2. Total Quality Management in Medical Services

In many spheres of a service activity, a tendency to develop a quality of services exists. Many managers treat solving of quality problems as a priority. Those tendencies are visible in area of health service as well. Patients are much conscious their preferences and rights, relating to medical services.

¹ Marcin Jakubiec Ph.D.; ul. Willowa 2, 43-309 Bielsko-Biala, Poland, m.jakubiec@ath.bielsko.pl

* Corresponding author

They are active and more often want to decide about a way of replying for their needs. Often contact of a patient with quality caused that this category is qualified as necessary element of acting of a whole, wide meaning medical environment. Management of medical services quality could be realized by Total Quality Management concept (TQM) (Jakubiec, Kurowska-Pysz, 2013; Fraś, 2013).

TQM constitutes a holistic approach to the management of quality, emphasizing a role of all parts of an organization and all people within an organization to influence and improve quality (Jakubiec, 2017). Fundamental settings of this concept, relating to analyzed services are as follows (Tsutsumi, 2001; Daft, 2010; Certo, Certo, 2009; Barcik, 2016; Barcik, 2017; Dziwiński, 2016, Dziwiński, 2017; ISO 9001:2015-10, 2015):

1. Patient approach.
2. Process approach — exact process is much more important than result achieved through unspecified way. Medical organizations (hospitals) are managed by processes.
3. Facts and data approach — avoid intuition management in decision making process.
4. Engagement of all employees — group wisdom is more effective.
5. Personnel development — delegating entitlements and responsibilities, trainings and education, looking up to human dignity.
6. Continuous improvement of all processes and activities. Implementation of quality management systems creates and steers a quality of medical services.
7. Scientific and logical approach — use case studies, apply methods of scientific development.

TQM is a concept of quality management representing engagement of all functional units in organization (Figure 1).

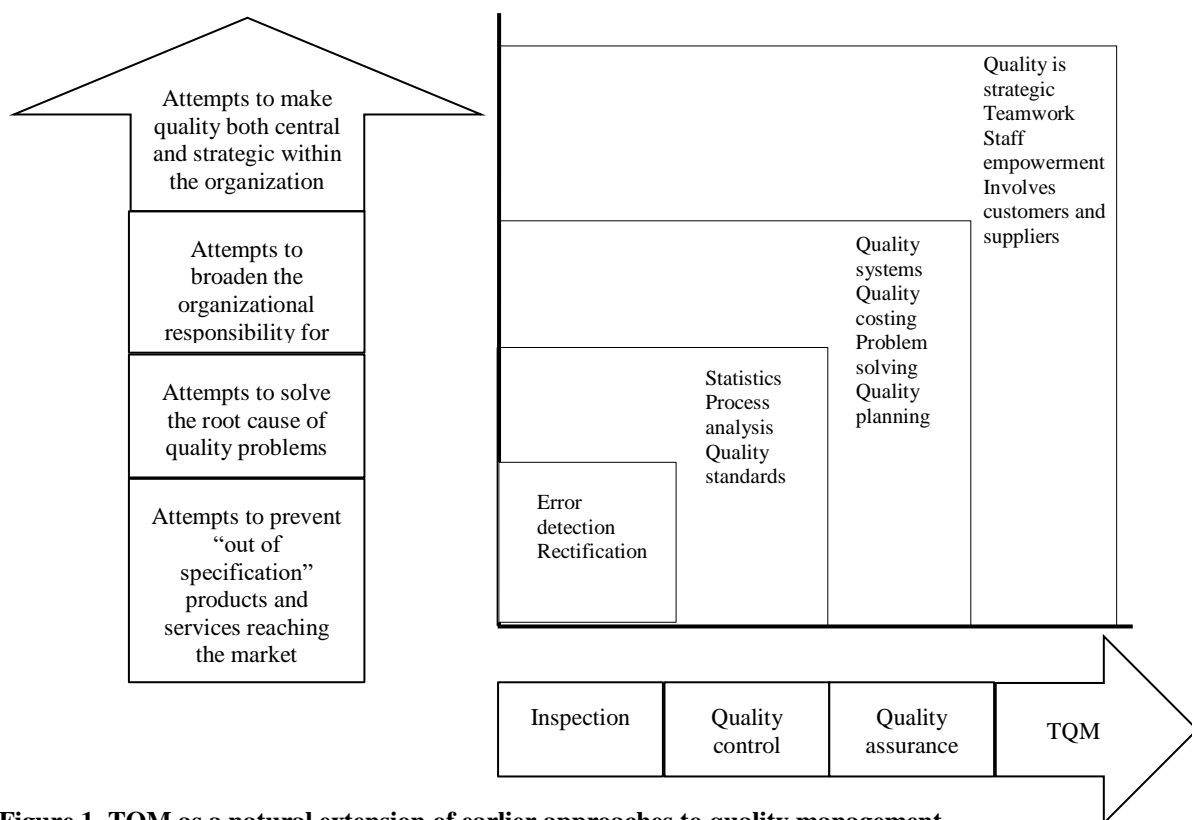


Figure 1. TQM as a natural extension of earlier approaches to quality management

Source: Oakland, 2000; 2014

TQM, except a quality of services, puts concentration on quality of work and quality of management in a whole organization as well as a quality of organization influence on the environment. Such wide meaning of an organization improvement should ensure it success and competitive position on the market (Jakubiec, 2016; Łukasiński, Sikora, 2008; Grudzewski, Hejduk, 2004).

One of the most known models of TQM suggested Oakland, a representative of British quality school. According to this model, TQM is a way of management geared towards improvement of efficiency and effectiveness in aspect of a whole organization. TQM leaves traditional way of

detecting and eliminating of malfunctions, based on tests and inspection. The concept concentrates on cooperation in area of quality among all units of an organization. In TQM realization proper meaning of quality and engagement of all functions, areas of activity and all employees are relevant. Above description represents traditional defining of TQM (traditional model). After some time, a new, modified concept of TQM was showed. A new model emphasizes management responsibility for quality planning, based on process approach. An organization management should create proper quality system, defined clear and measurable goals adjusted to exact processes, used in order to monitor of functioning of an organization and its improvement (Wiśniewska, Grudowski, 2014; Berdowski, 2017). Traditional and new defining of TQM presents Figure 2.

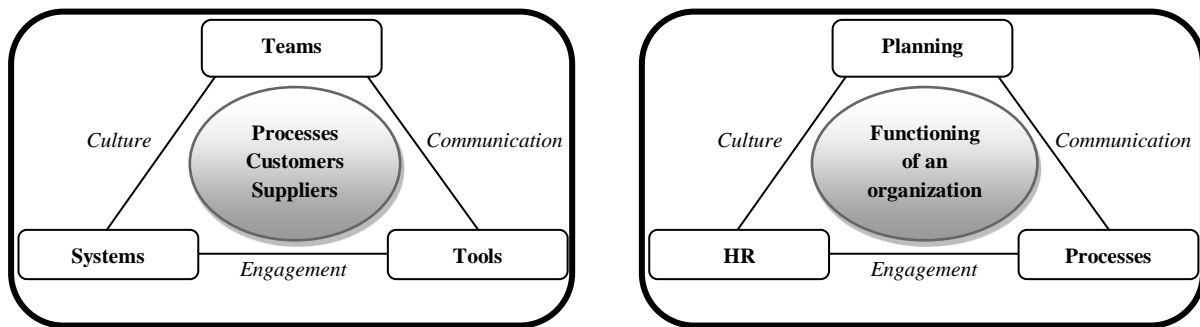


Figure 2. Classical and new model of TQM

Source: Dale, Bamford, Ton van der Wiele, 2016

2.1. Quality of medical services

Specific type of a service constitutes a medical service. It is important to show a difference between a medical service and a health service. According to Polish act relating to medical activity, a health service means actions concerning keeping, rescuing, recovering and improving health and other medical actions coming from care process or law acts defining rules of their realization (Ustawa ...). Actions relating to a health service could concern: quick and precise diagnosis, quality of care, accuracy of medical documentary realization, a ward hygiene, culture of administrative staff, accessibility to information about health, education and experience of staff and material equipment. All mentioned actions define wide meaning satisfaction of patients.

A medical service means more than a health service. The second one is realized in closed conditions of a hospital (or similar unit). A medical service could relate to the mentioned actions and concern as well: a consultancy with a different doctor, treatment of a doctor after leaving a hospital, rehabilitation or a stay in a sanatorium. Customers of medical services are patients and their families.

Quality of medical services could be described by many criteria. Some of them are common for services in general, but some are dedicated to analyzed services. Criteria are as follows (Detyna, Detyna, 2011; Skrzypek, 2017; Parasuraman, Zeithaml, Berry, 1985).

1. Immateriality means that a patient cannot touch or see a service before use. Before use of medical service patients attach importance to general outlook of a hospital, a ward, a reception, behaviour and competences of medical staff, available information and opinions of other patients.
2. Inseparability of processes of supply and use of a service. Medical services are supplied and consumed at the same time. A patient must be present during service realization because during those activities relations between a patient and a provider are created.
3. Impermanency means that a medical service cannot be warehoused. It has a value only during supply and use. If a patient would not come at proper time, a service would be lost.
4. Medical services are changeable and determined on who and when realizes them. Differences come from a patient feeling, a day time and mood of a service provider.
5. Supply and consumption of medical services at the same time mean that they cannot be bought or resold. A client is an exact patient and medical service served for him could not be an object of secondary use.

6. Another criterion concerns informational asymmetry. A patient does not have proper knowledge to decide about treatment, to diagnose or to decide about treatment plan. A patient cannot state a correctness of treatment realization and its results.
7. Uncertainty and risk are attributes of medical services. They concern exact injury or sickness and complexity of treatment process.
8. Another criterion relates to qualifications and competences of medical staff. Quality of medical services is determined by well educated personnel. Permanent education and trainings are required in case of medical staff.
9. Individualization of process of a service realization means a medical service dedicated to exact patient, his health and sicknesses. Medical services oblige medical personnel to individual treatment of patients.
10. A liberty of choice of a technology of a service realization gives a doctor a free choice of medical techniques and technologies and use diagnostic methods which enable the best diagnosis of a patient. In such situation a patient could trust decisions and skills of a doctor.
11. Limitation of a sovereignty of a patient concerns only emergencies. In such situations a patient could not make decisions on his own and they are made by medical staff.
12. Decision making process is delegated to a doctor. A way of help or treatment is chosen by a doctor. A patient should trust a doctor during rights delegation. A doctor could delegate rights to another doctor in emergency.
13. Lack of substitutes means a situation when exact medical service cannot be replaced by another one.
14. Psychological complexity appears in a situation when a patient could feel fear concerning realization of a medical service. Similar situation concerns medical staff as well. It happens in emergencies.
15. External effect is very difficult to prove. It is hard to prove an influence of environment and patient actions on his health. Sicknesses occurring not always depend on those factors.

Above mentioned characteristics of quality of medical services represent exemplary criteria defining this quality. A specificity of analyzed services cause that their quality is analyzed individually, up to a hospital, a treatment or a sickness. Next point shows results and conclusions of conducted research concerning analysis and assessment of selected attributes of quality of medical services. Attributes were defined with use of above mentioned characteristics.

2.2. Research Methodology

Conducted research was realized as questionnaire survey. The author formulated following goal of the research: analysis and assessment of selected criteria defining quality of analyzed medical services in order to improve them. As the research tool was used the questionnaire, consist of 10 questions and metrics (Szczepańska, 2009). Interviewees were the patients of selected ward of analyzed hospital, totally 50 people. The research was realized in the second quarter of 2017 as the pilotage research in examined topic area. In the research attended 57% of women and 43% of men, mostly at the age from 30 to 50 years, holding university education (Table 1).

Table 1. Research methodology

Elements of research	Description
Research method	Questionnaire survey
Purpose	Analysis and assessment of selected criteria defining quality of analyzed medical services in order to improve them
Research tool	Questionnaire (10 questions + metrics; used closed questions and different scales)
Interviewees	Patients of analyzed hospital (selected ward – 50 interviewees)
Time of realization	Second quarter of 2017

Source: Personal elaboration

Next subsection presents selected results of conducted research.

2.3. Results of Conducted Research

Analyzed, provincial hospital is the biggest and the most modern medical unit in the southern part of Poland (Podbeskidzie region). The hospital possesses 17 wards, fully equipped, employing qualified medical staff. Mission of the hospital is as follows: offering high quality medical services, according

to actual medical knowledge, qualifications, the highest care, in friendly and safe conditions of stay and work and promotion of health and young medical staff. The hospital implemented and certified management systems like ISO 9001 and HACCP. One of a ward of following hospital was taken under consideration during research [www.hospital.com.pl].

First issues analyzed during research concerned:

- amount of times spent in analyzed hospital,
- medical staff informed about patient rights,
- permanent accessibility to information about health condition,
- recommendation of services offered by analyzed hospital.

They were presented in the Table 2.

Table 2. Results of conducted research

Result area	Description
Amount of times spent in analyzed hospital	Last five years: – 1 time: 31% – 2-3 times: 57% – more than 3: 12%
Medical staff informed about patient rights	Yes: 90% No: 10%
Permanent accessibility to information about health condition	Yes: 81% No: 19%
Recommendation of services offered by analyzed hospital	Yes: 55% Rather yes: 45% No: 5%

Source: Personal elaboration

Interviewed patients spent in analyzed hospital in most 2-3 times in last five years. Every time, they were informed about basic patient rights. During stay in hospital, they were informed about health condition in a proper way, according to answers. Answers yes and rather yes give 95% of positive answers, relating to recommendation of analyzed services.

Criteria of analysis and assessment of medical services in examined hospital were defined as following:

- quickness of formal issues realization,
- kindness of doctors and nurses,
- general support by doctors and nurses,
- accessibility of doctors and nurses,
- time dedicated to patient,
- a way of informing about health condition,
- keeping of intimacy during examination,
- quickness of reaction of medical staff,
- serving of remedies on time,
- quality of hospital food,
- equipment of a ward,
- cleanness of a ward,
- cleanness of bathrooms and toilets,
- silence on a ward,
- availability of bathrooms and toilets,
- comfortable time of visiting.

They assessment were showed on the Figures 3 and 4.

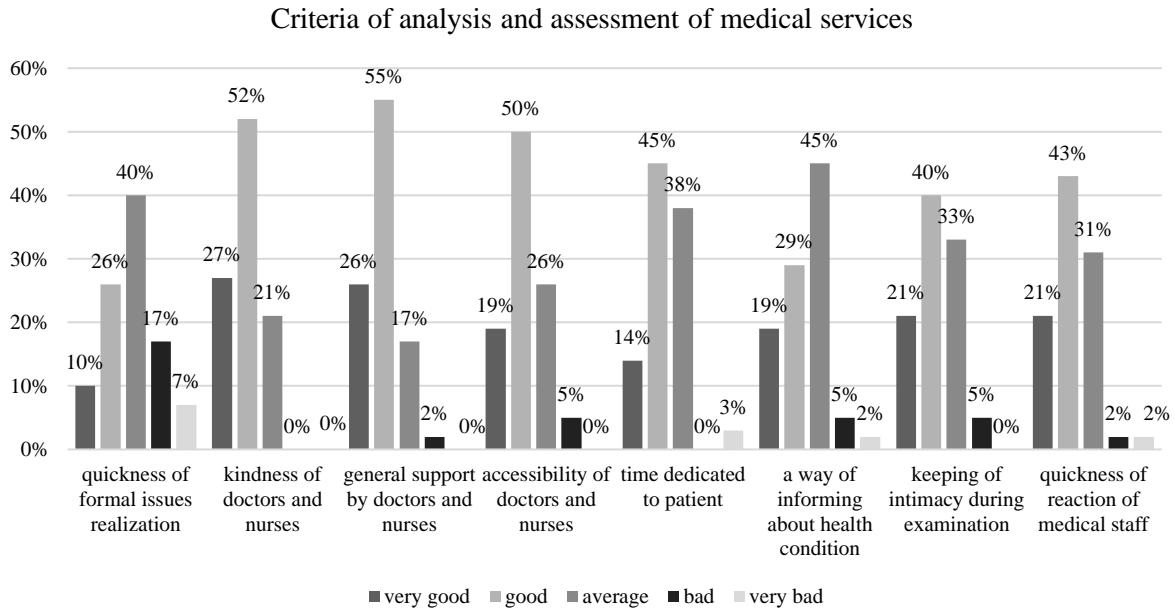


Figure 3. Attributes of medical services

Source: Personal elaboration

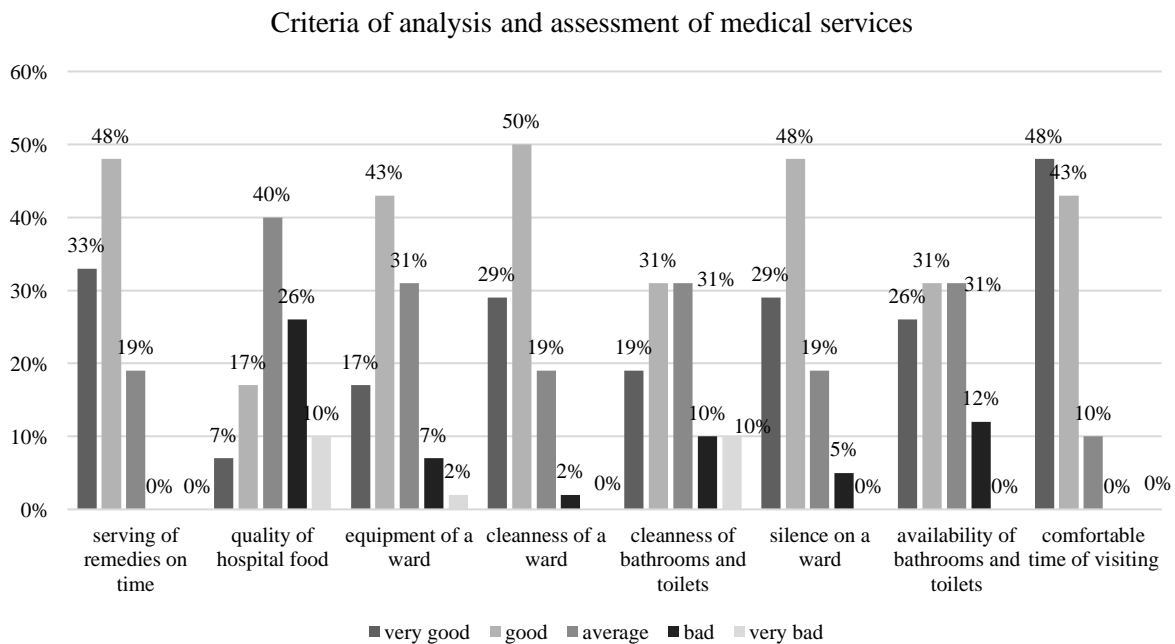


Figure 4. Attributes of medical services (continuation)

Source: Personal elaboration

Looking at Figures 3 and 4, we could notice that analyzed criteria received in most positive assessment. But, some of them require improvements. Those criteria are: quickness of formal issues realization, quality of hospital food, cleanness of bathrooms and toilets and their availability. Too long time of waiting for realization of formal issues by patients is tiring for them. Patients have different sicknesses and very often they require quick action and help. In case of hospital food, this problem is typical in many hospitals in Poland. Money spends for food is low and determines quality of this food. The problem has system character and its solution requires deeper and wider changes. But, cleanness and availability of hospital bathrooms and toilets could be resolved by analyzed hospital. The problem requires better organization and changes in hospital infrastructure (increasing).

3. Conclusion

Following paper concerns area of system quality management with reference to medical services. Medical services, providing human health and life, have to be carried out with the utmost care. Attention to quality of those services belongs to people, who manage medical units (hospitals) as well as to the medical staff.

In the paper presented theoretical fundament of analyzed topic, emphasizing role of Total Quality Management in management of such organization like a hospital. Next, author presented selected characteristics of medical services quality. Main point of the article concerned analysis and assessment of medical services quality attributes, in order to point out possible areas of those services improvement. Analysis and assessment based on pilotage research conducted in provincial hospital in Bielsko-Biala. The research was realized as questionnaire survey. The research supplied feedback about correctness of selected attributes and showed areas to improve. Interviewees (patients of chosen ward of analyzed hospital) suggested improvements in case of: quickness of formal issues realization, quality of hospital food, cleanness of bathrooms and toilets and their availability. Following problems could be repaired by managers of analyzed medical unit.

Author plans to extend presented research (amount of wards and interviewees). Wider look at analyzed services will bring their deeper characteristic and ways of changes. As a practical aspect of the paper, it should be pointed out that the results and conclusions of conducted research were supplied to the head of the ward, as a basis for improving the quality of medical services.

References

- Barcik, A. (2016). Co-opetition of Enterprises in Terms of the European Competition Policy. *Proceedings of the 3rd International Conference on European Integration 2016*, pp. 65-71. Ostrava: VŠB - Technical University of Ostrava.
- Barcik, A. (2017). Compliance Management System in Ethical Codes of Socially Responsible Enterprises in Poland. *Aktuálne Problémy Podnikovej Sféry 2017 Zborník vedeckých prác, International Conference Current Issues in Corporate Sector 2017*, pp. 34-41. Bratislava: University of Economics.
- Berdowski, J. (2017). Wpływ VII zasad zarządzania jakością na etos kierowania przedsiębiorstwem. In E. Skrzypek (Eds.), *Nowa jakość zarządzania* (pp. 13-19). Lublin: Katedra Zarządzania Jakością i Wiedzą.
- Certo, S.C., Certo, S.T. (2009). *Modern management – concept and skills*, 11th edition. New Jersey: Prentice Hall.
- Daft, R.L. (2010). *New era of management*, 9th edition, South Western. Canada: Cengage Learning.
- Dale, B.G., Bamford, D., Ton van der Wiele (eds.) (2016). *Managing Quality 6E - an Essential Guide and Resource Gateway*. New Jersey: John Wiley & Sons.
- Detyna, B., Detyna, J. (2011). *Jakość usług medycznych ocena statystyczna podstawy metodyczne*. Warszawa: Difin.
- Dziwiński, P. (2016). Restructuring of Small and Medium-Sized Enterprises – the European Perspective. *Proceedings of the 3rd International Conference on European Integration 2016*, pp. 190-196. Ostrava: VŠB - Technical University of Ostrava.
- Dziwiński, P. (2017). Social Responsibility in Restructuring of Polish Enterprises. *Aktuálne Problémy Podnikovej Sféry 2017 Zborník vedeckých prác, International Conference Current Issues in Corporate Sector 2017*, pp. 248-256. Bratislava: University of Economics.
- Frańś, J. (2013). *Kompleksowe zarządzanie jakością w logistyce*. Poznań: Wyższa Szkoła Logistyki.
- Grudzewski, W.M., Hejduk, I. (2004). *Metody projektowania systemów zarządzania*. Warszawa: Difin.
- ISO 9001:2015-10. Quality management system. Requirements. Warszawa: PKN.
- Jakubiec, M., Kurowska-Pysz J. (2013). *Kvalita profesního vzdělávání v polsko-českém pohraničí jako determinanta konkurenceschopnosti podniků*. Bielsko-Biala: Wyd. Naukowe Akademii Techniczno-Humanistycznej w Bielsku-Białej.
- Jakubiec, M. (2016). Quality of Higher Education as a Factor of European Companies' Competitiveness – Case of Poland-Czech Republic Cross-Border. *Proceedings of the 3rd International Conference on European Integration 2016*, pp. 383-390. Ostrava: VŠB - Technical University of Ostrava.
- Jakubiec, M. (2017). *Projakościowe zarządzanie przedsiębiorstwem*. Warszawa: Difin.
- Jakubiec, M. (2017). Implementing, Functioning and Improving of Quality Management System in Organization of Automotive Sector. *Aktuálne Problémy Podnikovej Sféry 2017 Zborník vedeckých prác, International Conference Current Issues in Corporate Sector 2017*, pp. 429-438. Bratislava: University of Economics.

- Łukasiński, W., Sikora T. (2008). Filozofia TQM szansą na skuteczne zarządzanie organizacją. *Problems of Quality*, No. 11, p. 16.
- Oakland, J.S. (2000). *Total Quality Management*. Oxford: Butterworth-Heinemann.
- Oakland, J.S. (2014). *Total Quality Management and Operational Excellence: Text with Cases*. Londyn: Routledge.
- Parasuraman, A., Zeithaml, V.A., Berry, L.L. (1985). A Conceptual Model of Service Quality na Implications for Future Reserach. *Journal of Marketing*, Vol. 49, Fall, pp. 41-50.
- Slack, N., Chambers, S., Johnston, R. (2007). *Operations management*, fifth edition. London: Prentice Hall.
- Skrzypek, E. (Eds.) (2017). *New Quality of Management*. Lublin: Department of Quality and Knowledge Management.
- Szczepańska, K. (2009). *Metody i techniki TQM*. Warszawa: Oficyna Wydawnicza Politechniki Warszawskiej.
- Tsutsumi, S. (2001). Rzetelny TQM jako podstawa rozwoju i sukcesu przedsiębiorstw. Potwierdzenie podstawowych zasad koncepcji TQM. *Problems of Quality*, No. 8, p. 11.
- Ustawa z dnia 15 kwietnia 2011 r. o działalności leczniczej, Dz.U. 2011 Nr 112 poz. 654.
- Wiśniewska, M.Z., Grudowski P. (2014). *Zarządzanie jakością i innowacyjność. W świetle doświadczeń organizacji Pomorza*. Gdańsk: Wyd. InnoBaltica sp. z o.o.
- www.hospital.com.pl [2017, November 29].

21. APPLICATION OF BAYESIAN AND DEMPSTER-SHAFER THEORY FOR ESTIMATION OF THE BUSINESS RISKS PROBABILITY

Abstract: Estimation of the probability is an important part of determining the level of risk. The level of the risk is calculated as multiplication of the probability of a negative event occurring and its consequence. The enterprise has the necessary data to determine the level of the consequences (bookkeeping and related asset value documentation), but for the determining the probability of the occurrence of a negative event the enterprise does not always have the necessary information. In this case, when estimating the probability, it is not appropriate to rely on a classical or statistical theory of the probability. Therefore, it is suitable to deal with the methods of determining subjective probability. Bayesian and Dempster-Shafer theory deals with the subjective probability. The aim of this article is to point out the possibilities of using Bayesian and Dempster-Shafer theory in assessing the probability of the business risks. The article seeks to outline the advantages and disadvantages of using Bayesian and Dempster-Shafer theory and compare their calculation procedures. This comparison will be realized on a model example of the business risk analysis. The output of this article is an evaluation of the use of Bayesian and Dempster-Shafer theory in estimating the probability of the business risks, their comparison and identification of the advantages and disadvantages of the application to the certain types of assessed events. The conclusion of this article includes the suggestions for further research in this area.

Keywords: Bayesian, Dempster-Shafer, probability, risk.

JEL Classification: D81, G32, M21

1. Introduction

The term risk, not taking into account various definitions, is closely linked with uncertainty (Keung-Chi, Abramson, 1990). The uncertainty of the formation is expressed through probability and the uncertainty of the development as the qualitative or quantitative expression of the consequence on the subject assessed. The risk assessment is therefore connected with the need to describe and express the uncertainty of the formation and development of negative events (crisis phenomena) by stating the size of the risk.

We distinguish two basic types of uncertainty – the objective and subjective uncertainty. The importance of distinguishing these two characteristics consists in expressing the uncertainty as probability of developing the event assessed. Especially the usage of a mathematical formula for calculating the probability in situations which are bound with the subjective uncertainty is a problem.

The objective uncertainty results from the random development of the relations between the system elements or from a random behaviour of this system (Šimák, 2006). It is called uncertainty of coincidence, stochastic uncertainty or variability (Senz, Ferson, 2002). The calculation of probability of events which are based on the objective uncertainty is based on the classical and statistical theory of probability.

The subjective uncertainty results from the imperfectness of the people's way of thinking, from the lack of knowledge about or incompleteness of the course of the system assessed. It is also called uncertainty of cognition, uncertainty of the state of awareness or unknowingness (Senz, Ferson, 2002). The Bayesian and Dempster-Shafer Theories are dealing with determining the subjective probability.

2. Literature Review

The information used in the paper are based on analysis of the Slovak and foreign bibliography – the publications and articles listed in part References. The articles were taken from various databases. The key words entered for the search were “probability” and “Bayesian and Dempster-Shafer theory” which are the subjects of interest of this paper. Only a few documents dealing with the theory of probability were chosen. Many authors are dealing with the area discussed is not mentioned here.

¹ Ing. Denisa Janasová; Univerzitná 8215/1, 010 26 Žilina, Slovakia, denisa.janasova@fbi.uniza.sk.

* Corresponding author

It is difficult to state the objective probability of exceptional events as well as its usage in the economic practice (Merigó, Palacios-Marqués, Zeng, 2016; Bleichrodt, Eeckhoudt, 2006; Titko Lusková, 2016). Two problems can be emphasised. Firstly, the economic practice knows a lot of unique events where the information is derived from the situations similar only partially (Belles-Sampera et al., 2013). In spite of this fact, based on this information about “sample” events which developed under not always the same conditions, we state the probability of developing a “new” assessed situation. Secondly, the calculation of the objective probability depends on a sufficient number of recorded data. Therefore it is impossible to state the probability of an exceptional event. In these cases it is suitable to deal with the possibilities of stating the subjective probability. The Bayesian and Dempster-Shafer Theories are dealing with understanding the subjective probability (Challa, Koks, 2004).

2.1 Bayesian Theory of Probability

The Bayesian definition of probability is not understood as a quality of the phenomenon (event) investigated but it represents a personal attitude to this quality. The change of our opinion after achieving new information is typical. It enables to calculate the probability corresponding with the current opinion with respecting the original information. During calculation it is necessary to differentiate between the a priori (the originally calculated) and post priori (updated) probability. The formula for calculating the Bayesian probability, also called the law of inverse probability is in (Hebák, 2012; Andersson et al., 2014; Weber et al., 2012).

A model pattern for calculating the Bayesian probability is e.g. the example with balls, hats or boxes where all conditions of the event assessed are given. The usage of the Bayesian formula is also possible if we do not know all conditions of the event being assessed. In this case we estimate what is more typical for usage in practice. In the Bayesian formula the mutual disjunctive phenomena B_i will be understood as mutually disjunctive hypotheses H_i . To calculate the probability through the Bayesian formula it is necessary to know the probability of the hypotheses which are part of the calculation of the event assessed. If they are not known or are not available, they are determined in two ways. The first method is a uniform division of the probability's size. The second method is to determine their size by estimation (judgement of an expert) based on knowing the possible sources of causes or knowing the relations between them.

The probability according to Bayes is based on the Boolean Algebra Expressions which are either truthful or untruthful. Therefore the knowledge of probability that an event will develop can be transformed to the knowledge that the given event will not develop. Here we respect the Kolmogorov axioms and the calculation is based on implementing the traditional probability theory. It is possible to think that subjectiveness here is represented in a form of a subjective estimation of an expert who replaces the unavailability of the recorded data or data from the experiments.

2.2. Dempster-Shafer Theory

The Dempster-Shafer Theory of Probability also called the Theory of Evidence models the uncertainty through assumptions which are available for the expert (analyst) regarding to the event assessed (Jiang et al., 2016; Zhanga, Mahadevana, Dengb, 2017). These assumptions are formulated on the basis of the detected and acquired evidence. The probability calculation is not based on the traditional probability approach, i.e. the calculation in the form of the relative number of the phenomenon investigated and also the Kolmogorov axioms need not be valid. The calculation of probability is based especially on the Set Theory and is also linked with combinatorics. An advantage for expressing uncertainty through the Dempster-Shafer Theory can be especially the expression of the probability rate in the form of an interval which determines the character of uncertainty of the event assessed better. Another advantage is the possibility to work with individual pieces of evidence in the framework of their relation to several hypotheses. The Dempster-Shafer Theory distinguishes four basic terms – the power set, the basic probability assignment, measure of belief and measure of plausibility.

The set U also called the frame of discernment is created by elementary disjunctive hypotheses (originally intended). The power set 2^U is a set of all subsets of the set U . Any subset (containing one or more hypotheses) of 2^U is considered a specific hypothesis. The basic probability assignment, the

measure of belief and the measure of plausibility are defined in the power set (Senz, Ferson, 2002; Beránek, 2010; Beránek, 2011).

The basic probability assignment $m(h_i)$ represents the rate of belief of the expert which is assigned to the elements of the power set 2^U . The value of the basic probability assignment $m(h_i)$ is in the interval $\langle 0,1 \rangle$ and it is valid $\sum m(h_i) = 1$, where $h_i \in U$. Regarding to expressing the subjective uncertainty, each non-assigned assumption is assigned to the whole set of hypotheses from 2^U , it does not relate to negation. Although the Dempster-Shafer Theory does not derive any negation of the hypothesis based on an assumption about hypothesis's validity, it does not exclude the negation of the hypothesis. About the complement of negations $m(\neg h_i)$ it is valid that $m(h_i) + m(\neg h_i) \leq 1$. In comparison to the Bayesian Theory of Probability the sum of the hypothesis validity and its negation need not equal 1. The calculation of the measure of belief $Bel(h_i)$ and the measure of plausibility $Pl(h_i)$ is based on the basic probability assignment $m(h_i)$.

The measure of belief $Bel(h_i)$ expresses the rate of the assumption we have about the hypothesis (Yang, Xu, 2013; Yang, Han, 2016). It concentrates the basic probability assignment of all subsets (or components, hypotheses) it contains. The $Bel(h_i)$ represents the bottom boundary of the interval where the probability of the given hypothesis can be found. For the belief function $Bel(h_i)$ it is valid (Senz, Ferson, 2002; Beránek, 2010; Ha-Duong, 2008):

$$Bel(h_i) = \sum_{h_j \subseteq h_i} m(h_j) \quad (1)$$

The measure of plausibility $Pl(h_i)$ expresses how much we would believe in the hypothesis h_i if the whole evidence which can support this hypothesis would really support it. The measure of plausibility represents the upper boundary of the belief interval in the hypothesis. For the plausibility function $Pl(h_i)$ it is valid (Senz, Ferson, 2002; Beránek, 2010; Ha-Duong, 2008):

$$Pl(h_i) = \sum_{h_j \cap h_i \neq \emptyset} m(h_j) \quad (2)$$

Then the interval that represents the belief in the given hypothesis is $\langle Bel(h_i), Pl(h_i) \rangle$ and the difference $Pl(h_i) - Bel(h_i)$ expresses the rate of uncertainty (the interval range).

The Dempster-Shafer Theory enables to combine also opinions of several experts. Similarly it enables to assess the basic probability assignment $m(h_i)$ if new facts about the assessed event are detected. It is based on the Dempster's Rule of Combination (Senz, Ferson, 2002; Beránek, 2010; Lin, 2010):

$$m_{AB}(h_k) = \frac{\sum_{h_i \cap h_j = h_k} m_A(h_i) \cdot m_B(h_j)}{\sum_{h_i \cap h_j \neq \emptyset} m_A(h_i) \cdot m_B(h_j)} = \frac{\sum_{h_i \cap h_j = h_k} m_A(h_i) \cdot m_B(h_j)}{K} \text{ or } \frac{\sum_{h_i \cap h_j = h_k} m_A(h_i) \cdot m_B(h_j)}{1 - K} \quad (3)$$

The symbol K in the denominator expresses up to what extent the opinions of independent experts or new facts are contradictory to the original belief. If $K = 0$, then the stated basic probability assignments are inconsistent (they are fully inconsistent with each other). If the evidence is sufficient for assigning the probability to individual elementary disjunctive hypotheses then the basic probability assignment corresponds with the classical probability. It means that the basic probability assignment $m(h_i)$ is stated only for elementary hypotheses and the power set 2^U corresponds with the frame of discernment (the set U) and then $m(h_i) = Bel(h_i) = Pl(h_i)$.

3. Methodology of the Research

This article is focused on the application Bayesian and Dempster-Shafer theory on a model example. The output of the article point out the benefits and limitations of using Bayesian and Dempster-Shafer theory. The content of this article can be used for further research aimed at a practical usability and applicability of the probability determination in the business risks evaluation.

The usage of a particular calculation method of probability depends on the type of uncertainty and information availability. The objective is to show the different calculation procedure of probability based on the assigned information of the model example and the possibility to adapt it to a given situation. The assessed event is the decline of demand (A) for a particular product. In the model example there are two experts who stated three hypotheses determining the development of the

event A. The stated hypotheses are – entering a new competitor h_1 , declining the price of the substitution product h_2 and declining the importance, usefulness of the product for the customer h_3 . These three hypotheses can be considered the causes of declining the demand. The data and information about the properties and development of the assessed event A are not available or they are not recorded. Therefore it is impossible to calculate the probability based on the classical or statistical theory. The probability for the stated hypotheses is estimated by the experts E_1 and E_2 on the basis of their personal knowledge, experience, information and practice. The subjective opinions of the experts (Table 1) represent the probability estimation for hypotheses h_1, h_2 and h_3 .

Table 1. A model example of the original estimation of probability and in the Bayesian Theory

		Original estimation = Dempster-Shafer Theory								Use for Bayesian Theory						
		m(h_i)	h_1	h_2	h_3	h_1h_2	h_1h_3	h_2h_3	$h_1h_2h_3$	Σ	Expert	P($h_i A$)	h_1	h_2	h_3	Σ
Expert	E_1		0.15		0.3	0.2		0.2	0.15	1	Expert	E_1	0.3	0.25	0.45	1
	E_2			0.2	0.2	0.2	0.3	0.1		1		E_2	0.25	0.35	0.4	1

Source: Autor

The stated value of probability represents the rate of belief (Bayesian Theory) or the basic probability assignment (Dempster-Shafer Theory). The basic probability assignment $m(h_i)$ used in the Dempster-Shafer Theory can be theoretically compared with the rate of belief $P(h_i|A)$ used in the Bayesian Theory. The difference between the basic probability assignment and the rate of belief is that the basic probability assignment is defined on the power set 2^U . It allows determining the basic probability assignment to several hypotheses together, without any necessity to divide it to elementary disjunctive hypotheses based on the fact we do not have information. The Dempster-Shafer Theory understands the basic probability assignment stated for the compound hypothesis (h_1h_3) with the value of 0.3 as an independent hypothesis. For each elementary hypothesis, the compound hypothesis consist of, is valid that the probability value is either 0 or 0.3. There can be only one correct possibility; however, the analyst has not enough evidence which would show just one of these two hypotheses.

When we state the probability estimation according to Bayes to which several hypotheses are assigned, it is divided equally among the hypotheses (see the Table 1). E.g. the analyst A_2 thinks with the probability value of 0.3 that the decline of demand is caused either by entering competitors (h_1) or by declining the usefulness of the product for the customer (h_3). The probability 0.3 stated for the hypotheses h_1 and h_3 is divided equally between these hypotheses. Then the hypothesis h_1 will be assigned the probability value of 0.15 and the same is valid for the hypothesis h_3 .

3.1. Using Bayesian Theory on a Model Example

The analysts' opinions E_1 and E_2 are different (Table 1 – use for Bayesian Theory), it is necessary to decide about the unified probability value (respecting the opinions of both experts). Two methods can be taken. Either we will use the basic aggregation methods, in this case the arithmetic average of the estimated probabilities or we will use the rules for making decisions under uncertainty. The rules minimax, maximin, Laplace, Hurwitz and Savage rules belong to the most frequently used procedures (Švecová, Fotr, 2010).

All the rules are based on the values of the decision matrix. The lines of the matrix contain variants or activities. The matrix columns represent the situation of the surroundings, external conditions affecting successfulness of the expected result when we implement the given variants. For the model example the decision matrix can be adapted. Then the conditions in the surroundings will be considered individual hypotheses and the variants the opinions of the E_1 and E_2 experts on these hypotheses.

Table 2. Using the rule minimax and maximax

Expert	P($h_1 A$)	P($h_2 A$)	P($h_3 A$)
E_1	0.3	0.25	0.45
E_2	0.25	0.35	0.4

Source: Autor

The rule minimax selects a variant (in this case the analyst's opinion which estimates the lower probability of its development for the most probable hypothesis – unfavourable state) estimating a lower probability of its development. The usage of this rule shows the selection of the probability

estimation of the E_2 analyst ($h_3 = 0.4$). It would be similar if we used the maximax rule according to which that analyst would be chosen who estimates a lower probability ($h_1 = 0.25$) for the least probable hypothesis (favourable condition). If we use these rules it is necessary to distinguish what is favourable and unfavourable state from the point of view of the probability size.

The Laplace rule is based on comparing the estimation averages. The Laplace rule cannot be used in this model example as the average of sums of probability hypotheses stated by experts is the same. The Bayesian probability respects the Kolmogorov axioms, i.e. the sum of probabilities is 1.

Table 3. Using the Hurwitz rule

$\beta_1=0,25$ (pessimistic)	$\beta_2=0,5$ (neutral)	$\beta_3=0,75$ (optimistic)
$0.25 \cdot 0.25 + 0.45 \cdot (1 - 0.25) = 0.4$	$0.25 \cdot 0.5 + 0.45 \cdot (1 - 0.5) = 0.35$	$0.25 \cdot 0.75 + 0.45 \cdot (1 - 0.75) = 0.3$
$0.25 \cdot 0.25 + 0.4 \cdot (1 - 0.25) = 0.3625$	$0.25 \cdot 0.5 + 0.4 \cdot (1 - 0.5) = 0.325$	$0.25 \cdot 0.75 + 0.4 \cdot (1 - 0.75) = 0.2875$

Source: Autor

The Hurwitz rule works with a numerical expression of optimism or pessimism of the decision-maker which moves in an interval of $\langle 0;1 \rangle$. If the attitude is pessimistic, the decision maker selects the values from the interval $\langle 0;0,5 \rangle$ and in the case of the optimistic attitude he/she takes the values from the interval $\langle 0,5;1 \rangle$. The formula for calculating the compared values using the given rule is in (Strelcová, 2012a). According to the preference attitude (neutral, pessimistic, optimistic) we choose the estimation of that expert who achieves the lowest values (according to the cost-type criterion). We recommend continuing with the probability estimation by the expert E_2 in all three attitudes (neutral, pessimistic, optimistic).

Table 4. Using the Savage rule

Expert	$P(h_1 A)$	$P(h_2 A)$	$P(h_3 A)$	Max. difference
E_1	$0.3 - 0.3 = 0$	$0.25 - 0.35 = -0.1$	$0.45 - 0.45 = 0$	-0.1
E_2	$0.25 - 0.3 = -0.05$	$0.35 - 0.35 = 0$	$0.4 - 0.45 = -0.05$	-0.05

Source: Autor

The Savage rule is based on knowing the possible losses. Therefore the matrix of losses is created for selecting the probability estimation. The smallest probability value of the calculated hypothesis is deducted from the stated probability values. We choose that expert's estimation which gives the smallest value of the maximal probability differences. In this case the estimation of the expert E_2 would be chosen.

These rules of making decisions under uncertainty show that the probability estimation by the expert E_2 should be chosen. The inclination of the decision-maker to optimism or pessimism plays a significant role for adapting and using the aforementioned rules. And not only for implementing individual rules but also from the point of view of understanding the value of probability (the criterion of the cost-type or revenue-type). Therefore it is possible to say when we decide about the probability value by two or several experts we will utilise the arithmetic average of the hypotheses. In this case the probability value for the hypotheses would be $h_1 = 0.275$; $h_2 = 0.3$ and $h_3 = 0.425$.

3.2. Using Dempster-Shafer Theory – a Model Example

Even before calculating the measure of belief $Bel(h_i)$ and the rate of plausibility $Pl(h_i)$ it is necessary to determine the “compromise” of the basic probability assignment stated by the experts E_1 and E_2 . The Dempster-Shafer Theory enables combining opinions of several experts and it is not based on the basic aggregation methods. The opinions of independent experts or acquiring new evidence are connected with Dempster Rule of Combination defined by the equation (3). According to the size of the coefficient K we choose one of these relations. The Dempster Rule of Combination states the basic probability assignment for six hypotheses. The condition that the sum of the basic probability assignment is 1, is fulfilled (Table 5, $m_{E_{12}}(h_k)$). After achieving a consensus between the basic probability assignments of the experts E_1 and E_2 it is possible to start calculating the measure of belief $Bel(h_i)$ according to the equation (1) and the measure of plausibility $Pl(h_i)$ according to the equation (2). The measure of belief $Bel(h_i)$ and the measure of plausibility $Pl(h_i)$ represent the boundaries of the boundary of assumptions about the validity of the stated hypotheses. These boundaries of the interval are calculated just from the combination of the basic probability assignment by the experts $m_{E_{12}}(h_k)$.

Table 5. Calculation of probability value by Dempster-Shafer Theory

Hypothesis of 2^U	$m_{E1}(h_i)$	$m_{E2}(h_i)$	$m_{E12}(h_k)$	$Bel(h_k)$	$Pl(h_k)$	$Pl(h_k) - Bel(h_k)$
h_1	0.15		0.1765	0.1765	0.3268	0.1503
h_2		0.2	0.2222	0.2222	0.3595	0.1373
h_3	0.3	0.2	0.4052	0.4052	0.5098	0.1046
$h_1 h_2$	0.2	0.2	0.0915	0.4902	0.5948	0.1046
$h_1 h_3$		0.3	0.0588	0.6405	0.7778	0.1373
$h_2 h_3$	0.2	0.1	0.0458	0.6732	0.8235	0.1503
$h_1 h_2 h_3$	0.15		-	1	1	0
\sum			1	-	-	-

Source: Autor

The usage of the Dempster-Shafer Theory enables expressing uncertainty which relates to the hypothesis of the power set in such a case when it is not possible (based on insufficient, missing evidence) to assign the probability only to elementary hypotheses. The uncertainty represents here the range of the interval of belief about the validity of the stated hypothesis $\langle Bel(h_i), Pl(h_i) \rangle$, i.e. the difference $Pl(h_i) - Bel(h_i)$.

4. Results

The subjective probability is estimated on the basis of evidence, knowledge and experience. They can directly or indirectly show and be connected with the event assessed. It is suitable, in the case of unknowingness, to take into account several hypotheses. The Dempster-Shafer Theory allows this. The Bayesian Theory divides this ambiguous rate of belief individually among hypotheses. The comparison (see the table 6) offers significant differences between the originally stated probability of hypotheses and the probability we should work with for calculating the risk rate. These differences consist especially in a different procedure and calculation of the probability estimation by two experts.

Table 6. Probability values of the stated hypotheses – comparison

	Original estimation of probability						
	h_1	h_2	h_3	$h_1 h_2$	$h_1 h_3$	$h_2 h_3$	$h_1 h_2 h_3$
Expert E1	0.15		0.3	0.2		0.2	0.15
Expert E2		0.2	0.2	0.2	0.3	0.1	
Bayesian theory							
Arithmetic average	0.275	0.3	0.425	-	-	-	-
Rules for making decisions	0.25	0.35	0.4	-	-	-	-
Dempster-Shafer theory							
$\langle Bel(h_i), Pl(h_i) \rangle$	$\langle 0.18, 0.33 \rangle$	$\langle 0.22, 0.36 \rangle$	$\langle 0.41, 0.51 \rangle$	$\langle 0.49, 0.59 \rangle$	$\langle 0.64, 0.78 \rangle$	$\langle 0.67, 0.82 \rangle$	$\langle 1 \rangle$

Source: Autor

The use of the Bayesian formula and expression of uncertainty can be considered as a limitation of using the Bayesian Theory for assessing the entrepreneurial risks. The use of the Bayesian formula depends not only on the estimation of the hypothesis probability $P(h_i)$ but also on the probability of the event occurrence for the given hypothesis $P(A|H_i)$. It is suitable to use the Bayesian formula if we know the properties of the development of the event assessed. It is also valid for the usage of the equation for calculating the probability after the opinion is changed. It is necessary to decide in which way the additional information will change the opinion of the originally estimated probability. If we hesitate about the validity of evidence only for one disjunctive hypothesis, it is solved by dividing the rate of belief among several hypotheses. As a result, it decreases the estimated probability for the given hypothesis and vice versa it increases the probability for the invalid hypotheses. The invalid hypotheses were considered valid before - based on insufficient information.

The usage of the Dempster Rule of Combination is considered questionable in the framework of the Dempster-Shafer Theory. If the experts' opinions are contradictory, this conflict is ignored and the

rate of belief is attached to a hypothesis which has support of both experts. Several modifications of the Dempster Rule of Combination (Senz, Ferson, 2002; Kramosil, 2002) solve this limitation.

It is also necessary to draw attention to distinguishing between the term probability and probability value in the Dempster-Shafer Theory. The Dempster-Shafer Theory takes into consideration the probability for the basic probability assignment which is stated for the hypotheses on the power set 2^U . It is considered a probability even if the basic probability assignment is stated only for the elementary hypotheses, i.e. for the hypotheses on the set U . This refers to the usage of probability stated by the Dempster-Shafer Theory only when the assessor has sufficient evidence relating only to the elementary hypotheses. We do not distinguish here between these terms. The probability stated for the elementary hypotheses can be considered an ideal case when the assessor gains sufficient evidence after some time. In the economic practice and regarding to the intention to use the Dempster-Shafer Theory for assessing the entrepreneurial risks it is not always possible to wait for any further evidence. Therefore it is more suitable to use the determined probability value on the power set of the hypotheses.

Another reason is the fact that the entrepreneurial subjects have to act immediately (Strelcová, Řehák, Johnson, 2015; Strelcová, 2012b). There can occur such a situation when further evidence will not be gained for various reasons. Last but not least, the development of the estimated negative event can be determined by the hypothesis validity which was not stated, i.e. it is not among the elementary (originally intended) hypotheses. Just then the expression of uncertainty in the form of an interval range can be connected not only with the particular hypothesis about which we have no sufficient information but also with developing a fully different hypothesis than the elementary (originally intended) ones. Such a situation is not excluded as the hypotheses are evaluated by the assessors according to their consideration. Last but not least, the outline of a dispute by (Taleb, 2008) brings an interesting idea: “what probability is there that the stated probability is correct?” The consideration about the probability of stating the correct probability is twice that important just in the case of the entrepreneurial risks which is based on the subjective uncertainty and depends on the expert’s estimation. Therefore it is probably suitable to leave a certain space for uncertainty and to take into account several alternatives including those ones which were not taken into consideration before.

5. Conclusion

The stated size of probability and the extent of consequences of a negative event affect the resulting risk rate which influences the decisions of the entrepreneurial subjects (Klučka, Strelcová, 2012). While the entrepreneurial subject has an overview about determining the extent of the consequences, it has not always necessary information when estimating the probability of developing an event. It creates the need and it is justifiable to deal with various methods of estimating the probability whose usage depends on a particular type of the event assessed and information that is available for the company. A lot of negative events in the entrepreneurial environment are on the one hand unusual and on the other hand they are specific for each entrepreneurial subject (Strelcová, 2011). It means that frequently it is not possible to determine the probability of developing an event if we used the classical or statistical theory of probability. This fact creates the need to deal with various methods of probability estimation whose usage depends on the particular type of the event and available information.

It is suitable to use the Bayesian probability for modelling the random events connected with the objective uncertainty in that case if necessary data is not available. The assessor should possess the knowledge about the properties and possibilities about the development of the event assessed. The Dempster-Shafer Theory seems to be a suitable approach for calculating the probability of developing events and it is based on the subjective uncertainty. Further research will be aimed at the modifications of the Dempster Rule of Combination and further activities in the area of probability in the form of an interval in the framework of the risk assessment.

Acknowledgements

This paper was created with the support of the Institutional Grant Project [No. IGP 201706] Analysis and evaluation of business risks as part of the risk management process.

References

- Andersson, M.G., Faverjon, C., Vial, F., Legrand, L., Leblond, A. (2014). Using Bayes' Rule to Define the Value of Evidence from Syndromic Surveillance. *Plos One*, vol. 9, iss. 11, pp. 1-9.
- Belles-Sampera, J., Merigó J.M., Guillén, M., Santolino, M. (2013). The connection between distortion risk measures and ordered weighted averaging operators. *Insurance: Mathematics and Economics*, vol. 52, iss. 2, pp. 411-420.
- Bleichrodt, H., Eeckhoudt, L. (2006). Survival risks, intertemporal consumption, and insurance: The case of distorted probabilities. *Insurance: Mathematics and Economics*, vol. 38, iss. 2, pp. 335-346.
- Beránek, L. (2010). Základy Dempster-Shaferovy teorie a její aplikace pro modelování bezpečnosti a spolehlivosti (I.). *Chemmagazín*, vol. 6, iss. 1, pp. 28-30.
- Beránek, L. (2011). Základy Dempster-Shaferovy teorie a její aplikace pro modelování bezpečnosti a spolehlivosti (II.). *Chemmagazín*, vol. 1, iss. 1, pp. 23-25.
- Challa, S., Koks, D. (2004). Bayesian and Dempster-Shafer fusion. *Sadhana*, vol. 29, iss. 29, pp. 145-174.
- Ha-Duong, M. (2008). Hierarchical fusion of expert opinions in the Transferable Belief Model, application to climate sensitivity. *International Journal of Approximate Reasoning*, vol. 49, pp. 555-574.
- Hebák, P. (2012). Srovnání klasické a Bayesovské pravděpodobnosti a statistiky (1.). *Acta Oeconomica Pragensia*, č. vol. 1, pp. 69-85.
- Jiang, W., Xie, Ch., Wei, B., Zhou, D. (2016). A modified method for risk evaluation in failure modes and effects analysis of aircraft turbine rotor blades. *Mechanical Engineering*, vol. 8, iss. 4, pp. 1-16.
- Keung-Chi, N. & Abramson, B. (1990). Uncertainty Management in Expert systems. *IEEE Intelligent Systems & Their Applications*, vol. 5, iss. 2, pp. 29-48.
- Klučka, J., Strelcová, S. (2012). Financovanie kritickej infraštruktúry. *Mechanika Transport Komunikácii*, vol. 1, iss. 2, pp. UK-3.1-UK-3.4.
- Kramosil, I. (2002). A nonstandard modification of Dempster Combination Rule. *Kybernetika*, vol. 38, iss. 1, pp. 1-12.
- Lin, T.-C. (2010). Switching-based filter based on Dempster's combination rule for image processing. *Information Sciences*, vol. 180, iss. 24, pp. 4892-4908.
- Merigó, M.M., Palacios-Marqués, D., Zeng, S. (2016). Subjective and objective information in linguistic multi-criteria group decision making. *European Journal of Operational Research*, vol. 248, iss. 2, pp. 522-531.
- Senz, K., Ferson, S. (2002). *Combination of Evidence in Dempster-Shafer Theory* [online]. Available: <http://prod.sandia.gov/techlib/access-control.cgi/2002/020835.pdf>. [2017, September 15].
- Strelcová, S. (2012a). Ďalšie metódy na podporu rozhodovania. In K. Bugarová, M. Hudáková, S. Strelcová, J. Klučka, *Manažment Rizika v podniku – praktikum*. (pp. 221-230). Žilina: Edis University of Žilina.
- Strelcová, S. (2012b). Hodnotenie spoľahlivosti ľudského faktora v technologických procesoch. *Periodica Academica*, vol. 7, iss. 1, pp. 122-127.
- Strelcová, S. (2011). Particularity of risk management in SMEs. *SMEPP 2011 : Small and medium enterprises - possibilities and perspectives 2011: international scientific conference*. pp. 285-292. Novi Pazar: International University.
- Strelcová, S., Řehák, D., Johnson D.E.A. (2015). Influence of critical infrastructure on enterprise economic security. *Communications: scientific letters of the University of Žilina*, vol. 17, iss. 1, pp. 105-110.
- Šimák, L. (2006). *Manažment rizik*, [online]. Available: http://fsi.uniza.sk/kkm/old/publikacie/mn_rizik.pdf. [2016, April 04].
- Svecová, L., Fotr, J. (2010). Pravidla rozhodování za nejistoty. In J. Fotr, L. Svecová et al. *Manažerske rozhodování: Postupy, metódy a nástroje*. Praha Ekopress.
- Taleb, N.N. (2008). *The Black Swan*. London: Penguin Books.
- Titko, M., Lusková, M. (2016). Analysis of Risks Associated with Transport Infrastructure Elements Failure due to Extreme Weather Events. *Transport Means - Proceedings of the International Conference*. pp. 207-212. Lithuania: Juodkrante.
- Weber, P., Medina-Olivaria, G., Simon, C., Iung, B. (2012). Overview on Bayesian networks applications for dependability, risk analysis and maintenance areas. *Engineering Applications of Artificial Intelligence*, vol. 25, iss. 4, pp. 671-682.
- Yang, J.-B., Xu, D.-L. (2013). Evidential reasoning rule for evidence combination. *Artificial Intelligence*, vol. 205, pp. 1-29.
- Yang, Y., Han, D., (2016). A new distance-based total uncertainty measure in the theory of belief functions. *Knowledge-Based Systems*, vol. 94, pp. 114-123.
- Zhanga, X., Mahadevana, S., Dengb, X. (2017). Reliability analysis with linguistic data: An evidential network approach. *Reliability Engineering and System Safety*, vol. 162, pp. 111-121.

Janina Jędrzejczak-Gas^{1*}
University of Zielona Góra
Poland
Anetta Barska²
University of Zielona Góra
Poland

22. STRATEGIC APPROACH TO INVESTMENT ATTRACTIVENESS MANAGEMENT OF A COMMUNE. EMPIRICAL STUDY OF THE ŚWIDNICA COMMUNE, POLAND

Abstract: The aim of this article is to present the concept of management of investment areas of the Świdnica commune, which is a manifestation of the strategic approach of the commune authorities to managing local development. The analysis of secondary data in the form of available statistics, source materials and the literature relevant to the subject was used in the research proceedings. Numerous methods of obtaining primary data were also applied: a non-standardized in-depth interview with representatives of the self-government of the Świdnica commune, methods of strategic analysis, a focus method and questionnaire surveys carried out using the original questionnaire among representatives of business entities. The result of the applied research methodology is the strategic plan developed to increase the investment attractiveness of the Świdnica commune. The plan specifies, among others: the target vision, mission, priorities, strategic and operational goals and measures to be taken to increase the investment attractiveness of the commune. The plan is an element of the document entitled „The concept of management of investment areas of the commune of Świdnica”, which is an instrument of strategic management in the studied commune.

Keywords: commune, investment activity, strategic management, strategic plan.

JEL Classification: D78, H70, H79, H83, O20, O29, R58

1. Introduction

The scale and dynamics of the local development largely depend on the investment attractiveness, which is usually understood as the ability to persuade investors into investing in a given area (Snieska, Zykiene, 2015) – attractive due to offering the best combination of location benefits.

Investment attractiveness management at the local level is a complex process conditioned by many internal and external factors. The quality of this process has a significant impact on the investment potential of the commune and, consequently, on the pace and directions of its development.

The tasks performed by a commune within the scope of investment attractiveness management are very rarely of an annual nature; usually they require several years to be implemented. It is therefore necessary to use long-term planning methods. The strategic management occupies a high position among them. Over the last years, a significant progress has been made in the field of adaptation of the rules of this management to the areas of communes, especially in the field of conceptualization of their development strategies.

In Poland, commune self-government is an independent entity with a certain scope of freedom in deciding about itself, the way of its development, common property and implementation of public tasks (Ustawa, 1990). Commune authorities are responsible for active controlling of local development processes. Therefore, they undertake various types of regulatory, initiating, organizing and stimulating activities. The commune authorities should be creative, innovative and determined in their actions. They should use modern management methods, take rational pro-development decisions and apply appropriate instruments to influence the scale and pace of the local development. The necessity of

¹ Janina Jędrzejczak-Gas Ph.D.; Podgórna 50, 65-246 Zielona Góra, Poland, j.jedrzejczak-gas@wez.uz.zgora.pl

² Ing. Anetta Barska Ph.D.; Podgórna 50, 65-246 Zielona Góra, Poland, a.barska@wez.uz.zgora.pl

* Corresponding author

such conduct was also noticed by the authorities of the Świdnica commune³, which have been applying a strategic approach to the management of the commune development for many years. The most recent instrument of the strategic management in the commune of Świdnica is the document entitled „The concept of management of investment areas of the Świdnica commune”. It was in 2017 that the commune authorities noticed the necessity of transformation of the existing methods of managing investment attractiveness by the commune and took steps to develop the discussed concept.

The aim of this article is to present the concept of management of investment areas of the Świdnica commune, which is a manifestation of the strategic approach of the commune authorities to managing local development. This paper was divided into two sections. The first section reviews the literature, whereas the second section presents an empirical study of the Świdnica commune.

The publication is the result of the project commissioned by the municipality of Świdnica. The authors of the article conducted research and took part in the work of the team for development of the document entitled „The concept of management of investment areas of the Świdnica commune”.

2. The Strategic Approach to Managing the Development of the Commune – Literature Review

There is no one widely accepted definition of strategic management (e.g. Jeżak, 2004; Obłój, 2007; Stabryła, 2007). After having considered different views, schools and approaches Nag, Hambrick and Chen (2007) formulated a definition according to which the strategic management deals with important intended and revealed initiatives taken by the company management board on behalf of their owners, using their resources to strengthen the company's position in its external environment and also to improve its performance. Strategic management is based on strategic thinking and strategic approach that is characterized by originality, creativity and power of imagination; the desire to create something new and the ability to make it happen in a way that increases efficiency and competitiveness of an organization (Gawroński, 2010, p. 29).

Historically, the strategic management as a science and practice was associated with the commercial sector of the economy. However, the adaptation of the rules of the strategic management to the public sector and the separation of the public management within management sciences can be noticed in the last few decades. There has been an increase in the research activity within the scope of how public management influences the results of organizations in the public sector. Studies show, among others, why the Balanced Scorecard is the most appropriate management tool for the public sector (Talaghir, Gheonea, Iconomescu, 2017), how the strategy formulation process in the public-sector proceeds (Favoreu, Carassus, Maurel, 2016), how the strategic public management influences the financial condition of the public sector - school districts (Soojin, Sangyub, 2017). It is with regard to communes that studies are focused primarily on the strategy of their development (Sztando, 2012), strategic awareness and its consequences for the strategic planning (Longo, Rotolo, 2016).

The strategic management as a modern management system encompasses universal ways to effectively solve problems related to functioning of organizations, regardless of their type. However, due to significant differences between types of organizations, and in particular between their subsystems of goals and values as well as a different nature of interactions they enter with their environment into, it is justified to distinguish the strategic public management (Kožuch, 2004, p. 179). The strategic management in the public sector can be defined as a future-oriented process of planning, selection of objectives and tasks, implementation of adopted provisions as well as monitoring and controlling of the implementation of the adopted arrangements (Wojciechowski, 2012). According to Kożuch (2004, p. 184), strategic management has been introduced most rapidly, among others, in local governments among the public organizations. It is for the dissemination of modern management instruments in organizations that integration processes are of the greatest importance, which is particularly noticeable in case of communes, poviats and voivodeships.

In the case of territorial self-government units, strategic management has the three main functions (Gawroński, 2010, p. 31):

- Decision making function: it creates a certain framework for decisions to be taken by a local self-government unit, which should be consistent with the general vision of the socio-economic development of the given unit.

³ The Świdnica Commune - a rural commune located in western Poland, in the LubuszVoivodeship.

- Coordination function: it assigns specific measures to relevant self-government bodies and organizes them chronologically and spatially.
- Informative function: it creates a consistent message about the hierarchy of goals and tasks implemented by a given local self-government unit.

In the literature on the subject, the attention is paid especially to the first phase of the strategic management process, i.e. planning (Nartisa, Putans, Muravska, 2012; Poister, Streib, 2005; Junjan, 2015; Ugboro, Obeng, Spann, 2011). With regard to communes, the strategic planning is a stage of planning their development strategies (Ślusarz et al., 2010) as well as planning implementation activities in the form of relevant programs and plans, e.g. long-term investment and financial plans, transport and culture development programs. The result of the strategic planning process is a strategic plan which (Sierak, 2013):

- is the basis for municipal policies, programs and undertakings, including spatial policy,
- informs about operating conditions in the commune,
- contains a marketing offer for investors or constitutes a basis for its preparation,
- increases credibility towards external partners,
- constitutes a formal and actual basis for applications for financing by aid institutions (domestic and foreign ones).

The process of creation of a strategic plan is executed in several stages. The literature on the subject presents different concepts on how to "arrange" the work on a strategic plan. In the case of a commune's development strategy, which is one of the main strategic plans, the work usually begins with determination of the current condition of the commune. Then a SWOT analysis is made, key objectives are selected, a vision of development is formulated, and a strategic program of action is worked out (Wołowiec, Reško, 2012). However, it should be remembered that every commune has slightly different conditions, other development opportunities and other resources. Therefore, there is no one model strategic planning process. The individual character of communities, communal economies and their diversity mean that there will be no two identical commune strategic plans. In the case of a local government unit, it should be also remembered that the strategic management has its own specificity. An element of this specificity is the fact that it must also take into account the importance of the administrative and political logic in addition to economic one. It is according to the administrative logic that the strategy must have a form of a legal document to be adopted in a relevant procedure. The duration of a given strategy is also dictated: in Poland, it is usually 7-9 years, which is associated with the programming period of the EU budget perspective. The political logic dictates the process of the strategic management that takes into account interests of the main political actors. It also implies changes in the hierarchy of goals resulting from political changes (Ciarczyńska, Drzewiński, 2013).

3. Methodology

The development of the concept of the management of the investment areas of the Świdnica commune required the use of the original research methodology, which allowed, among others, formulate a mission, vision and identify priorities, strategic and operational goals, as well as desired activities, which could be undertaken by local authorities, aimed at making the commune more attractive place to invest capital.

The process of concept creation included the following stages: 1. Strategic analysis, 2. Development of a strategic plan. The basis for creation of a strategic plan was the strategic analysis, which included an analysis of the environment and an analysis of the Świdnica commune. The literature presents different approaches and methods of strategic analysis (Obłój, Trybuchowski, 2013, pp. 139-165). It is in this study that the SWOT analysis was applied. In order to identify internal conditions (strengths and weaknesses) and external conditions (opportunities and threats), secondary data (statistical data from the Central Statistical Office, source materials, literature relevant to the subject) and primary data were used. Then the SWOT analysis became a basis for the development of a strategic plan to increase the investment attractiveness of the Świdnica commune.

This study presents the second stage of the concept creation process, i.e. the developed strategic plan. The authors of the article took part both in the first and second stage of the process of the concept creation for the investment attractiveness management in the commune of Świdnica.

4. The Concept of Investment Attractiveness Management in the Commune of Świdnica

The result of the applied research methodology is the strategic plan developed to increase the investment attractiveness of the Świdnica commune (Figure 1).

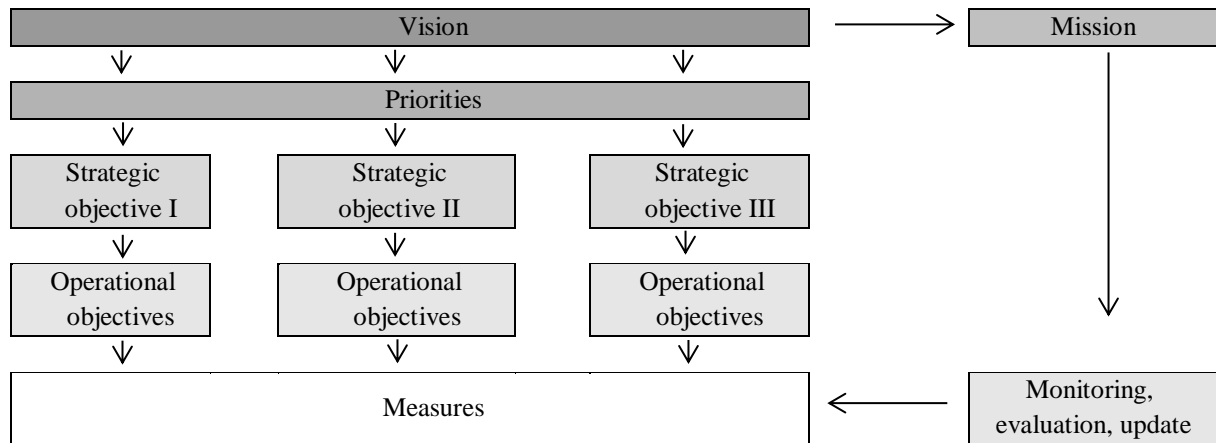


Figure 1. The strategic plan to increase the investment attractiveness of the Świdnica commune

Source: Author’s elaboration on the basis of *The concept of management of investment areas of the commune of Świdnica*

The strategic plan for increasing investment attractiveness of the Świdnica commune is an element of the developed „Concept of the management of the investment areas of the Świdnica commune”, which is one of the fundamental documents of the commune’s development policy. The presented plan specifies, among others: the target vision, mission, priorities (Figure 2), strategic and operational goals (Table 1) and measures (Table 2) to be taken to increase the investment attractiveness of the commune.

Vision		
The Świdnica commune is a place friendly to entrepreneurs and investors, who are offered attractive investment areas and support in locating and running business in the commune.	Mission	
	The mission of the Świdnica self-government is to strive after increasing the investment attractiveness of the commune and creating attractive conditions for investing and doing business.	Priorities
		The stable and transparent spatial policy, friendly to residents, entrepreneurs and investors. The commune attractive for business, enterprising and creative people.

Figure 2. The mission, vision and priorities for increasing the investment attractiveness of the Świdnica commune

Source: Author’s elaboration on the basis of *The concept of management of investment areas of the commune of Świdnica*

It is for the implementation of the vision described above that the following, equivalent strategic objectives have been indicated:

- Strategic objective I: Development of the municipal and technical infrastructure for increasing investment attractiveness of the commune.
- Strategic objective II: Shaping spatial conditions for increasing investment attractiveness of the commune while maintaining sustainable development and spatial order.
- Strategic objective III: Creation of conditions to increase investors' interest in the commune and the development of entrepreneurship.

Then the catalogs of operational objectives were developed for the specification of strategic objectives (Table 1).

Table 1. Strategic and operational objectives to increase the investment attractiveness of the Świdnica commune

Strategic objectives	Operational objectives
Development of the municipal and technical infrastructure for increasing investment attractiveness of the commune	<ul style="list-style-type: none"> – Improvement of the commune's accessibility and communication cohesion – Development of the technical infrastructure – Construction, modernization, reconstruction of the transport infrastructure – Implementation of investments in the field of water and sewage management – Development of the information society infrastructure
Shaping spatial conditions for increasing investment attractiveness of the commune while maintaining sustainable development and spatial order	<ul style="list-style-type: none"> – Spatial planning covering entire towns and villages, sites – Separation of housing and economic functions – Increasing the importance of the tourist function of the commune – Development of a long-term plan for municipal investment areas management – Intensification of the process of developing and updating spatial development plans – Monitoring of spatial development
Creation of conditions to increase investors' interest in the commune and the development of entrepreneurship	<ul style="list-style-type: none"> – Development of an offer of prepared and fully equipped investment areas for economic activation – Promotion of investment areas of the Świdnica commune – Improvement of the investor service system – Development of local cooperation networks for investor services – Improvement of the incentive program for new and existing entrepreneurs and investors (taxes and reliefs within the scope of the local law)

Source: Author's elaboration on the basis of *The concept of management of investment areas of the commune of Świdnica*

Meeting strategic and operational goals requires completion of a variety of investment and organizational projects. The research shows that a lot of measures must be taken in the commune of Świdnica to increase its investment attractiveness. These measures are presented in the Table 2.

Table 2. Examples of the measures increasing the investment attractiveness of the Świdnica commune

Examples of the measures implemented within the framework of strategic and operational objectives
<ul style="list-style-type: none"> – Creation of a bookmark called „Vademecum of Entrepreneurship” on the website of the Commune Office, which will contain all relevant information related to starting a business (the link to the website should also be available on the PUP and business organizations' websites). – Further organization of trainings for those interested in running their own businesses, acquiring funds from available funds. They can be given a common name „Vade mecum of Entrepreneurship”. – Participation in fairs together with a representation of local entrepreneurs and a professional promotional offer of the commune and business entities. – Organization of competitions promoting local entrepreneurship; for example, organizing a competition for the „Best Young Entrepreneur” (e.g. who runs business for not less than 1 year and not longer than 3 years), „Innovative Enterprise”. – Municipal patronage over the selected events promoting local enterprises. Establishment of a Business Council. – Strengthening presence in social media. – Promotion of tourist attractions of the commune. Promotion and creation of new tourist products. – Presentation of the commune on electronic media, promotional materials - maps, catalogs, information. – Setting billboards on investment areas. – Development of promotional materials about Świdnica for potential investors, including information on existing companies, which will allow to assess the investment attractiveness of the commune also in the context of the possibility of cooperation in the international market. – Cooperation with the Polish Information and Foreign Investment Agency, Agency for Restructuring and Modernization of Agriculture. – Joint activities in the field of investment promotion carried out by neighboring communes. – Greater and more active participation of the self-government in creating innovations of SMEs operating in Świdnica, as well as encouraging entrepreneurs to cooperate with the scientific community by creating a platform for such cooperation; e.g. workshops, trainings, etc. – Creation of an Investor Portal, to which the link will be also on websites of business environment institutions. – Conducting an information campaign promoting resolutions of the Commune Council regarding the forms of supporting investors.

- Conducting cyclical surveys and preparing reports to assess the current situation and needs of local entrepreneurs and investors.
- Implementation and annual organization (with the participation of business organizations) of „Open doors in enterprises” for young people, New Year's meetings with business.
- Taking a wide promotional and informational action for young people within the scope of the possibility of establishing companies in the commune of Świdnica.
- Cooperation with the Lubuski Fundusz Poręczeń Kredytowych Sp. z o. o. with the seat in Zielona Góra within the scope of guarantees for entrepreneurs from the Świdnica commune.
- Monitoring of the local labor and education market.
- Adjusting organizational changes and procedures to optimize the investor service; implementation of management solutions improving quality of services for entrepreneurs and monitoring their satisfaction within the scope of taxes, local fees and real estates.
- Development and implementation of investor service standards, solutions enhancing investment attractiveness of the commune, including specification of the rules for preparing, updating and disseminating information regarding the investment offer.
- Development of a real estate management plan for the commune; the program will allow for introduction of a rational policy, among others, within the scope of providing new investment areas, ongoing successive implementation of public tasks of the commune, taking into account issues within the scope of spatial planning.
- Expanding the scope of services provided electronically.
- Development of services provided in the area of geo-information, spatial planning and economic development.
- Update of the investment offer, including keeping an electronic database of investment offers.
- Continuous placement of investment offers in the databases of among others Polish Information and Foreign Investment Agency (PAIiIZ), All-Poland Base of Investment Offers - www.ofertyinwestycyjne.pl
- Submission of the selected offers of investment areas to nationwide competitions, e.g. „Fair Play Commune - Certified Investment Location”.
- Cooperation with other local self-governments, social and private entities to implement joint projects with long-term economic impact.
- Initiating cooperation in the form of public-private partnership.
- Creation of instruments facilitating establishing relationships between companies; e.g. by increasing the availability of infrastructure.
- The use of „outsourcing” as a tool for implementation of the municipality's own tasks.
- Increasing internationalization of enterprises.
- Organization of business missions.
- Update of the schedule for the development and adoption of local spatial development plans taking into account the development areas of the commune for investment placement and undertaking business activity. A relevant draft of a resolution updating the schedule for preparing the MPZP should be submitted to the Commune Council of Świdnica.
- Efforts should be taken at the Polish Information and Foreign Investment Agency and the Polish Agency for Enterprise Development in order to provide the municipality of Świdnica with support for promotion and search for new investors.
- Conducting an information campaign promoting the resolution of the Świdnica Commune Council regarding financial support (through the exemption from the property tax) for entrepreneurs undertaking the economic activity in the commune of Świdnica for the first time and implementing new investments and creating new jobs in the commune of Świdnica.
- Monitoring of the implementation and effectiveness of the previous Resolution of the Commune Council regarding state aid for entrepreneurs expressed in real estate tax exemptions (Resolution No. XLVII / 266/14 of June 24, 2014)
- Conducting an analysis and appropriate consultations regarding the feasibility and socio-economic effects within the scope of introduction of new forms of de minimis aid in the commune of Świdnica enabling the differentiation of real estate tax rates for particular types of taxation items (e.g. for industries significant for the commune's development, preferences for disappearing industries or the type of buildings). Preparing an appropriate draft of a Resolution of the Commune Council regarding real estate tax rates based on the results of the analysis.
- Creation of non-financial incentives for people undertaking business activity for the first time in the Commune of Świdnica.
- Supporting by the local self-government the idea of creating economic clusters in the commune.
- Implementation of EU projects aimed at increasing investment attractiveness of the Świdnica Commune.

Source: Author's elaboration on the basis of *The concept of management of investment areas of the commune of Świdnica*

5. Conclusion

The Świdnica Commune has been applying a strategic approach to management of the development of the commune for many years. It was in 2017 that it faced the necessity of solving many essential problems having a direct impact on the level of investment attractiveness of the commune and the conditions of functioning of business entities. It became necessary to implement a new investment management system for the municipality, i.e. strategic management, a future-oriented process. The effect of measures taken by the commune authorities is the document „The concept of management of investment areas of the Świdnica commune”. It is a planning document that was developed to

coordinate activities and unify the approach to management of the investment attractiveness of the commune. The concept is a long-term program containing priority objectives and projects to be implemented in order to increase the investment attractiveness of the commune. The concept focuses the managers of the municipality on the best use of own assets and resources in the long-term perspective. It is about the development of the own (endogenous) potential which consequently determines the level of investment attractiveness and competitiveness of the commune in its environment. The strategic plan for increasing investment attractiveness of the Świdnica commune presented in this study may be an example and an incentive for other communes in Poland and around the world to apply such a strategic management tool in a commune.

Acknowledgements

This study is the result of a task commissioned by the commune of Świdnica. The result of the task is, among others, the document entitled „The concept of management of investment areas of the commune of Świdnica”. The document was prepared in connection with the intention of the Świdnica commune to apply for co-financing of the project entitled: „Creation of the technical infrastructure on investment areas of the Świnica commune” within the priority axis: Priority Axis 1. Economy and innovation, Measure 1.3. Creation and development of investment areas under the Regional Operational Program – Lubuskie 2020.

References

- Ciarczyńska, A., Drzewiński, P. (2013). Zarządzanie strategiczne w samorządzie. *Wrocławskie Studia Politologiczne*, vol. 15, pp. 160-168.
- Favoreu, C., Carassus, D., Maurel, C. (2016). Strategic management in the public sector: a rational, political or collaborative approach? *International Review of Administrative Sciences*, vol. 82, iss. 3, pp. 435-453.
- Gawroński, H. (2010). *Zarządzanie strategiczne w samorządach lokalnych*, Warszawa: Wolters Kluwer.
- Jeżak, J. (2004). Zarządzanie strategiczne - rosnące znaczenie podejścia organicznego. *Organizacja i Kierowanie*, no. 3, pp. 3-20.
- Junjan, V. (2015). Strategic Planning in Local Governments in Europe: ‘Where Do We Go Now?’. *Transylvanian Review of Administrative Sciences*, special iss., pp. 45-54.
- Kozuch, B. (2004). *Zarządzanie publiczne w teorii i praktyce polskich organizacji*, Warszawa: PLACET.
- Longo, F., Rotolo, A. (2016). Promoting programme gap awareness as a method of effective public strategic management. *Public Management Review*, vol. 18, iss. 3, pp. 349-368.
- Nag, R., Hambrick, D.C., Chen, M.J. (2007). What is strategic management, really? Inductive derivation of a consensus definition of the field. *Strategic Management Journal*, vol. 28, iss. 9, pp. 935-955.
- Nartisa, I., Putans, R., Muravska, T. (2012). Strategic planning and management in public and private sector organizations in Europe: comparative analysis and opportunities for improvement. *European Integration Studies*, no. 6, pp. 240-248.
- Oblój, K. (2007). *Strategia organizacji*, Warszawa: PWE.
- Oblój, K., Trybuchowski, M. (2013). Zarządzanie strategiczne. In A.K. Koźmiński, W. Piotrowski (Eds.), *Zarządzanie. Teoria i praktyka* (pp. 123-168). Warszawa: PWN.
- Poister, T.H., Streib, G.D. (2005). Elements of strategic planning and management in municipal government: Status after two decades. *Public Administration Review*, vol. 65, no., pp.45-56.
- Sierak, J. (2013). Zarządzanie strategiczne w jednostkach samorządu terytorialnego. *Mysł Ekonomiczna i Polityczna*, vol. 4, iss. 43, pp. 188-220.
- Snieska, V., Zykiene, I. (2015). City attractiveness for investment: characteristics and underlying factors. *Procedia - Social and Behavioral Sciences*, vol. 213, pp. 48-54.
- Soojin, K., Sangyub, R. (2017). Strategic public management for financial condition: Focus on fund balances of school districts. *Social Science Journal*, vol. 54, iss. 3, pp. 249-260.
- Stabryła, A. (2007). *Zarządzanie strategiczne w teorii i praktyce*, Warszawa: PWN.
- Sztando, A. (2012). Practically verified conception of local development strategy construction procedure. *10th International Scientific Conference on Hradec Economic Days 2012: Economic Development and Management of Regions*, pp. 203-209. Hradec Kralove.
- Ślusarz, B., Wyrwa, J., Jędrzejczak-Gas, J., Szudra, P. (2010). *Strategia rozwoju gminy Czerwieńsk na lata 2011-2018 (Development strategy for Czerwieńsk commune for 2011-2018)*, Zielona Góra: Uniwersytet Zielonogórski.

Talaghir, G.L., Gheonea, V., Iconomescu, T.M. (2017). Balanced Scorecard – Strategic Management Tool of Performance in Public Institutions. *29th International-Business-Information-Management-Association*, pp. 3372-3382. Vienna.

Ugboro, I.O., Obeng, K., Spann, O. (2011), Strategic Planning As an Effective Tool of Strategic Management in Public Sector Organizations: Evidence From Public Transit Organizations. *Administration & Society*, vol. 43, iss. 1, pp. 87-123.

Ustawa z 8 marca 1990 r. o samorządzie gminnym, Dz.U. z 2017 r., poz. 1875, z późn. zm.

Wojciechowski, E. (2012). *Zarządzanie w samorządzie terytorialnym*. Warszawa: Difin.

Wołowicz, T., Reško, D. (2012). Strategia rozwoju gminy jako narzędzie zarządzania zmianą gospodarczą. *Zeszyty Naukowe WSEI, Ekonomia*, vol. 5, no. 2, pp. 61-89.

Marta Kadłubek^{1*}

Czestochowa University of Technology
Poland

Manuela Ingaldi²

Czestochowa University of Technology
Poland

Szymon T. Dziuba³

Wroclaw University of Economics
Poland

23. DISTRIBUTION OF PRODUCTS IN THE ENTERPRISE: FLOW MANAGEMENT IN CUSTOMER SERVICE

Abstract: The aim of the paper was to present the area of distribution of products with particular focus on the identification and analysis of information flows and flow management in customer service in an enterprise X. The strategy and cooperation between links in the distribution channels in the enterprise X were characterized. The most critical stage in the analysis of the area of distribution of coal in the enterprise X was identification and analysis of information flows and flow management in customer service. Based on the analysis of the source documentation, interview of the employees from the distribution department and author's own observations, the recognition and analysis of information flows and flow management in customer service processes was performed with indication to the proposals for process improvement.

Keywords: customer service, distribution, logistics, flow management, management.

JEL Classification: D22, D30, P42

1. Introduction

Tendency in much of the recent thinking on distribution has been the almost exclusive emphasis on approaches in the area of customer service management. Distribution subsystem is that part of the logistics chain, which is directly related to the market receivers. The most important distribution task is to provide the product in right place and time that would meet the expectations of buyers. This makes the distribution may be included as one of the most important spheres of the logistic management in the enterprise.

The essential objectives of the paper are the problems of the distribution structure both in reference to distribution channels and information flows in the selected process i.e. customer service. The aim of the paper was to present the area of distribution of products with particular focus on identification and analysis of information flows and flow management in the customer service process in enterprise X.

2. Literature Review

The idea of distribution consists in overcoming temporal barriers, spatial barriers and those concerning the range of products, quantity and information, which separate manufacturers from final consumers (Bowersox, Closs, Cooper, 2012, pp. 93-130; Bozarth, Handfield, 2016 pp. 17-52; Christopher, 2011, pp. 2-28; Price, Harrison, 2013; Rushton, Croucher, Baker, 2017; Rutkowski, 2007). The aim of the distribution is to provide final consumers (Cook, 2002) with desired products to the places where they are willing to buy them, at right time while meeting specific terms and at an acceptable price (Brandimarte, Zotteri, 2007, pp. 6-18; Chopra, Meindl, 2012, pp. 73-114; Nowakowska-Grunt, 2017; Kozerska, Smolnik, 2012). The achievement of this task requires making the decision on two principal

¹ Marta Kadłubek Ph.D.; Al. Armii Krajowej 19 B, 42-200 Częstochowa, Poland, martakadlubek@wp.pl;

² Manuela Ingaldi Ph.D.; Al. Armii Krajowej 19 B, 42-200 Częstochowa, Poland, manuela@gazeta.pl

³ Szymon T. Dziuba Ph.D.; ul. Komandorska 118/120, 53-345 Wrocław, Poland, szymon.dziuba@ue.wroc.pl

* Corresponding author

are which are at the same time the fundamental components of the distribution structure (Brandimarte, Zotteri, 2007, pp. 6-18; Dent, 2011, pp. 9-44):

- the first, which concerns the choice of the distribution channels, their types, structure, number, channel participants and institutions that support flow of streams,
- the second, more correlated with physical flow of products and, consequently, with storage and customer service, transport and inventory levels.

Both components of the distribution structure differ in the mobility degree, which in the enterprise operation reality, translates into the type of decisions (Ensafian, Yaghoubi, 2017; Niu, Lam, Gao, 2014; Turneksteen, Klose, 2012). Distribution channels are a less mobile component and therefore, are not included in the scope of strategic decisions, whereas distribution logistics (Bozarth, Handfield, 2006, pp. 17-52; Brdulak 2012) is characterized by a greater degree of mobility, which allows for taking operative decisions with respect to the related issues (Sołtysik, 2009).

Frequently critical dimension of a modern distribution is the flow management, specially in the area of information. In the distribution sphere the main tasks of flow management in the area of information include the collection and processing of data and information, which are derived from the processing, and are intended to make distribution decisions (Bozarth, Handfield, 2016, pp. 17-52). Flow management in the area of information has the following functions (Price, Harrison, 2013):

- communication and customer service, which is aimed at improving the relationship between the supplier and customer,
- customers' needs' planning in advance, and then the physical flows monitoring and variations perception as to the assumptions of the prior plans,
- linking all distribution operations in an enterprise in one coherent system.

The focus of this paper is on the problems of the distribution structure in reference to distribution channels and flows in the selected process which is customer service (Chapman, Soosay, Kandampully, 2003; Chen, Chang, Lai, 2009; Chapman, Soosay, Kandampully, 2003; Hoover et al., 2001; Florez-Lopez, Ramon-Jeronimo, 2012; Fonseca, Pinto, Brito, 2010; Nowicka-Skowron, Dima, 2013, pp. 14-68; Rafele, 2004). Area of distribution with particular focus on identification and analysis of information flows and flow management (Cichoń, 2015; Moczyłowska, Korombel, Bitkowska, 2017) in the customer service (Bieding 2005; Lemańska-Majdzik, Okręglika, 2016) process one of the crucial issue of contemporary logistics management.

3. Methodology of the Research

The epistemological foundation of methodological background of the article is embedded in the analysis of theoretical assumptions of its subjects in reference to the relevant empirical data. This analysis employed short theoretical discussion for generating the selection of the connections in the fields of distribution and customer service. Considered areas were relating to the description of the processes through which may take place the cause relationships highlighted in the reviewed literature sources. The scope of research carried out covers also gathering and selection of appropriate exploratory data and their critical analysis.

The paper is based on the author's own examinations conducted using the method of interviews with employees from the distribution department of the enterprise X and author's own observation. An important source of information was internal materials obtained through collaboration with authorities and employees of the enterprise X. To explore them quantitative and qualitative research was conducted in September 2017.

4. Results

4.1. Strategy and Cooperation between Links in Distribution Channels in the Enterprise X

The enterprise X extracts and sells hard coal and is located in the southern part of Poland. Since 2011, the enterprise has produced hard coal mainly for the energy sector and various types of hard coal for retail sales.

Plan of hard coal distribution in the enterprise X impacts on the structure and types of distribution channels, which mainly results from the characteristics and properties of the raw material i.e. hard coal. The strategy of the enterprise X results in a horizontal structure of the distribution channels: the enterprise decides on the number of Authorized Sales Points. The coal is offered at a specific stage of the distribution channel only by a specific number of agents.

The enterprise X implements the distribution strategy (Romanowska, Gierszewska, 2009, pp. 11-26) which is characterized as a pull strategy. This strategy is oriented towards final recipients of the raw material, whereas the enterprise X is responsible for the most of the promotional activities aimed at final recipients while assuming that the desired and known products are also searched by intermediate sales units. A push strategy is sometimes used, with the enterprise X performing the promotional activities aimed at indirect sales links, whereas agents are responsible for final recipients (mostly individual customers). Furthermore, the enterprise X also uses the integration strategy, where the enterprise, being a distribution channel integrator, creates its own strategy and adjusts the specific type of participants which are best suited for the strategy.

The members of the hard coal distribution channel include both the enterprise X and 10 mining works with partners, which include institutional recipients, individual customers as well as carriers and agents. The enterprise X also connects 10 mining works.

The customers represent the entities of the distribution channels of raw material i.e. hard coal of the enterprise X. The market of recipients of the analysed enterprise is composed of the customers that differ from each other with e.g. purchasing preferences or geographical location. A key criterion of the division of the customers of the enterprise X is however the quantity of the purchased raw material. The division includes the group of strategic customers (SC) who purchase every year over 20,000 tons of coal and other customers (OC), who purchase every year smaller volume of the raw material.

Coal sales by the enterprise X in this market area are performed by the general national distribution networks based on:

- Partners of the enterprise X (group of firms associated in order to cooperate with the Authorized Sales Point,
- Authorized Sales Points (ASP),
- Commercial Partners (the enterprise is evaluated from the standpoint of the total customer service).

Cooperation of links in the hard coal distribution channels in which the enterprise X participates is critical to the adequate flow of streams of data, materials and finances. Apart from its main activities, the enterprise X takes part in many interactions with other entities that operate in the market. Cooperation in hard coal distribution channels of the enterprise X is often based on annual or many-year contracts with strategic recipient and Authorizes Sales Points and vendors who often conclude annual contracts with their recipients. The contracts concluded between the members of the distribution channels of the enterprise X do not only concern sales of hard coal but also provide standards for settlements for turnover of railway carriages.

4.2. Identification and Analysis of Flows and Flow Management in the Customer Service Process in the Enterprise X

Analysis of hard coal distribution channels used in the enterprise X reveals three key processes, whose performing directly affects the supply of the raw material with adequate quantities at right time and to right place. These activities are connected with such issues as:

- coal storage,
- customer service i.e. accepting and execution of the order,
- loading and transport of the required type of raw material.

The focus of the paper is on the analysis of flow and flow management in the customer service process. This process is composed of the tasks, with the participants including, to different degree of involvement, the headquarters of the enterprise X, mine works, and customers. The customer service process in the enterprise X is divided into the following elements:

- an inquiry sent by the customer and an order for the raw material,
- internal processing of the order in the enterprise X and mine works,
- flow of payments from the customers to the enterprise X,
- reception/supply of raw material to the customer,
- making the complaints.

The customer service and coal sales in the enterprise are the responsibility of the Sales and Marketing Department, whereas in the mine works, this is performed by the customer service departments. The Sales and Marketing Department of the enterprise X is composed of four offices: Marketing Strategy, Customer Service, Strategic Customers, Individual Customers and Quality Control.

Customer service departments are the organizational entities in the mining works of the enterprise X and they report to the Director of the Customer Service Office. They are responsible for maintaining a high level of sales. However, it should be adjusted to production opportunities of the mining works. The tasks of the above departments include:

- operating planning of sales of hard coal,
- preparation and updating the commercial proposals of the mining works in the area of coal sales,
- preparation of monthly and daily schedules of coal deliveries,
- accepting, verification and recording and processing of the orders,
- cooperation with the division of mechanical processing of the mining company,
- cooperation with railway service and coal carriers, concerning ordering and placing the wagons.

The enterprise chooses the tasks in the area of extraction of the commercial coal for the period of one year. Determination of these tasks for the longer periods has only a prognostic character, based on the achievement of the annual plans before the beginning of another calendar year.

The level of the commercial coal production accepted in the annual technological and economic plans of the mining works is compared with the production level in other mining works that belong to the enterprise X. Simultaneously, the managers of the enterprise studied, with respect to the estimated production level in their mining works, can make decisions on concluding the contracts with coal consumers and present the mines which will achieve the targets contained in the contracts.

Receiving and turnover of orders for coal in the customer service process are performed in both paper form and in the electronic form, which is presented below in figures showing the processes of order acceptance.

The first method is the paper form of placing orders. Figure 1 presents the processing of customer order for coal using the conventional form for order placement.

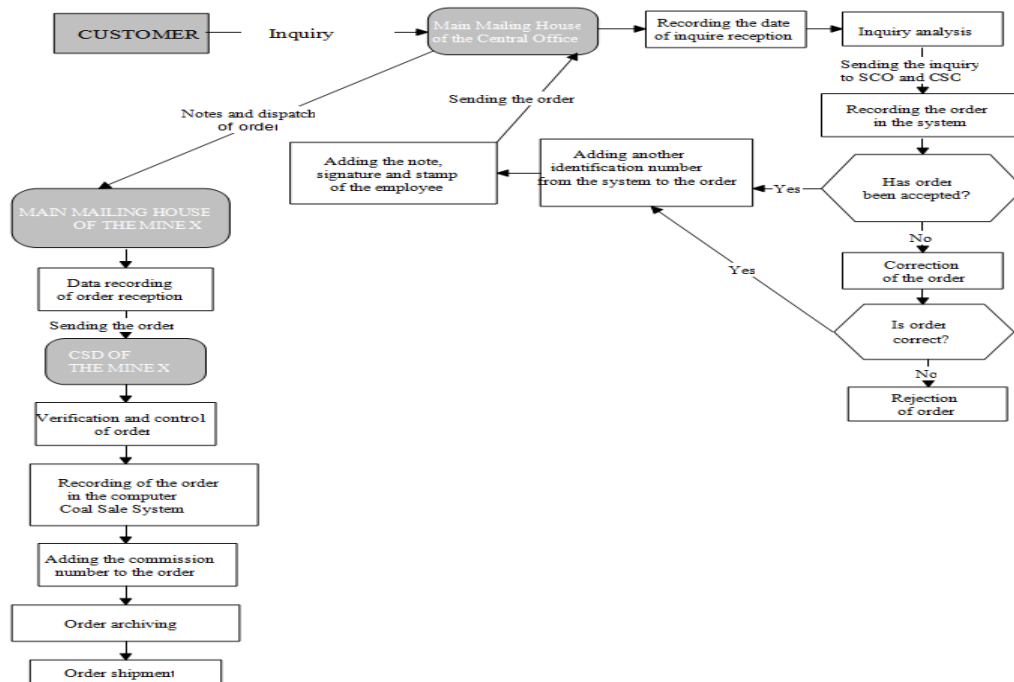


Figure 1. Processing the customer's order for coal in the paper form in the enterprise X

Source: Author's own elaboration based on the internal materials from the enterprise X

Figure 1 presents the processing of customer order in the paper form. The order is sent to the Central Office of the enterprise X and then transferred to the Strategic Customer Office and Customer Service Office of the enterprise where it is recorded and the decision is made on order execution (negative decision can be caused by e.g. the lack of specific products). The headquarters of the enterprise X sends the order the Main Mailing House and next to the Customer Service Department in the mining works, where it is executed i.e. shipped to the customer.

It was demonstrated based on the analyses that in order to improve the customer service process concerning placing orders in the paper form the Central Office of the enterprise X should have access

to the inventory levels of the mine so that it can immediately check whether the order can be completed without consultations with the Strategic Customer Office and Customer Service Office. If the order is accepted in the Central Office of the enterprise X, it should be sent to the Strategic Customer Office and the Customer Service Office to be finally verified and transferred for execution.

The orders in the enterprise X can be also placed in the electronic form. Fig. 2 presents graphical illustration of this form of order placement by customers.

Figure 2 presents the flow for customer order processing for the order placed in the form of the electronic document, using the electronic signature in the Customer Panel (e-K) in the enterprise X. Reception, acceptance and processing of this type of orders within the contracts with the Authorized Sales Points (ASP) occurs in the Customer Service Departments in individual mining works of the enterprise X. Furthermore, reception and acceptance of other orders placed by other small customers occurs in the Customer Service Office in the Central Office of the enterprise X while their processing is the responsibility of the Customer Service Department in the respective mining works. The orders placed in the form of the electronic document should have, among other things, the data concerning the name and address of the entity that placed the order, REGON and NIP identification numbers, preferred quality and quantity of the raw material, means of transport, deadline, payment option and electronic signature of the ordering person.

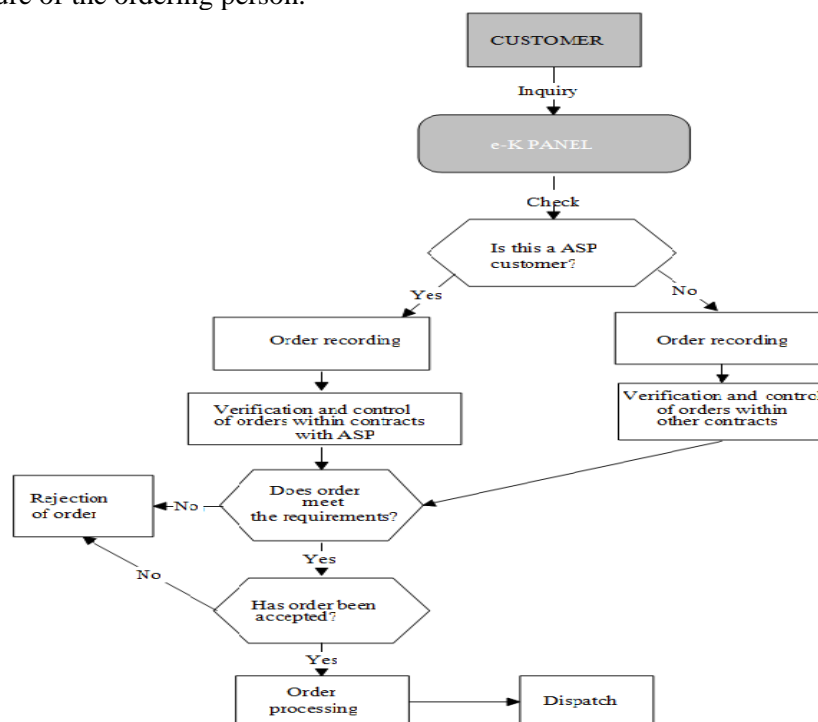


Figure 2. Processing the customer's order for coal in the electronic form in the enterprise X

Source: Author's own elaboration based on the internal materials from the enterprise X

The analyses revealed that in order for the customers to perform their customer service processes more efficiently and place orders, the enterprise X should create the customer databases with division into those who place orders due to the contracts concluded with the Authorized Sales Points and those who place orders based on other contracts. This will save the time for verification of the contract used for placing the order and will facilitate the whole system while reducing the order execution time.

Processing of customer order for coal in the enterprise X based on the contracts is presented in Figure 3. As can be seen in Figure 3, the ordering person places an order for deliveries to the Marketing Department of a specific mining works. Next, the Marketing Department sends the contract to the Shipping Department for verification, recording and assigning the number in the order book. When the order number is assigned, one of the copies is sent by registered mail to the ordering person whereas another copy is delivered to the Marketing Department while the original order is stored in the Shipping Department. The next step is inputting the order by the Shipping Department into the computer system that supports sales processes, which allows for issuing documents on mixed cargo scales and in the Shipping Department. The final stage of execution of this type of orders is to choose the means of transport (by car or railway transport).

Based on the analyses, the process of placing the order using the concluded contracts can be improved by the customer placing the order directly in the shipping department. The department should verify the order, record it, assign the number and input into the order book and then prepare the contract, send it to the customer and input the order into the computer system.

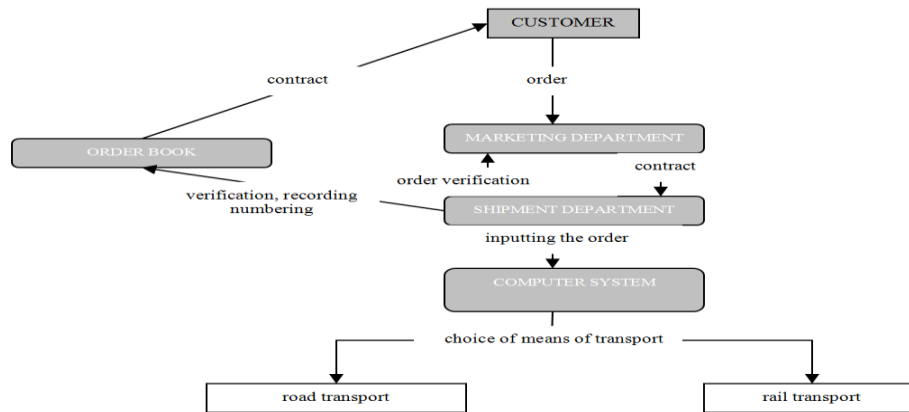


Figure 3. Processing of customer order for coal in the enterprise X based on the contracts

Source: Author's own elaboration based on the internal materials from the enterprise X

The orders in the enterprise X can be also placed in the form of prepayments. Processing of the customer order in the form of prepayment in the enterprise X is presented in Figure 4.

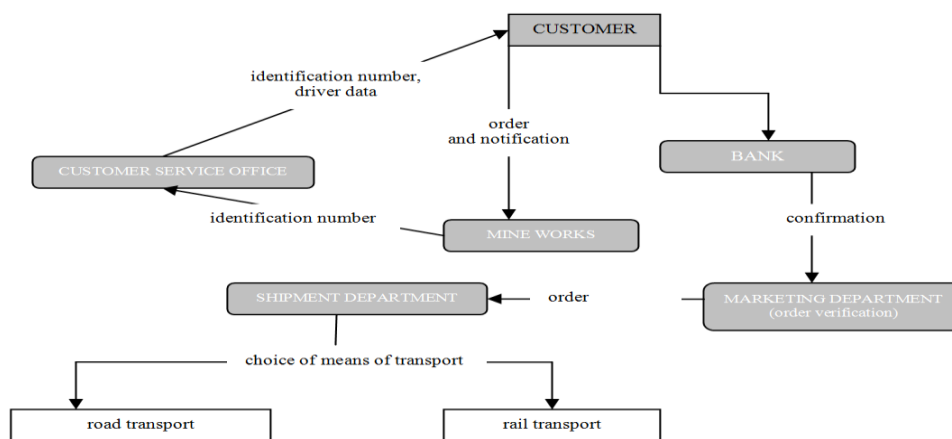


Figure 4. Processing the customer's order for coal in the form of prepayment in the enterprise X

Source: Author's own elaboration based on the internal materials from the enterprise X

The prepayment for the raw material is made by the customers who do not have contracts for coal supply. The representatives of the enterprises who order the purchase of coal in the mining works notify the reception of the coal by means of the Online Customer Panel in the enterprise X. The notification of the coal reception should be performed seven days before. Over the week, the notification process in the enterprise X can be divided into the three following stages:

- determination of the estimated order quantity (every Monday),
- acceptance of the offer of the purchasing party by the mining works and preparation of the identification number for notification, which is unique and connected with the vehicle and driver chosen by the customer until the reception of the raw material (Tuesday, Wednesday) – acceptance of the notification made by the mine with the generated identification numbers transferred to the customer on Thursday,
- completion of the notification process by the consumer through placing the data concerning the vehicles and drivers.

The purchaser has to accept the required data (vehicles and drivers) for 24 hours before the beginning of the day for which the raw material notification was made. The Authorized Sales Point issues an electronic authorization for the coal recipient. The authorization certifies that the specific car driver (or other person) is authorized to receive the selected raw materials from the mining works.

Based on the analyses, a solution was proposed to facilitate communication and execution of the reception i.e. implementation of the six-digit PIN number assigned to the person authorized for reception of the delivery. Furthermore, the driver who receives the coal does not have to contact the person who placed the authorization since using the Customer Panel, he or she is notified by a text message. In order to accelerate order execution time, the enterprise should shorten the notification time from 7 to maximally 4 working days.

As above presented solutions suggest, the analysis of distribution channels and flows in the selected process i.e. customer service helps an organization to evaluate the impact on its proper management. From this it can develop a basis for taking decisions on profitability, and the level and mix of service offered to the customers. In spite of both conceptual and practical difficulties, enterprise that attempt to stand and introduce the mechanisms of customer service in distribution are likely to be amply rewarded at the bottom line, even with only limited application of the principles.

5. Conclusion

Based on the results of the study conducted in the enterprise X, it can be concluded that despite the fact that the process of receiving and execution of the orders in the customer service process in the enterprise X seems to be proper, it also shows some drawbacks, including:

- the enterprise X does not always have access to the data on inventory levels of raw materials at the recipient's place (Authorized Sales Points or institutional recipients) for which this information can represent the commercial secret,
- the institutional consumer does not obtain updated information about the order execution status (including cargo tracking information and coal loading date, which is important for the consumers without their own unloading equipment, who have to use the external service providers),
- institutional customers and Authorized Sales Points are not adequately informed about the current level of supply and types of products and calorific value of the coal.

Based on the analyses of flow and flow management in the customer service process in the enterprise X, it was demonstrated that:

- in order to improve the customer order processing in the paper form, the Central Office of the enterprise X should have access to inventory levels so that it can find out whether an order can be executed without consultation with the Strategic Customers Office and the Customer Service Office. If the order is accepted in the Central Office of the enterprise X, it should be sent to the Strategic Customer Office and the Customer Service Office to be finally verified and transferred to execution,
- in order for the customers to place orders for coal more effectively in the form of an electronic document in the enterprise X and order processing to be more efficient, the enterprise X should create databases of customers with division into those who place orders by contracts concluded with the Authorized Sales Points and those who place orders based on other contracts. Consequently, the change will save time for verification of the contract used for placing the order and will facilitate the whole distribution system,
- the customer order process based on the concluded contracts can be improved if the customer is allowed to place the order directly in the Shipping Department. The department should verify the order, record it, assign the number and input into the order book and next prepare the contract, send it to the customer and input the order into the computer system,
- with regard to the customer order processing in the form of prepayment, the communication and reception can be improved by introduction of a six-digit PIN number for the person authorized for the reception of the order. Furthermore, the driver who receives the coal does not have to contact the person who placed the authorization since using the Customer Panel, he or she is notified by a text message. In order to accelerate order execution time, the enterprise should shorten the notification time from 7 to maximally 4 working days.

Implementation of the above changes in the area of distribution with particular focus on the streams of flows, mainly information flow in the process of customer service in the enterprise X will substantially simplify them and will make that they will be processed more effectively, which should translate into faster customer service while maintaining the quality. The customer satisfaction, which is a key success driver in the enterprise, will undoubtedly improve and the objectives to be achieved

through presented area correspond with enterprise's business strategy. Suggested solutions are not limited to the enterprise X only and may be applied in other similar entities.

References

- Bowersox, D., Closs, D., Cooper, M.B. (2012). *Supply Chain Logistics Management*. United States: Mc Graw-Hill.
- Bozarth, C., Handfield, R. (2016). *Introduction to operations and supply chain management*. New Jersey: Pearson Education Inc.
- Brandimarte, P., Zotteri, G. (2007). *Introduction to Distribution Logistics*. USA: Wiley.
- Brdulak, H. (2012) Logistyka w trudnych czasach – szansa czy ryzyko? Zmiany w globalnych łańcuchach dostaw. In H. Brdulak (Ed.), *Logistyka przyszłości* (pp.45-57). Warszawa: Polskie Wydawnictwo Ekonomiczne.
- Chapman, R.L., Soosay, C., Kandampully, J. (2003). Innovation in logistic services and the new business model. A conceptual framework. *International Journal of Physical Distribution & Logistics Management*, vol. 33, p. 7.
- Chen, K.K., Chang, C.T., Lai, C.S. (2009). Service quality gaps of business customers in the shipping industry. *Transportation research Part E*, vol. 45, pp. 222-237.
- Chopra, S., Meindl, P. (2012). *Supply Chain Management*. USA: Pearson.
- Christopher, M. (2011). *Logistics and supply chain management*. London: FT Press.
- Cichoń, S. (2015). Selected Theories of Organization Management. *Proceedings of the 2nd International Scientific Practical Conference Catching Up New Ideas: Management, Economics and Law' 2015*, pp. 16-19. Kauno: University of Applied Science.
- Cook, S. (2002). *Customer Care Excellence. How to Create an Effective Customer Focus*. London: The Kogan Page Ltd.
- Dent, J. (2011). *Distribution Channels: Understanding and Managing Channels to Market*. United Kingdom: The Kogan Page.
- Ensafian, H., Yaghoubi, S. (2017). Robust optimization model for integrated procurement, production and distribution in platelet supply chain. *Transportation Research Part E: Logistics and Transportation Review*, vol. 103, pp. 32-55.
- Bieding, T.J. (2005). Planning and controlling daily deliveries to the same clients: problems and adequate solutions. In B. Fleischmann, A. Klose (Eds.), *Distribution Logistics* (pp. 121-140). Berlin: Springer-Verlag.
- Florez-Lopez, R., Ramon-Jeronimo, J.M. (2012). Managing logistics customer service under uncertainty: An integrative fuzzy Kano framework. *Information Sciences*, vol. 202, pp. 41-57.
- Fonseca, F., Pinto, S., Brito, C. (2010). Service quality and customer satisfaction in public transports. *International Journal for Quality Research*, vol. 4, no. 2, pp. 125-130.
- Hoover, W.E., Eloranta, E. Jr., Holmström, J., Huttunen, K. (2001). *Managing the demand – supply chain. Value innovations for customer satisfaction*. New York: John Wiley & Sons, pp. 7-36.
- Sołtysik, M. (2009). Uwarunkowania logistyki w łańcuchach dostaw. In D. Kisperska-Moroń, S. Krzyżaniak (Eds.), *Logistyka* (pp.11-66). Poznań: Biblioteka Logistyka.
- Moczydłowska, J.M., Korombel, A., Bitkowska, A. (2017). *Relacje jako kapitał organizacji*. Warszawa: Difin.
- Kozerska, M., Smolnik, P. (2012). Rola dystrybucji w przedsiębiorstwie na przykładzie firmy HYGIENIKA S.A. *Logistyka*, vol. 3, pp. 1131-1140.
- Lemańska-Majdzik A., Okręglińska M., Gorzeń-Mitka I. (2016). Selected Development Factors of Small and Medium Enterprises. In 28th International Business Information Management Association Conference (28th IBIMA), Vision 2020: Innovation Management, Development Sustainability and Competitive Economic Growth, Sevilla, Spain, 9-10 November 2016, VOL. I – VII, pp. 1090-1099.
- Niu, Y.F., Lam, W.H.K., Gao, Z. (2014). An efficient algorithm for evaluating logistics network reliability subject to distribution cost. *Transportation Research Part E: Logistics and Transportation Review*, vol. 67, pp. 175-189.
- Nowakowska-Grunt, J. (2017). Zasady współpracy w kanale dystrybucji. In J. Nowakowska-Grunt, M. Starostka-Patyk (Eds.), *Logistyka dystrybucji* (18-28). Warszawa: WKiŁ.
- Nowicka-Skowron, M., Dima, I.C. (2013). *Management of Serving Activity*. Hershey: IGI Global.
- Price, P.M., Harrison, N.J. (2013). *Looking at logistics: a practical introduction to logistics, customer service, and supply chain management*. United Kingdom: Access Education, pp. 63-80.
- Rushton, A., Croucher, P., Baker, P. (2017). *The Handbook of Logistics and Distribution Management: Understanding the Supply Chain*. United Kingdom: The Kogan Page, pp. 3-15.
- Rutkowski, K. (2007). Zarządzanie logistyczne dystrybucją towarów. In K. Rutkowski (Ed.), *Logistyka dystrybucji* (pp. 55-110). Warszawa: Difin.
- Rafele, C. (2004). Logistic service measurement: a reference framework. *Journal of Manufacturing Technology Management*, vol. 15(3), pp. 280-290.

Romanowska, M., Gierszewska, G. (2009). *Analiza strategiczna przedsiębiorstwa*. Warszawa: PWE.

Turneksteen, M., Klose, A. (2012). Demand dispersion and logistics costs in one-to-many distribution systems. *European Journal of Operational Research*, vol. 223, iss. 2, pp. 499-507.

Radomír Kaňa^{1*}

VŠB – Technical University of Ostrava
Czechia

Judyta Kabus²

Czestochowa University of Technology
Poland

24. SELECTED ASPECTS OF EUROPEAN UNION MISSIONS AND OPERATIONS MANAGEMENT

Abstract: Since the half of the 1990s, when the EU Common Foreign and Security Policy (CFSP) and later on the Common Security and Defense Policy (CSDP) are developing more intensively, the issue of the management (command and control) of later EU operations and missions arises too. The growing power of the European Union to act within both of mentioned policies has also necessarily led to the development of its own capability in the field of crisis management. Main objective of the paper is through an analysis of the institutions and bodies of the European Union involved in the Common Security and Defence Policy within the framework of the current and completed EU missions and operations to identify and characterize roles of main actors (players) in the EU's crisis management policy. The objectives will be achieved by using mainly qualitative research. The basic research methods are mainly analysis, comparison and literature review method.

Keywords: crisis management, Common Security and Defense Policy, EU missions and operations, European Union.

JEL Classification: F5, F15, F51

1. Introduction

Over the last two decades, the security situation in global and especially in regional scale has changed significantly. The recent multipolarity brings new threats such as the escalation of a series of regional conflicts, which by their nature are beyond standard military strategies and procedures like asymmetric warfare (Rand Corporation, 2016). Present security situation in the world is different from the Cold War and, as such, requires different approaches to solve many problems at regional or global scale. Syrian Civil War and overall deterioration of the situation in the Middle East and a number of African countries led to biggest migration crisis the EU has not faced yet. We have to add to this the real danger of terrorist attacks (as in Paris, Brussels, Nice, Manchester or Barcelona) and, finally, increasing ambitions of Russian Federation. These security threats represent a great security challenge for European Union and its member states to strengthen Union's position in the field of foreign and security policy and to build and manage appropriately the necessary military/police/civilian capabilities (Kaňa, Mynarzová, 2014, 2016). Planning, commanding and managing in multinational integrated foreign operations/missions are difficult issues over many years. As the European Union becomes an increasingly active global actor - including the area of foreign, security and defense policy – the EU is constantly developing its capabilities for integrated missions and operations. Foreign operations and missions of the European Union managed under the Common Security and Defence Policy (CSDP) are considered the most important tool to ensure not only its own but also global security (Kaňa, Mynarzová, 2015).

Concept of crisis management of the European Union (see Robert Schuman Foundation, 2006; Gros, Juncos, 2011) includes a substantially wide range of situations and activities. In principle, this includes interventions designed to solve the armed conflict, to protect the civilian population and to reconstruct devastated areas. Initially, they were mostly military (crisis management) operations, but they now combine both military and civilian resources that are responsible for restoring the smooth running of state services as part of the reconstruction of the territory. This objective is central to European Crisis Management Policy and such an enterprise demands both significant resources (including EU's administrative, see Piskorzová, 2009) and a complete range of know-how.

¹ Ing. Radomír Kaňa Ph.D.; Sokolská třída 33, 70121, Ostrava 1, Czechia, radomir.kana@vsb.cz

² Judyta Kabus Ph.D.; ul. Dąbrowskiego 69, 42-201 Częstochowa, Poland, judyta.kabus@wz.pcz.pl

* Corresponding author

2. European Union Common Security and Defence Policy and Crisis Management

The progress of a European capability for crisis management could be described as the result of two movements: *the expansion of international competence of the European Communities since 1958 and the creation and development of the Common Foreign and Security Policy since 1993 (and especially the Common Security and Defence Policy since 1999-2000).*

The authority of the European Economic Community (1958) was mainly in the economic sphere. The role of the Common Commercial Policy has gradually given the European Commission considerable power on the international scene. In addition to the GATT (later WTO) relations, the trade relations between the Community and certain countries or regional organizations have governed various Association Agreements since the 1960s. These Association Agreements were quickly completed by cooperation and partnership agreements which allowed the Community to extend its powers to areas such as cooperation, development aid and economic support. During the 1990s, the Community had a number of tools and instruments that enabled it to influence the internal development of its partners.

2.1. Common Security and Defence Policy

The development of the Common Foreign and Security Policy (CFSP) of the European Union and its emergence in 1993 (by Maastricht Treaty) as a second pillar, was accompanied by a number of activities in the diplomatic field, and thus the emphasis on the “foreign” dimension. The European Council was assigned as a Coordinator for the CFSP, together with the presiding country. The main actor in the framework of CFSP was the Council. Despite the gradual strengthening of the role of the Union in the field of international relations and in diplomatic activities in resolving many conflicts, its military capabilities were not able to provide, maintain and successfully solve any operation outside the territories of the Member States. This fact led to the creation of the European Security and Defence Policy (ESDP), as an integral part of the Common Foreign and Security Policy, and later changed its name to the Common Security and Defence Policy – by Lisbon Treaty (The Lisbon Treaty, 2008) – Treaty on European Union (TEU) and the Treaty on the Functioning of the European Union (TFEU) (Merlingen, 2012).

The concept of a European Security and Defence Policy was first officially used at an EU summit in Cologne (June 1999). The summit nominated the first High Representative for the CFSP, the Political and Security Committee (PSC) and the EU Military Committee (EUMC). Another important summit for the development of ESDP was meeting in Helsinki in December 1999.

At the Nice Summit (December 2000), the concept of the military structure of ESDP and CFSP was definitively established, the Political and Security Committee, the EU Military Committee and Military Staff of the European Union have begun to operate since 2001 (Dubský, 2006).

In May 2004, the Headline Goal 2010, has been approved which included the concept of EU Battlegroups (EU Battle Groups Concept). These comprehensive security military units of about 1,500 troopers (in one or several EU member states) have to give the EU the ability to quickly intervene mainly in lower intensity conflicts (for example, in the context of evacuation and humanitarian missions or operations to prevent conflict). These groups must be able to deploy within 10 days of the decision of the EU Council (EEAS, 2013).

A new dimension in the implementation of CFSP and CSDP was brought by mentioned Lisbon Treaty, in force since 1 December 2009. This treaty cancelled the pillar structure of the EU. The original second pillar (CFSP, CSDP), however, continues to maintain its specific properties. CFSP was incorporated into the EU Treaty – i.e. outside the framework of the TFEU, which regulates all other common policies of the European Union. This meant that CFSP retained its intergovernmental character, remained the unanimity of the Council. One of the most important institutional changes was the establishment of the High Representative for Foreign Affairs and Security Policy (HR - merged two existing features - High Representative of the Union for Foreign Affairs and External Relations Commissioner) who also leads the Foreign Affairs Council and is the Vice-President of the Commission (El-Agraa, Ardy, 2011).

The newly established institutions - the European External Action Service (EEAS) should help the High Representative with his role. The EEAS coordinates the external actions of the EU. As the EU's diplomatic service, it is also responsible for the development and execution of the Common Security and Defence Policy (CSDP). Crisis Management and Planning Directorate (CMPD) was established in November 2009, in connection with the ratification of the Lisbon Treaty, as part of the EU Directorate. This led to the integration of civilian and military dimensions of strategic planning and crisis management, which enhances the comparative advantage of the EU - the possibility of using a wide range of instruments for mission management and leadership (Staab, 2011).

3. CSDP Institutions and Bodies Involved in Crisis Management

The Common Security and Defence Policy (CSDP) enable the Union to take a crucial role in peace-keeping operations, conflict prevention and in the strengthening of the international security. It is an integral part of the EU's comprehensive approach towards crisis management, drawing on civilian and military assets. In order to enable the European Union fully to assume its responsibilities in CSDP and crisis management, political and military structures were permanently established (see EEAS, 2017a).

3.1. Research Description and Methodology

For the research authors used some of the basic methods of the scientific research to achieve information necessary to the complex systemic processing of the issue. The authors predominantly used methods of qualitative research. The basic research methods include literature review method and a method of analysis. Due to formation of the CSDP in 2000, the roles of the relevant Commission and European Parliament services involved in the crises analysis of EU foreign and security policy were not surveyed. Another key aspect in view of the focus of this article is the fact, that it examines the issue of EU CSDP missions and operations management and thus selects only some of the instruments of “crisis management toolbox” i.e. “EU’s Comprehensive Approach“. Given the objective of this article, the following hypothesis has been formulated:

H1: The EEAS is a key institution of the CSDP that ensures the consistency of the EU's external action.

3.2. Key CSDP Institutions and Bodies

The European Council consists of the Heads of State or Government of the Member States, together with its own President and the President of the European Commission. The High Representative takes part in its work too. It defines the general political direction and priorities thereof, including in relation to the CFSP and the CSDP. According to Article 22 TEU, the European Council shall identify the strategic interests and objectives of the Union relating to the CFSP and in other areas of the external action of the Union, on the basis of the following principles, as stated in Article 21 TEU. Article 26 TEU states that the European Council shall identify the Union’s strategic interests, determine the objectives and define general guidelines for the CFSP, including matters with defence implications, and shall adopt the necessary decisions (Consilium Europa, 2017a).

The Council of the European Union (EU Council, Council) is composed of government ministers from each EU country, according to the policy area to be discussed. The Council meets in 10 different configurations of 28 national ministers (one per state). According to the Lisbon Treaty is responsible for the definition and implementation of the CFSP and CSDP based on European Council guidelines - by unanimous/consensus decision (Article 42 TEU). The Foreign Affairs Council (FAC - national foreign ministers) is responsible for CSDP and chaired by the Union's High Representative. The Foreign Affairs Council elaborates the Union’s external action on the basis of the strategic guidelines laid down by the European Council and ensures that the Union’s action in this area is consistent. This includes foreign policy, defence and security, trade, development cooperation and humanitarian aid. The Council can launch EU crisis management missions and operations, both civilian and military, in pursuit of the EU’s objectives of peace and security. It can also adopt measures needed to implement the EU’s foreign and security policy, including possible sanctions.

The Council Secretariat is headed by the Secretary-General and is divided into seven directorates-general (A-G), each administered by a director-general, Directorate-General C is responsible for Foreign Affairs, Enlargement and Civil Protection. A Committee of Permanent Representatives of the Governments of the Member States (Coreper) prepares the work of the Council. The main role of Coreper is to coordination and preparation the work of the different Council configurations, including FAC (Europa, 2017).

The Political and Security Committee (PSC) meets at the ambassadorial level as a preparatory body for the Council of the EU. Its main functions due to Article 38 TEU are monitoring the international situation, and help in defining policies within the Common Foreign and Security Policy (CFSP) including the CSDP. PSC prepares a coherent EU response to a crisis and exercises its political control and strategic direction of civilian and military crisis management missions and operations.

The Foreign Affairs Council is (beyond Coreper and the PSC) supported by some 35 thematic and geographic preparatory bodies (the Council itself is supported by more than 150 preparatory and working groups, (see List of Council preparatory bodies, 5183/16; Council of the European Union, 2016).

The European Union Military Committee (EUMC) is the highest military body established within the Council (Council Decision 2001/79/CFSP). It is composed of the Chiefs of Defence of the Member States, who are regularly represented by their permanent military representatives. The EUMC provides the PSC with information assistance and recommendations on all military matters within the EU. The EUMC is supported by military representatives appointed by Coreper – the European Union Military Committee Working Group (EUMCWG), and group of military experts, the European Union Military Committee Working Group/Headline Goal Task Force (EUMCWG/HTF).

The Committee for Civilian Aspects of Crisis Management (CIVCOM) in parallel with the EUMC advises the PSC. This committee provides information, drafts recommendations, and gives its opinion to the PSC on civilian aspects of crisis management (Council Decision 2000/354/CFSP). It is chaired by a representative of the High Representative and is composed of Member States' delegates (EEAS, 2017a).

The Politico-Military Group (PMG) carries out preparatory work in the field of CSDP for the Political and Security Committee. It covers the political aspects of EU military and civil-military issues, including capabilities, concept, and operations and missions. It prepares Council Conclusions, moreover provides Recommendations for PSC, and monitors their effective implementation. It has a particular responsibility regarding partnerships with non EU states and other organisations, including EU-NATO relations. The PMG is chaired by a representative of the High Representative and is composed of Member States' delegates (EU Monitor, 2017).

The European Union Military Staff (EUMS) – working under the direction of the EU Military Committee (EUMC) and since 2009 (from 2001 as a Council body) under the authority of the High Representative – as a Directorate-General of the EEAS to is the source of collective (multi-disciplinary) military expertise within the EEAS and commanding non-executive operations through its Military Planning and Conduct Capability (MPCC) operational headquarters. The EUMS coordinates the military instrument, with particular focus on missions/operations (both military and those requiring military support) and the creation of military capability. Enabling activity in support of the output includes: early warning, situation assessment, strategic planning, Communications and Information Systems, training and education, concept development, and support of partnerships through military-military relationships. Concurrently, the EUMS is charged with sustaining the EU OPCEN (EU Operations Centre) and providing its core staff when activated (EEAS, 2017b).

The Military Planning and Conduct Capability (MPCC) is a regular operational headquarters at the military strategic level for non-executive military missions deployed as part of the CSDP. The MPCC is part of the EU Military Staff, a department of the EEAS, and the Director General of the EUMS also serves as Director of the MPCC - exercising command and control over the operations. The MPCC is single military strategic command and control structure, which is responsible for the operational planning and conduct of non-executive missions. This includes the building up, deployment, sustaining and recovery of EU forces (Consilium Europa, 2017b).

The Civilian Planning and Conduct Capability (CPCC) is part of the EEAS, and is the permanent structure responsible for an autonomous operational conduct of civilian CSDP operations. Under the political control and strategic direction of the Political and Security Committee and the overall authority of the High Representative, the CPCC ensures the effective planning and conducts of civilian CSDP crisis management operations. CPCC is the permanent operation headquarters for all civilian EU missions (EEAS, 2017c).

The Crisis Management and Planning Directorate (CMPD) contributes to the goals of the European External Action Service (as part of EEAS), the CSDP and a more secure international environment by the political-strategic planning of CSDP civilian missions and military operations, ensuring coherence and efficient of those actions as part of the EU comprehensive approach to crisis management and developing CSDP partnerships, policies, concepts and capabilities (EEAS, 2017d).

One of the real key players in the CSDP is the European External Action Service (EEAS). It is the diplomatic service and “foreign and defence ministry” of the European Union. The EEAS is headed by the High Representative for Foreign Affairs and Security Policy (since 2014 Federica Mogherini), who is President of the Foreign Affairs Council and Vice-President of the European Commission too (HR/VP), and carries out the EU's CFSP and, CSDP. Main competences of the EEAS are primarily determined by TEU (Article 18, 27), organization and functioning matters were adopted by Council Decision 2010/427/EU (26 July 2010, EEAS Decision). By the Article 1 EEAS Decision, the EEAS was established as a functionally autonomous body of the EU. In general, the tasks of the EEAS include ensuring the consistency and coordination of the Union's external action and preparing policy

proposals and implementing them following approval by the Council. The EEAS does not propose or implement policy in its own name, but prepares acts to be adopted by the High Representative or the Council. The EEAS is in charge of EU diplomatic missions and ensures intelligence and crisis management structures. It should be noted that the tasks of the EEAS are quite complex (for details see Article 2 and 3 EEAS Decision), (EEAS Decision, 2010).

3.3. EEAS – Crisis Management Structure and Crisis Response Mechanism

Deputy Secretary General (one of three) of the EEAS, is responsible for the Common Security and Defence Policy and its crisis management structures. These structures (see EEAS Decision, 2010; EEAS, 2017e) comprise, in particular:

- the Crisis Management and Planning Directorate (CMPD), see above
- the Civilian Planning and Conduct Capability (CPCC), see above
- the EU Military Staff (EUMS), see above
- the Security and Conflict Prevention Directorate (SECPOL)
- the EU Intelligence and Situation Centre (INTCEN)
- a new Division complemented the crisis management structures (from December 2016), which deals with Prevention of conflicts, Rules of Law/security sector reform, Integrated approach, Stabilisation and Mediation (PRISM).

The Security and Conflict Prevention Directorate, provides the various crisis management bodies with conflict risk assessments. It uses conflict analysis to assess the impact on actual and potential conflicts of a planned CSDP mission, supports the development of conflict mitigation strategies and conflict prevention missions, and contributes to the overall expertise on conflict, peace and security inside the crisis management bodies. In addition, SECPOL's responsibilities cover disarmament, non-proliferation, arms export control, the sanctions regime etc.

The EU Intelligence and Situation Centre is special civilian intelligence service of the European Union, providing nonstop monitoring and intelligence analysis, early warning and situational awareness to the High Representative and to the EEAS, to various EU decision-making bodies in the fields of CSFP and CSDP and counterterrorism, as well as to the EU Member States.

A new Division within the CSDP PRISM is a special center for the EEAS and Commission – complementing CSDP, and geographical and cross-departmental activities – for coordinating EU responses to the conflict cycle, including conflict analysis, early warning, conflict prevention and peacebuilding, mediation, etc. It is specialised service provider recognized across the EU institutions, Member States and external partners.

The EEAS Crisis Response Mechanism (or System) (CRM) is specific internal procedure comprising of schedules and structures for responding in a coordinated and effective way to crises and emergencies – including hybrid threats – of an external nature or with an external dimension, potentially or actually impacting the interests of the EU or any Member State (see EEAS, 2017f).

In the case of threat Deputy Secretary General (DSG) for Crisis Response consults with the HR or the Secretary General (SG) and EEAS senior managers and, if the situation so reasoned, activates the EEAS Crisis Response Mechanism.

The central elements of the Crisis Response Mechanism are: the Crisis Meeting, the Crisis Cell, the Crisis Platform and the Task Force.

The Crisis Meeting meets EEAS, Commission and Council senior managers directly affected by the crisis. It judges the short-term effects of the crisis and may decide to take one or more of the following steps: (1) take immediate action; (2) activating the Crisis Cell; (3) calling the Crisis Platform. These directions of action can be implemented in any time sequence. The Crisis Meeting can agree on some immediate steps to be taken, including providing guidance and support to the EU Delegation, providing guidance to CSDP missions and operations, issuing public messages, etc.

The Crisis Cell is composed of a number of posts covered by representatives of EEAS, Commission and Council services involved in the response to the crisis and provides support to the decision-making bodies of the EEAS and ensures that decisions taken in the Crisis Meeting are implemented.

The Crisis Platform is an ad-hoc meeting and therefore, it is not permanently activated. It aims to gather together relevant services of the EEAS, Commission and Council to assess the medium and long-term effects of crises and to agree on action to be taken. It is chaired by the HR, the Secretary General or the DSG for Crisis Response. The Crisis Platform may agree on activating the Task Force, decides on possible further measures and discusses proposals for Council action.

The Task Force aim is to follow and facilitate the implementation of the EU response. The Task Force estimates the impact of EU action, prepares policy documents, contributes to the preparation of the Political Framework for Crisis Approach (PFCA), develops its own action plan, a roadmap and reviews it periodically, contributes to the communication strategy, and adopts any other arrangements. It is headed by the relevant geographic Managing Director. The Integrated Political Crisis Response (IPCR) arrangements are activated by the EU Presidency or upon request from one or more Member States. They allow for rapid consultation of EU Member States at political level in the event of any political crises with a wide-ranging impact. The EEAS contributes to the IPCR process, including by providing input for Integrated Situational Awareness and Analysis (ISAA) reports. The specific Situation Room is the EEAS central IPCR permanent contact point.

4. CSDP Missions and Operations – Practices in Crisis Management

Under the Treaty (TEU, Article 42), CSDP was developed as a crisis management tool and envisages later a progressive definition of a common EU defence policy, thus consolidating the development of operational (civil and military) capabilities for peacekeeping, conflict prevention and enhancing international security. By the TEU, the EU has the ability to conduct a wide range of tasks which cover the full range of the crisis management cycle (prevention/intervention/peacebuilding) and has developed a flexible, a decision-making procedure adapted to the CSDP (Boin, Ekengreen, Rhinard, 2013; Rehrl, 2017). Of course, this five steps procedure is used for all processes related to the management of foreign missions and operations (and such process can be considered as a part of used complexity management strategy and methods, see Gorzeń-Mitka, Okręglicka, 2015).

Step 1 – Monitoring and early warning. This phase represents the daily routine of crisis management, which consists of monitoring, planning and anticipating crises and serious threats by the Council, with help of PSC. The Member states and the Commission monitor the situation, EUMC and CIVCOM evaluates the risks of potential crisis. When crisis grow, EEAS prepares a document Political Framework for Crisis Approach (PFCA), that results will be a wide variety of options available to the EU (including possible cooperation with other international partners – UN, NATO etc.).

Step 2 – Crisis Management Concept. Supported by decision of PSC (based on PFCA), a Crisis Management Concept (CMC) is prepared identifying the political interests of the EU, the strategic options and the final goal. The CMC is the key document of crisis management operations as it ensures the coherence and complexity of EU instruments and tools in the crisis management field. The CMC is drafted by EEAS Crisis Management and Planning Directorate with help of European Union Intelligence and Situation Centre (EU INTCEN), supported by EUMC and CPCC. EEAS (HR) submits the CMC to PSC and then to the Council for final approval. On the basis of the Council decision, status of mission (civilian/military – SOMA/SOFA) is negotiated, in case of military operation, the headquarters (OHQ) are designated and the operation commander (OpCdr) is appointed.

Step 3 – Operation planning. The operation commander and his team prepare the Concept of Operations (CONOPS) and the Operation Plan (OPLAN). The operation commander presents the CONOPS to the PSC, which submits it to the Council for approval. For military operations, the Initiating Military Directive (IMD), is prepared by the EUMS, as a comprehensive “guideline”. As soon as the Council approves the CONOPS, the OpCdr will start the force generation process. The next step is for Member States to agree on their rights, obligations, immunities etc. The PSC presents the proposal to the Council as well as the proposal for military and civilian OPLANs. The Council finally approves the rules of engagement (military operations) or the rules for the use of force (civilian missions).

Step 4 – Deployment and implementation. The measures taken are thus carried with the political control and strategic direction of the PSC, under the direction of the Council. At this stage, the EUMC monitors and reports on execution to the PSC. For civilian missions, the Head of Mission is responsible for command and control whereas the civilian operation commander is the one who reports back and is responsible to the PSC.

Step 5 – Strategic review. The implementation of missions and operations is regularly reviewed, in particular their respective mandates and structures. The outcome of these reviews may be that the missions/operations remain unchanged, re-focus its priorities or that EU action ends. This phase requires a (re-)assessment of the situation and the revision of the CMC by the PSC, which make a recommendation to the Council. Mission/operation finishes by the Council decision.

Since 2003, when the first EU foreign mission (EUPM) was sent - by December 2017 a total of 35 missions were sent, 18 of which have already been completed. By December 2017, the Union

managed a total of 17 missions (see Table 1), 6 of which can be referred as military and 10 civilian/police (one mission – EUBAM Moldova and Ukraine is not managed by CSDP structures). The latest ongoing missions are listed in Table 1. (EEAS, 2017g).

Table 1. The latest ongoing EU missions and operations

Missions	Destination	Starting year	Status
EUAM Iraq	Iraq	2017	civilian
EUTM RCA	Central African Republic	2016	military
EUCAP Somalia	Somalia	2016	civilian
EUNAVFOR MED (Sophia)	Mediterranean	2015	military
EUCAP Sahel Mali	Mali	2015	civilian/military

Source: EEAS, 2017g

By 2009, before the establishment of the EEAS, the EU's planning and management of EU missions and operations was primarily devoted to bodies that cooperated with the EU Council or were directly part of its structures (PSC, EUMC, CIVCOM, EUMS). Since 2010, a number of key roles in the CSDP have been taken over by the EEAS, which takes some of the institutions into their structures (EUMS, MPCC) and creates new ones (CPCC, CMPD). The mentioned institutions cooperate very well within new structure, ongoing missions are regularly monitored closely and achievements are published – see Annual reports (CSDP, 2016).

5. Conclusion

The European Union's foreign operations and missions are considered to be the most important instrument for securing not only its own but also the whole world security. This is the top of the Union's existing CSDP efforts. Not all Member States contribute equally to foreign operations, but it always regards the participation of the countries under the auspices of the Union.

One of the key tasks of the EEAS is to ensure that all the different activities and policies that the EU conducts abroad – the EU's external action – are consistent and effective. As outlined in Subchapter 3.2, the EEAS as the EU institution plays an important role not only in the CSDP hierarchy, its Crisis Management Structure still manages CSDP tasks without any problems. Crisis Response Mechanism as an internal procedure for dealing with crises (including hybrid threats) is also considered as satisfactory. The CRM is used in all EEAS procedural matters when it is involved in the CSDP decision-making procedure for foreign operations and missions (Rehrl, 2017).

Five-step decision-making procedure (Chapter 4) has been introduced as a guideline for coordinating crisis management tools to ensure their complementarity and for the rapid deployment of EU Member States' capacities that form the core of the EU's external missions and operations. Although the EEAS is not a decision-making body, it plays a key bridging role in the final CSDP approval process for foreign missions and operations where the final decision is on the part of the EU Council.

Based on these findings it can be stated that the hypothesis H1: The EEAS is a key institution of the CSDP that ensures the consistency of the EU's external action, can be considered as confirmed.

References

- Boin, A., Ekengren, M., Rhinard, M. (2013). *The European Union as Crisis Manager*. New York: Cambridge University Press.
- Consilium Europa (2017a). *The European Council*, [online]. Available: <http://www.consilium.europa.eu/en/european-council/>. [2017, November 23].
- Consilium Europa (2017b). *EU defence cooperation: Council establishes a Military Planning and Conduct Capability*, [online]. Available: <http://www.consilium.europa.eu/en/press/press-releases/2017/06/08/military-mpcc-planning-conduct-capability/>. [2017, November 24].
- Council of the European Union (2016). *List of Council preparatory bodies, 5183/16*, [online]. Available: https://slidelegend.com/5183-16-1-dpg-1-the-list-of-council-preparatory-european-council_59df60491723dd8561400e53.html. [2017, November 22].
- CSDP (2016). *Missions and Operations Annual Report 2016*, [online]. Available: https://eeas.europa.eu/sites/eeas/files/e_csdp_annual_report1.pdf. [2017, December 02].
- Dubský, Z. (2006). *Bezpečnostní a politická dimenze integračního procesu: Společná zahraniční a bezpečnostní politika EU*, Praha: Oeconomica.
- EEAS (2013). *Common Security and Defence Policy – EU Battlegroups*, [online]. Available: http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/esdp/91624.pdf. [2017, November 23].

- EEAS (2017a). *CSDP structure, instruments, and agencies*, [online]. Available: https://eeas.europa.eu/headquarters/headquarters-homepage/5392/csdp-structure-instruments-and-agencies_en. [2017, November 24].
- EEAS (2017b). *European Union Military Staff*, [online]. Available: https://eeas.europa.eu/topics/common-security-and-defence-policy-csdp/5436_en. [2017, November 24].
- EEAS (2017c). *CSDP structure, instruments, and agencies*, [online]. Available: https://eeas.europa.eu/headquarters/headquarters-homepage/5392/csdp-structure-instruments-and-agencies_en. [2017, November 25].
- EEAS (2017d). *The Crisis Management and Planning Directorate*, [online]. Available: https://eeas.europa.eu/topics/common-security-and-defence-policy-csdp/5433_en. [2017, November 25].
- EEAS (2017e). *Organization Chart of the EEAS*, [online]. Available: https://eeas.europa.eu/headquarters/headquarters-homepage/3602/organisation-chart-eeas_en. [2017, November 26].
- EEAS (2017f). *Crisis management and Response*, [online]. Available: https://eeas.europa.eu/headquarters/headquarters-homepage/412/crisis-management-and-response_en. [2017, December 03].
- EEAS (2017g). *Military and civilian missions and operations*, [online]. Available: https://eeas.europa.eu/headquarters/headquarters-homepage/430/military-and-civilian-missions-and-operations_en. [2017, December 04].
- EEAS Decision. (2010). Council Decision of 26 July 2010, establishing the organisation and functioning of the European External Action Service (2010/427/EU). *Official Journal of the European Union*, L201/40, 3 August 2010. [online]. Available: https://eeas.europa.eu/sites/eeas/files/eeas_decision_en.pdf. [2017, November 26].
- El-Agraa, A., Ardy, B. (2011). *The European Union: Economics and Policies*. Cambridge: Cambridge University Press.
- EU Monitor. (2017). *Politico-Military Group (PMG)*, [online]. Available: <https://www.eumonitor.eu/9353000/1/j9vvik7m1c3gyxp/vh7ej5swwyyw>. [2017, November 22].
- Europa (2017). *EU institutions and other bodies*, [online]. Available: https://europa.eu/european-union/about-eu/institutions-bodies/council-eu_en. [2017, November 25].
- Gorzeń-Mitka, I., Okręglińska, M. (2015). Managing Complexity: A Discussion of Current Strategies and Approaches. *Proceedings of the 22nd International Economic Conference of Sibiu 2015, IECS 2015 Economic Prospects in the Context of Growing Global and Regional Interdependencies*, pp. 438-444. Sibiu: Lucian Blaga University Sibiu.
- Gros, E., Juncos, E.A. (2011). *EU Conflict Prevention and Crisis Management*. New York: Routledge.
- Kaňa, R., Mynarzová, M. (2014). European Union Common Security and Defence Policy as an Important Factor of Transatlantic Security Cooperation. *Proceedings of 12th International Scientific Conference Economic Policy in the European Union Member Countries*, pp. 409-418. Ostravice: OPF SLU Karviná.
- Kaňa, R., Mynarzová, M. (2015). Global Security and the Role of the European Union. *European Business & Management*, vol. 1, iss. 2, pp. 25-34.
- Kaňa, R., Mynarzová, M. (2016). Common Security and Defence Policy of European Union in Light of Contemporary Security Threats. *Proceedings of the 3rd International Conference on European Integration 2016*, pp. 425-433. Ostrava: VŠB-TU Ostrava.
- Merlingen, M. (2012). *EU Security Policy. What it is, how it works, why it matters*. London: Lynne Reiner Publishers.
- Piskorzová, M. (2009). Managerial Conception of Bureaucracy. *Proceedings of the Hradecké ekonomické dny 2009. Economic Development and Management Region*, pp. 156-162. Hradec Králové: Univerzita Hradec Králové, Fakulta informatiky a management.
- Rand Corporation (2016). *Asymmetric Warfare*, [online]. Available: <http://www.rand.org/topics/asymmetric-warfare.html>. [2017, November 29].
- Rehrl, J. (2017). *The Common Security and Defence Policy of the European Union*. 3rd edition. Vienna: Armed Forces Printing Centre.
- Robert Schuman Fondation (2006). *The European Union and Crisis Management*, [online]. Available: <https://www.robert-schuman.eu/en/european-issues/0022-the-european-union-and-crisis-management>. [2017, November 29].
- Staab, A. (2011). *The European Union Explained: Institutions, Actors, Global Impact*. Bloomington: Indiana University Press.
- The Lisbon Treaty (2008). Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union. (2008). *Official Journal of the European Union*, vol. 51, 9 May 2008, [online]. Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:C:2008:115:TOC>. [2017, November 25].

25. IS THE PRICE/EARNINGS TO GROWTH RATIO A GOOD INDICATOR OF A COMPANY'S FUTURE MARKET VALUE? EVIDENCE FROM THE PRAGUE STOCK EXCHANGE AND THE NASDAQ

Abstract: The major objective of the paper was to test an assumption that the price/earnings to growth ratio is a good indicator of a company's future market value. The research was designed in the following steps: 1) setting an assumption, 2) selection of the companies, 3) collection of the data, 4) analysis of the data, 5) comparison of the results based on real data with the assumption, 6) conclusion. The analysis, comparison, induction and backtesting on relevant historical data of the selected companies traded on the Prague Stock Exchange and the NASDAQ were the main research methods used in this paper.

Keywords: price/earnings to growth ratio, trading strategy, analysis, testing, stock exchange.

JEL Classification: G11, G14, G31

1. Introduction

Especially in the present times of low interest rates in the Czech Republic, investors look for various opportunities of investing their free cash-flow. The stocks of the companies traded on the Prague Stock Exchange or on the RM-SYSTÉM Czech Stock Exchange are ones of the traditional investments. However, the investors deal with the difficult questions: What stocks should I invest in? When should I invest in stocks? Are there any ratios that can help me predict the future yield of the stocks?

One of the most popular market ratios used by many investors is price-earnings ratio (P/E ratio). Simplicity, clarity and availability of the data are among its advantages. Although the usability of this ratio for evaluation of the companies and prediction of the companies' future market value is very often discussed in the literature (Helfert, 2000; Anderson, Zastawniak, 2017), there is an evidence of some quite good results with the P/E ratio in combination with some other financial ratios (Kašík, Čvančarová, 2017). However, the price/earnings to growth ratio (PEG ratio), that has been recently dealt with in the scientific literature (Easton, 2004; Trombley, 2008; Schnabel, 2009; Chahine, Choudhry, 2010), is considered to eliminate some of the weaknesses of the simple P/E ratio. Therefore, the goal of the paper is to test the ability of the PEG ratio to predict the future market value of shares of a company.

2. Theoretical Background

2.1. Main Concepts

The price-earnings ratio (P/E ratio) is a market ratio that measures the current share price of a company relative to its earnings per share (EPS). The formula for the calculation of the P/E ratio is simple:

$$P/E = \frac{\text{market price of the share of a company}}{\text{earnings per share}} \quad (1)$$

¹ Ing. Josef Kašík Ph.D.; Sokolská tř. 33, 702 00 Ostrava, Czech Republic, josef.kasik@vsb.cz

* Corresponding author

It can be used, for example, as a multiple in the market-based approach for the valuation of the companies that are not traded on the stock exchanges. In this case, the following equation can be used (Dluhošová et al., 2010; Kašík, Čvančarová, 2017):

$$V = \bar{\phi} \frac{P}{E} \cdot E \quad (2)$$

where V is the market value of equity of the valued company, $\bar{\phi} \frac{P}{E}$ is the average of the P/E ratios of comparable companies and E is the net profit of the valued company.

One of the possibilities how to calculate the equity market value of companies with relatively stable net profit is the use of the earnings capitalization method (Pratt, Niculita, 2008; Mařík et al., 2011):

$$V = \frac{E}{i} \quad (3)$$

where i is the capitalization rate (which is the cost of equity from the company's point of view or the required return of investment from the shareholders' point of view).

The following equation can be derived from the above-mentioned formulas:

$$P/E = \frac{1}{i} \quad (4)$$

which means that the lower the required return of shareholders is, the higher the value of the P/E ratio is and vice versa.

The Gordon's growth model (the dividend discounted model) for the valuation of the shares of companies with stable or slightly growing dividends can also be used (Brealey, Myers, Marcus, 2012):

$$P_0 = \frac{DIV_1}{i-g} \quad i \neq g \quad (5)$$

where P_0 is the market value per share, DIV_1 is the expected dividend in the present (continuing) year (year 1), i is the cost of equity and g is the expected growth of dividends. The following formula for the calculation of DIV_1 can be used:

$$DIV_1 = DIV_0 \cdot (1 + g) \quad (6)$$

where DIV_0 is the last known dividend (dividend of the last year).

Therefore, the P/E ratio can be also calculated using the following equation:

$$P/E = \frac{DIV_0}{EPS} \cdot \frac{1+g}{i-g} \quad (7)$$

where EPS (*earnings per share*) is just another way of representing the net profit per share. The equation (7) indicates that relatively high P/E ratio can have more explanations and, e.g., it can mean that investors expect a relatively higher growth of dividends (g), the company is considered to be less risky and that is why the investors do not require high return of equity (i) and/or the company has recently performed low earnings per share (EPS). However, there can be another explanation that the share is overvalued and its price does not correspond to the expected company's earnings.

The following substitution for g in the equation (7) can be used:

$$g = ROE \cdot RR \quad (8)$$

where ROE is return on equity and RR is retention ratio (also known as plowback ratio), which expresses the amount of profit reinvested back into the company. The ROE can be calculated using the following formula (Higgins, 2012):

$$ROE = \frac{EAT}{E} \quad (9)$$

where EAT is earnings after taxes and E is equity.

The retention (plowback) ratio can be calculated using the equation:

$$RR = 1 - PR \quad (10)$$

where PR is payout ratio that can be calculated as:

$$PR = \frac{DIV}{EPS} \quad (11)$$

Using the equations (8), (10) and (11) and substituting in the equation (7), the following equation can be derived:

$$P/E = \frac{DIV_0}{EPS} \cdot \frac{1+ROE \cdot \left(1 - \frac{DIV}{EPS}\right)}{i - ROE \cdot \left(1 - \frac{DIV}{EPS}\right)} \quad (12)$$

from which it results that if the payout ratio equals 1, i.e., if all of the company's earnings are given to shareholders in the form of dividends, we will get back to the equation (4).

From the above-mentioned equations, it can be derived that the present value of a stock can be calculated using the following general equation (Brealey, Myers, Marcus, 2012):

$$P_0 = \frac{EPS}{i} + PVGO \quad (13)$$

where $PVGO$ is present value of growth opportunities.

Based on the knowledge of the above-mentioned equations, we can easily understand the price/earnings to growth (PEG) ratio that is defined as (Damodaran, 2012):

$$PEG = \frac{P/E}{EPS \text{ Growth } (\%)} \quad (14)$$

which can be transcribed into the following formula:

$$PEG = \frac{P/E}{\frac{EPS_t - EPS_{t-1}}{EPS_{t-1}} \cdot 100} \quad (15)$$

The last equation (15) will be used for the calculation of the PEG ratio of the selected companies that are analyzed in this paper. Investors and analysts very often compare P/E ratio to the EPS growth to identify undervalued or overvalued stocks. In the simplest form of this approach, companies with P/E ratios less than their EPS growth are viewed as undervalued. In its more general form, the PEG ratio is used as a measure of relative value, with a lower value believed to indicate that a company is undervalued (Damodaran, 2012).

2.2. Research Methods

The analysis of historical financial data of the selected companies traded on the Prague and the New York Stock Exchanges (NYSE) is the main research method. It is based on the backtesting of the results of financial ratios, especially PEG ratio, and the relating investment recommendations. The comparison of the last investment recommendations, i.e. an assumption concerning an increase or a decrease of a share price, and the real development of the share prices is the next method that was used in this paper.

3. Application

The analysis was applied on the following three companies traded on the Prague Stock Exchange - UNIPETROL, CEZ and Philip Morris CR and four companies traded on the NASDAQ - Alphabet, Amazon.com, Apple and IBM. Firstly, the historical data were collected through the time period 2013-2017 and then analyzed.

3.1. Data

In this section the tables with the data of selected Czech and American companies are presented.

The first selected company is UNIPETROL, a.s. The principal business activities of the company include oil and petroleum products processing, production of commodity chemicals, polymer materials, mineral lubricants, plastic lubricants, road and insulation bitumen, special refinery and petrochemical products. Furthermore, the company is engaged in the distribution of fuels and operation of gas stations. In addition to these principal activities, the company is engaged in other activities, such as production, distribution and sale of heat and electricity, operation of railway tracks

and railway transportation, advisory services relating to research and development, environmental protection, software and hardware advisory services and other services. The selected financial data that were used for the further analysis are presented in Table 1.

Table 1. Selected financial data of the company UNIPETROL, a.s.

Date	Share price (CZK)	P/E	EPS (CZK)	EPS growth (%)	DIV (CZK)	PEG
31/12/2013	168.0	-21.85	-7.69	-	0	-
31/12/2014	130.5	-42.56	-3.07	-	0	-
31/12/2015	160.0	4.12	38.80	-	5.52	-
31/12/2016	183.8	4.18	43.98	13.35	8.30	0.31
31/10/2017	376.1	8.55	-	-	-	-

Source: Own elaboration based on the data from Fio e-Broker, 2017 and Prague Stock Exchange

The second selected company is CEZ a.s. It is an established, integrated energy group with operations in a number of Central and Southeastern European countries and Turkey. The core business of the company is the generation, distribution, trade in and sales of electricity and heat, trade in and sales of natural gas, and coal extraction. The largest shareholder of its parent company, CEZ, a. s., is the Czech Republic with a nearly 70% stake in the company's share capital (as at December 31, 2016). CEZ, a. s. shares are traded on the Prague and Warsaw stock exchanges and included in the PX and WIG-CEE exchange indices. CEZ Group companies in the Czech Republic extract and sell coal, generate and distribute electricity and heat, trade in electricity and other commodities, sell electricity, heat, and natural gas to end customers, and provide other services. Their power generation portfolio consists of nuclear, coal-fired, gas, hydroelectric, and other renewable sources. The selected financial data of the company CEZ, a.s. that were used for the further analysis are presented in Table 2.

Table 2. Selected financial data of the company CEZ, a.s.

Date	Share price (CZK)	P/E	EPS (CZK)	EPS growth (%)	DIV (CZK)	PEG
31/12/2013	517.0	7.79	67.19	-	40	-
31/12/2014	591.0	14.11	41.90	-37.64	40	-0.37
31/12/2015	444.3	11.45	38.80	-7.40	40	-1.55
31/12/2016	430.0	16.09	26.73	-31.11	33	-0.52
31/10/2017	483.0	18.07	-	-	-	-

Source: Own elaboration based on the data from Fio e-Broker, 2017 and Prague Stock Exchange

The third company traded on the PSE is Philip Morris CR. The history of Philip Morris International (PMI) in the Czech Republic began in 1987 when PMI granted a license to produce Marlboro to the Czechoslovakian tobacco industry, a predecessor of the state-owned company Tabák, a.s. In 1992, PMI acquired a majority-share in Tabák, a.s. As of November 1, 2000, the company was renamed Philip Morris CR a.s. Today we are the largest manufacturer of tobacco products in the Czech Republic and are listed on the Prague Stock Exchange. The selected financial data of the company Philip Morris CR a.s. that were used for the further analysis are presented in Table 3.

Table 3. Selected financial data of the company Philip Morris CR a.s.

Date	Share price (CZK)	P/E	EPS (CZK)	EPS growth (%)	DIV (CZK)	PEG
31/12/2013	10,579	13.05	810.93	-	820	-
31/12/2014	10,820	13.18	821.13	1.26	880	10.48
31/12/2015	11,999	12.82	935.88	13.97	920	0.92
31/12/2016	13,096	12.99	1008.00	7.71	1000	1.69
31/10/2017	16,300	16.17	-	-	-	-

Source: Own elaboration based on the data from Fio e-Broker, 2017 and Prague Stock Exchange

The first company traded on the NASDAQ is Alphabet. Alphabet Inc. is an American multinational conglomerate created in a corporate restructuring of Google on October 2, 2015. It is now the parent company of Google and several former Google subsidiaries. Alphabet's portfolio encompasses several industries, including technology, life sciences, investment capital, and research.

The selected financial data of the company Alphabet Inc. that were used for the further analysis are presented in Table 4.

Table 4. Selected financial data of the company Alphabet Inc.

Date	Share price (USD)	P/E	DIV (USD)	PEG
31/12/2013	552.50	30.35	0.00	1.84
31/12/2014	529.55	25.42	0.00	1.46
31/12/2015	778.01	33.95	0.00	2.00
31/12/2016	825.21	29.65	0.00	1.78
31/10/2017	1032.20	37.50	0.00	2.11

Source: Own elaboration based on the data from NASDAQ and ZACKS

The second company traded on the NASDAQ is Amazon.com, Inc., which is an American electronic commerce and cloud computing company based in Seattle, Washington that was founded by Jeff Bezos on July 5, 1994. The tech giant is the largest Internet retailer in the world measured by revenue and market capitalization. The selected financial data of the company Amazon.com that were used for the further analysis are presented in Table 5.

Table 5. Selected financial data of the company Amazon.com

Date	Share price (USD)	P/E	DIV (USD)	PEG
31/12/2013	396.44	683.52	0.00	23.96
31/12/2014	308.52	NA	0.00	NA
31/12/2015	675.89	545.07	0.00	15.32
31/12/2016	795.99	171.59	0.00	4.58
31/10/2017	1105.97	281.94	0.00	10.90

Source: Own elaboration based on the data from NASDAQ and ZACKS

The third company traded on the NASDAQ is Apple Inc., which was founded by Steve Jobs, Steve Wozniak, and Ronald Wayne in 1976. Nowadays, it is an American multinational technology company that designs, develops, and sells consumer electronics, computer software, and online services. The selected financial data of the company Apple Inc. that were used for the further analysis are presented in Table 6.

Table 6. Selected financial data of the company Apple

Date	Share price (USD)	P/E	DIV (USD)	PEG
31/12/2013	77.28	13.42	1.74	1.15
31/12/2014	109.33	14.74	1.88	1.14
31/12/2015	105.26	11.17	2.08	0.91
31/12/2016	117.91	14.12	2.28	1.27
31/10/2017	168.89	18.95	2.52	1.64

Source: Own elaboration based on the data from NASDAQ and ZACKS

The fourth company traded on the NASDAQ is IBM. IBM (International Business Machines Corporation) is an American multinational technology company with operations in over 170 countries. IBM manufactures and markets computers hardware, middleware and software, and offers hosting and consulting services in areas ranging from mainframe computers to nanotechnology. IBM is also a major research organization. The selected financial data of the company IBM that were used for the further analysis are presented in Table 7.

Table 7. Selected financial data of the company IBM

Date	Share price (USD)	P/E	DIV (USD)	PEG
31/12/2013	186.64	10.96	3.80	1.26
31/12/2014	162.06	9.91	4.40	1.61
31/12/2015	137.62	9.22	5.20	1.38
31/12/2016	169.53	12.47	5.60	3.43

31/10/2017	154.28	11.31	6.00	2.12
------------	--------	-------	------	------

Source: Own elaboration based on the data from NASDAQ and ZACKS

3.2. Analysis and Results

Now, it is possible to analyze and compare the data presented in the previous subchapter with special focus on the value of P/E and PEG ratio and the growth of share price. The Czech companies are analyzed through the period with the available data, i.e. the P/E ratio and PEG ratio to the 31 December 2016 and the growth from the beginning of the year 2017 to 31 October 2017. The US companies are analyzed through the period beginning at the end of year 2013 and ending at 31 October 2017. The results are presented in Table 8 and Table 9.

Table 8. The P/E and PEG ratios and the growth of share price of the selected Czech companies

Company	P/E	PEG	Price growth
UNIPETROL	4.18	0.31	104.62%
Philip Morris CR	12.99	1.69	24.47%
CEZ	16.09	-0.52	12.33%

Source: Own elaboration based on the data from Fio e-Broker, 2017 and Prague Stock Exchange

The shares of company UNIPETROL were the best investment from the selected Czech companies with an extraordinary 104.62 percent growth. At the same time, there was the lowest P/E ratio and the lowest PEG ratio, which seems to be congruent with the general assumption that companies with the PEG ratio less than one have a strong potential for growth in value. The second best company was Philip Morris CR with a relatively high growth of 24.47 percent in 10 months in spite of the PEG ratio higher than one (1.69). The last company was CEZ with the negative PEG ratio (-0.52) but still growth in price of its shares (12.33 percent).

Table 9. The P/E and PEG ratios and the growth of share price of the selected US companies

Company	P/E	PEG	Price growth
Amazon	683.52	23.96	178.98%
Apple	13.42	1.15	118.54%
Alphabet	30.35	1.84	86.82%
IBM	10.96	1.26	-17.34%

Source: Own elaboration based on the data from NASDAQ and ZACKS

Amazon was the best long-term investment when we compare its share price at the end of year 2013 to 31/10/2017. However, this company had the worse, i.e., very high P/E ratio and even the PEG ratio is significantly higher than one, which is not in line with the general investment rule. On the other hand, the second best company through the period was Apple, Inc., with significant 118.54 percent growth of share price, had relatively low P/E ratio (13.42) and the lowest PEG ratio (1.15) from the selected US companies. The third company was Alphabet with 86.82 percent growth of share price, relatively low PEG ratio (1.84) and slightly higher P/E ratio (30.35). However, IBM with relatively low P/E and PEG ratios performed very poor results in share price (17.34 percent decrease).

3.3. Discussion

The analyses and back testing of the historical data of selected companies imply that there is no general and simple rule for predicting the future price of stocks. There are some companies with relatively low P/E and PEG ratios whose growth of share price was relatively high, e.g., UNIPETROL and Philip Morris CR in the Czech Republic and Apple in the U.S. On the other hand, Amazon with very high P/E and PEG ratios was the best investment among the US companies and IBM with relatively low P/E and PEG ratios was the worst investment among them. Hence, what could be the reason that it seems to be impossible to find a general rule for investing based on the P/E and/or PEG ratio? One of the reasons surely is that we usually use TTM (trailing twelve months) financial figures instead of forward ones. Using forward earnings per share and expected EPS growth could lead to significantly different results at some companies. For example, it is a well-known fact that one of the reasons Amazon's P/E is so high is that it has been sacrificing profits in order to expand aggressively on a wide-scale, thus, keeping earnings suppressed and the P/E ratio very high (Fogler, 2017).

However, the future is always uncertain and it is very difficult to predict the future earnings of a company. Therefore, one of the reasons that the TTM values are used is the availability and transparency of the past data.

4. Conclusion

Testing the assumption that the price/earnings to growth (PEG) ratio is a good indicator of a company's future market value, it can be concluded that researchers and investors have to be very careful in using this ratio and it certainly cannot be used as the only one indicator. Although the group of analyzed companies was, with regard to the extent of the conference paper, relatively very small, i.e. three companies traded on the Prague Stock Exchange and four companies traded on the NASDAQ, the assumption that the lower PEG ratio means the better investment could be quickly and easily falsified in the US market. It was proved on the particular examples that the company with very high PEG ratio (Amazon) can be the best investment and the company with relatively low PEG ratio can be the worst (IBM). We could also find that shares of the two selected companies from the Czech market, i.e., UNIPETROL and Philip Morris CR, with relatively low PEG ratio turned out to be very good investments and shares of the last company CEZ also reached quite sufficient growth in spite of the negative PEG ratio. These results are largely in consonance with previously published studies focused on the PEG ratio (I'Ons, Ward, 2012; Lajevardi, 2014; Schatzberg, Vora, 2009). It also implies and supports the idea that there are some other factors influencing future efficiency, performance and value of enterprises (Štverková, Humlová, 2016; Marhefková, 2016) that are not included in the PEG ratio.

Acknowledgement

This paper was supported within Operational Programme Education for Competitiveness – Project No. CZ.1.07/2.3.00/20.0296.

References

- Anderson, K., Zastawniak, T. (2017). Glamour, value and anchoring on the changing P/E. *European Journal of Finance*, vol. 23, iss. 5, pp. 375-406.
- Brealey, R.A., Myers, S.C., Marcus, A.J. (2012). *Fundamentals of corporate finance*. 7th ed. New York: McGraw-Hill/Irwin.
- Chahin, S., Choudhry, T. (2010). Price to earnings, growth ratio and value growth based strategies. *Social Science Research Network*, vol. 19, iss. 4, pp. 1-10.
- Damodaran, A. (2012). *Investment valuation: tools and techniques for determining the value of any asset*. 3rd ed. Hoboken: Wiley.
- Dluhošová, D. et al. (2010). *Finanční řízení a rozhodování podniku: analýza, investování, oceňování, riziko, flexibilita*. Praha: Ekopress.
- Easton, P.D. (2004). PE ratios, PEG ratios, and estimating the implied expected rate of return on equity capital. *The Accounting Review*, vol. 79, iss. 1, pp. 73-95.
- Fio e-Broker (2017). *Trh: CR/Fundamentální analýza*, [online]. Available: <https://www.fio.cz/e-broker>. [2017, March 03].
- Fogler, J. (2017). *How can the price-to-earnings (P/E) ratio mislead investors?*, [online]. Available: <https://www.investopedia.com/ask/answers/070214/how-can-pricetoearnings-pe-ratio-mislead-investors.asp>. [2017, October 15].
- Higgins, R.C. (2012). *Analysis for financial management*. 10th ed. New York: McGraw-Hill/Irwin.
- I'Ons, T., Ward, M. (2012). The use of price-to-earnings-to-growth (PEG) ratios to predict share performance on the JSE. *South African Journal of Business Management*, vol. 43, iss. 2, pp. 1-10.
- Kašík, J., Čvančarová, Z. (2017). Price-Earnings Ratio as an Appropriate Approach to Evaluation of Companies by Investors? *Proceedings of International Scientific Conference Current Problems of the Corporate Sector 2017*, pp. 501-507. Bratislava: University of Economics in Bratislava.
- Lajevardi, S.A. (2014). A study on the effect of P/E and PEG ratios on stock returns: Evidence from Tehran Stock Exchange. *Management Science Letters*, vol. 4, iss. 7, pp. 1401-1410.

Marhefková, A. (2016). Management competencies and their impact on the efficiency of organizations. *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management 2016*, pp. 276-280. Częstochowa: Częstochowa University of Technology.

Mařík, M. et al. (2011). *Metody oceňování podniku: proces ocenění - základní metody a postupy*. Praha: Ekopress.

Nasdaq (2017). *Nasdaq Stock Market | Stock Quotes & Stock Exchange News*, [online]. Available: <http://www.nasdaq.com>. [2017, October 1].

Pratt, S.P., Niculita A.V. (2008). *Valuing a business: the analysis and appraisal of closely held companies*. 5th ed. New York: McGraw-Hill.

Schatzberg, J. D., Vora, G. (2009). PEG investing strategy: A revisit. *Quarterly Journal of Finance and Accounting*, vol. 48, pp. 5-22.

Schnabel, J. A. (2009). Benchmarking the PEG ratio. *The Journal of Wealth Management*, vol. 12, iss. 3, pp. 89-94.

Štverková, H., Humlová, V. (2016). Assessment of the competitiveness of SMEs through BEE model in the Moravian-Silesian region. *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management 2016*, pp. 423-429. Częstochowa: Częstochowa University of Technology.

Trombley, M. A. (2008). Understanding the PEG ratio. *The Journal of Investing*, vol. 17, iss. 1, pp. 22-25.

Zacks (2017). *Zacks Investment Research: Stock Research, Analysis, & Recommendations*, [online]. Available: <http://www.zacks.com>. [2017, October 1].

26. LEAN PRODUCTION IN RUSSIA: A TRIBUTE TO FASHION OR A WAY OF DEVELOPMENT

Abstract: Key sources of growth of the Russian economy in 2000th such as favorable global market conditions for Russian exports and available capacity are no longer available. The new economic circumstances explain the need to address the labor productivity challenge. Actively implemented lean production projects should intensify the Russian economic growth. The aim of the paper was to evaluate the influence of lean production projects on the Russian economy, and to find real results at the macro level. The method applied was a descriptive method based on the content analysis data. Sample size amounted to 80 enterprises that announced lean principles implementation. Comparing data at micro and macro levels the hypothesis that implementation on lean principals at companies should cause the rise of labor productivity was tested. The pilot study was carried out in one business sector – “bus production”. We may conclude that the lean production is still far from being a mass phenomenon in Russia. The results and improvements in the operation of enterprises are often not related to true lean technologies. The implemented projects have not provided enterprises with survival or improved their adaptive abilities. It is necessary to look for and eliminate the reasons for the failure of lean projects implementation; otherwise the concept that allowed Toyota to become a world-class company will again not be suitable for us due to the strength of the mentality.

Keywords: agile, labor productivity, lean production, Russia.

JEL Classification: M110

1. Introduction

Key sources of growth of the Russian economy in 2000th such as favorable global market conditions for Russian exports, positive demographic trends, and available capacity are no longer available, and in this new environment productivity and new investment become critical drivers for the economy's future growth. The new economic circumstances explain the need to address the productivity challenge. The study suggests that Russia can meet this challenge by optimizing business processes in line with kaizen concept.

The lean or TPS principles began in Russia in the early 2000s. The first projects to improve the enterprise operation on this basis date back to 2003 and are associated with the beginning of the construction of the GAZ production system at the Gorky Automobile Plant. In regions with a large concentration of lean enterprises, lean is spreading beyond manufacturing incredibly fast.

The Kaluga region one of the fast growing Russian regions has used lean principles in healthcare, Tatarstan where lean is a Republic's development strategy has launched projects on “lean municipalities” and “lean cities”, Khanty-Mansiysk has even announced a “Lean Region” program. Lean principles were used during preparation for 2014 Sochi Olympics. Features of the implementation of lean projects in the country include a rapid transfer to a replicable model. When looking for concrete results of that implementation, we are faced with the difficulty of obtaining information that confirms the real results of projects. According to the world practice, the efficiency of lean manufacturing projects is determined by various indicators, the most important of which are: the average annual growth rate of sales, increase in labor productivity and improvement of the value indicators for the client. According to Goncharova (2016) and Karasyuk (2012). Sberbank, which launched the lean program in November 2008, within two years achieved fourfold growth in retail sales, the queue decreased by 36 percent (customer value). According to official reports savings from the introduction of lean principles at JSC Russian railways amounted to 560 million rubles in 2013 and 1 billion rubles in 2014. However, official reports do not specify how this savings are calculated and in what terms results are obtained.

¹ Prof. Svetlana Kazantseva; Leneina 16, 625001 Tyumen, Russia, svetlanakazancev@yandex.ru

* Corresponding author

The problem solved is the search for objective results from the implementation of lean manufacturing projects in Russia. The contradiction lies in the fact that we are aware of the many projects implemented and the high results declared, but we do not observe any real evidence of economic growth (increase in sales, improve quality or increase labor productivity).

Implemented projects of lean manufacturing in Russia did not provide enterprises with survival, they did not improve their adaptive abilities. The interrelations between the results of the improvement of the work of enterprises with the technologies of Lean introduced on them have not been revealed. An analysis of the experience and problems of introducing lean manufacturing in Russia has been paid enough attention, but research is mainly aimed at improving the image of a particular company through these projects. Most sources contain subjective opinions, and lean production is standardized to ISO 9001 or projects to improve product quality and obtain quality certificates. The lack of a real assessment of projects, on the one hand, and widespread attempts to replicate them, on the other, pose a threat to the Russian economy. The originality and value of the research is to objectively prove the need to find and eliminate the reasons for the failure of the implementation of Lean projects in Russia.

2. The Literature Review

The literature indicates that there exist a lot of distortions and discrepancies in relation to lean production. Under the projects of lean production, we will further understand projects and improvements based on the concept of Ohno Taiichi (first published 1978) "Toyota Production System". The American concept of lean production, outlined by Womack (first published 1990) unlike the Japanese one does not imply the restructuring of the whole organization's work under lean manufacturing principles and is introduced more often as a tooling or project that has the resources, time and Expected Result.

Taylor's key works were published in 1903-1911. almost at the same time as the creation of Ford Motor Company. Ford (2014) was fascinated by Taylor's lectures, his approach to the organization of production and labor in general based on eliminating unnecessary movements and optimizing technologies. The findings consisted in scientific and empirical evidence of the tremendous saving of time, and the increase in output that could be achieved by eliminating unnecessary movements and replacing slow and inefficient actions by fast workers from workers in any industry. Evidence was built on the measurement of movements and the construction of models of new productive operations. That is all that in modern lean manufacturing is present in the form of tools for analyzing the labor process.

In Russia the labor organization research was performed by Gastev, whose ideas were consonant with Taylor. Moreover, Gastev presented an analysis of the limitations that prevent Russian workers from achieving high labor productivity even with improved production organization. The main such limitation was the low level of labor culture. Following Gastev Russian worker needed to be vaccinated. "It is to inculcate, not preach!" (Gastev, first published 1921). The Central Institute of Labor (CIT) that Gastev headed was a pioneer in the research of lean production, but ended with the arrest in 1938 and the subsequent death of the researcher. In Russia, a competition of performance leaders "The Cup named after A.K. Gastev" takes place annually now (Gastev, 2011).

The modern concept of lean manufacturing (in the Japanese version of the Toyota Production System (TPS), founded by Ohno (2008), dates back to the middle of the last century. The merit of Japanese scientists and practitioners is to bring the philosophy of rejection of losses and respect for work at all levels of production. With the visit to Japan in 1946, Edwards (2010) began a turnaround from improvements in the organization of production towards quality. All subsequent ideas arose on the combination of a high degree of customer satisfaction and the ideal organization of the production process (Salah et al., 2010; Snee, 2010).

For example, in the works of Womack (2004), Liker (2010), Imai (2011), Antony (2017) and many others reveal various aspects of the implementation of these systems. Over the past 10-15 years, a lot of literature on the introduction of various tools of lean manufacturing. Modarress et al. (2014) study the cost of introducing lean production, Shah and Ward (2007), Albliwi et al., (2017), Atkinson et al., (2012). Timans et al, (2016), define concepts important for the correct interpretation of projects.

We believe that Russian enterprises, when introducing these systems, focus their attention on tools (for example, 5S), so when visualizing the implementation, the essence of the enterprise processes does not change. In our opinion, Russian enterprises need not pursue the illusion of implementation,

but return to the roots and start with the upbringing of labor culture and respect for the workman. At the same time, it is necessary to start with a managerial labor culture, understanding that the manager's role is to create conditions for increasing production. Numerous studies in the field of lean production, provided that the Russian enterprises ignore its foundations, unfortunately, are only cognitive in nature.

3. Methodology of the Research

The study explores the relationship between the presence of lean manufacturing projects at Russian enterprises and the economic growth. At the first stage of the study, the grouping method was used. From the aggregate of enterprises identified in the Lean-card, a choice was made according to the following criteria: 1) the official confirmation of the implementation of improvement programs in the field of "Lean Manufacturing"; 2) the existence of these programs in the enterprise at the present time. In view of the problem of evaluating the effectiveness of lean manufacturing projects with a close information on the cost and timing of these projects, the research objective is to select lean companies among others introducing other aspects of increasing efficiency and using the term "lean production" as a fashion trend. 15 firms were observed out of 80 in the sample.

At the second stage, we analyze the dynamics of growth in labor productivity "before the introduction of lean production" and "after". Given the impossibility of conducting a pure experiment to investigate the cause-effect relationships between the projects carried out and the improvement of the organizations' performance, we analyzed the changes in labor productivity prior and post the implementation of these projects. The study can be considered a pilot, since we focused only on the GAZ Group of Companies, and not on the whole sample of companies. The GAZ group of companies is a monopolist in the Russian bus market with a market share of more than 80 percent.

4. Lean Principles at Russian Companies

The production system development assumes constant improvements, with the Japanese kaizen, this process is endless. Enterprises that implement lean manufacturing in the form of a production system, for example GasPS (GAZ production system), KamPS (KAMAZ production system) have been grounded on the concept of the Toyota Production System (TPS). Adopted in 2014, the national standard of the Russian Federation GOST R 56020 – 2014 "Lean Production" is based on the use of Kaizen concept and involves the introduction of a complete system, rather than its individual tools.

Table 1. Lean production tool at Russian companies

The enterprise	Sector	Implemented tools
JSC GAZ	Automobile production	2003 GazPS (GAZ Production system)
JSC Micron	Microelectronics	2004 MicronPS (Micron production system)
JSC Kamaz	Automobile production	2006 KamPS (KAMAZ Production system)
JSC Sberbank of Russia	Finance and retail banking	2008 Production system of Sberbank
JSC Rosatom	Mining, construction, energy sector	2015 Production System Rosatom (RoAtPS)
JSC Olkon Olenegorsky (part of the Severstal Group)	Mining	JIT system (just-in-time)
JSC Sakhalin Energy (JSC Gazprom)	Mining	ISO 9001 certification procedure
JSC SIBUR Holding	Petrochemical	ISO 9001 certification procedure
JSC VSMPO-AVISMA (part of Rostech)	Titanium producer	Kanban and 5S
Ltd STIN	Manufacturing	JIT system (just-in-time)
JSC "ChKPZ" Chelyabinsk Forge-Pressing Plant	Metal	Kaizen and 5S
JSC Danaflex	Manufacturing	JIT system (just-in-time)
JSC "Plant" Chuvashkabel	Manufacturing	ISO 9001 certification procedure
JSC Rusal	Metal	Kaizen and JIT system (just-in-time)
JSC UEC-Saturn	engine-building, RnD	ISO 9001 certification procedure
JSC Russian Railways	Transport	ISO 9001 certification procedure

Source: Based on Lean-card, 2009

Case-studies of several Russian enterprises allowed to inquire into production system improvements in more detail. At the first stage of the study, we collected information on Russian

enterprises that introduced lean production. We can highlight more than 80 successful projects for the introduction of lean production in Russia. It is impossible to collect complete information on the number of enterprises and the results of the implementation, we used the data on the enterprises represented at official sites. The summary information is presented in Table 1.

Public corporations have become the leaders of lean production systems introduction. More than two thirds of them implemented not separate lean tools, but built complex production systems based on kaizen concept. Most Russian companies understand lean manufacturing as a set of tools and selectively use its methods, such as 5s, SMED, VSM, kanban, to achieve local improvements. The lean seems to be not only a toolbox, it is an alternative management model that encompasses the whole enterprise.

More than sixty percent of organizations under lean production implementation require ISO 9001 certification. In our opinion, this is due to a certain fashion, and not connected with real changes. In our opinion, the anciently adopters were all over completely spacious, unsociable businesses, which had bit successive surrogate but to adjustment deeper the pressure of increasing global competition and had the resources to do so. Extent, into disposed the consideration in spare has strapping at a compare know cool in the thick of mid-size to copious businesses, as typical of by the parsimonious of an abstract of managers of class enterprises conducted by the Cause of for Complex Strategic Studies between 2006 and 2012. It shows weighty and stabilize growth in the among of Russian companies range are effective on bony projects: The criticize was conducted usability a questionnaire conspectus of experts, while one expert from one company was interviewed. The results of this study can't be used for conclusions about the prevalence of lean manufacturing in Russia, since they contain subjective opinions, lean manufacturing often involves standardization according to ISO 9001 or projects to improve product quality and obtain quality certificates.

It should be noted that lean principles written in strategies are being introduced at large corporations, which should foster the economic development. Therefore, in the second stage of the study, we set the task of evaluating the results of the implementation by the visible parameters such as sales growth, quality improvement or using lean terminology, increasing consumer value, as well as productivity growth. According to official reports the labor productivity of its participants grows by 15-30 percent annually.

5. The Russian paradox: an Illusion of Productivity Rise

Labor productivity in Russia remains low, but improvements have been promising. As presented at Figure 1, the total labor productivity in Russia has risen by 60 percent since 2002, but it still stands only on average at 26 percent of US levels.

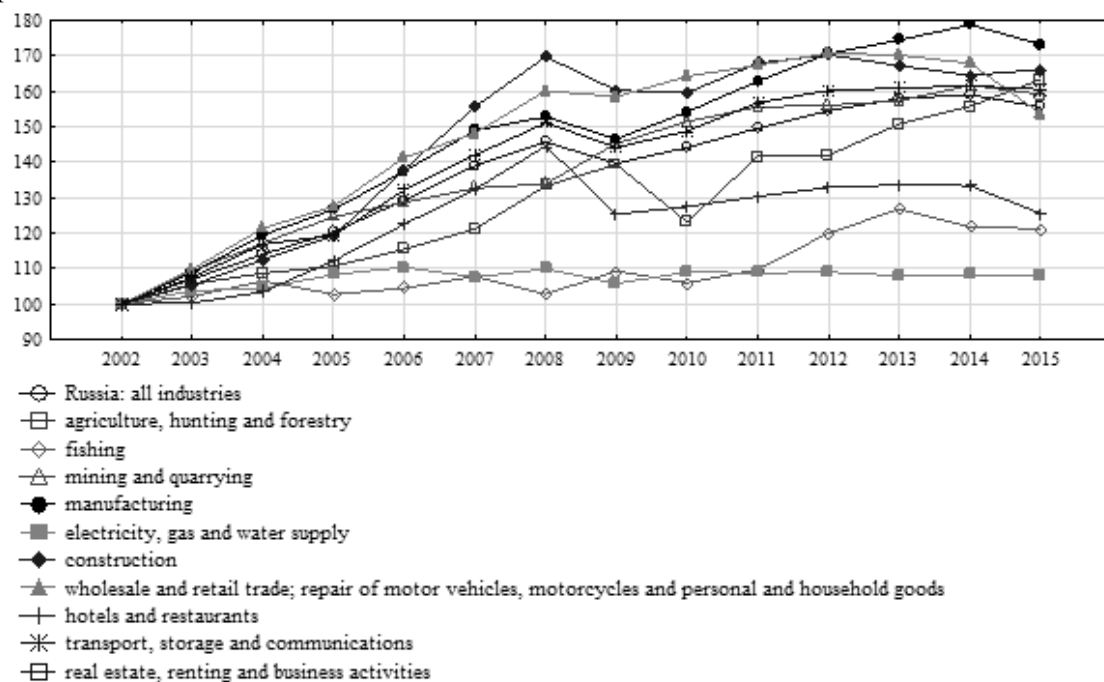


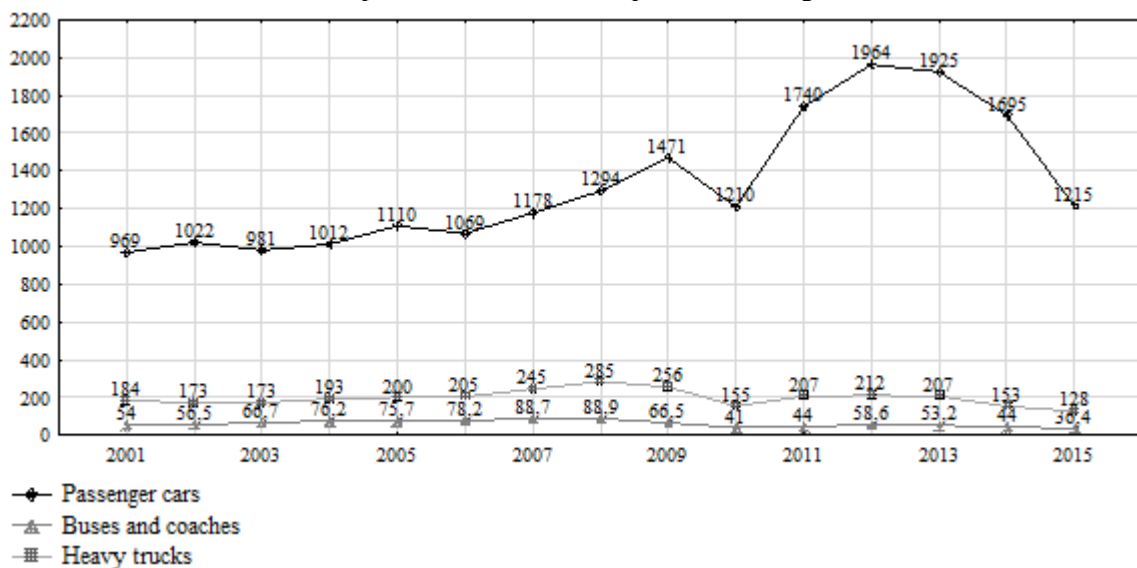
Figure 1. Labor productivity in Russia, 2002 = 100

Source: Rosstat (2017)

Analyzing labor productivity by sectors we conclude that the progress Russia has made differs substantially sector by sector. Russia's mining, manufacturing, construction and transport sectors have been growing faster than the Russian average. Productivity in manufacturing more than doubled in the past decade, making it the fastest growing in terms of productivity.

The results of lean manufacturing implementation should be correlated with the improvement of statistical indicators. However, there is no such connection, according to the official statistical data labor productivity has been growing insignificantly since 2009.

We have decided to narrow the scope of analysis to one industry that is presented by JSC GAZ Group of Companies. The company's share at domestic bus production is 80 percent, light commercial vehicles – 50 percent, heavy trucks – 33 percent. According to OICA ranking the company holds 44th place among all world manufactures in 2016 with 87,207 vehicles being produced. Such an introduction of the production system should result in the growth of labor productivity and other indicators at the national level. The data on motor vehicles production in Russia is presented at Figure 2.

**Figure 2. Motor vehicles production in Russia, thousand items**

Source: Rosstat, 2017

One can observe a steady decline in all items. The increase in bus production in 2012 may be explained by the introduction of lean manufacturing programs at the Pavlovsk Automobile Plant (GAZ Group). However, that rise is explained by purchase of buses for the Olympics in Sochi (the main supplier of the Pavlovsky Automobile Plant-GAZ Group) and the production of buses under the “School Bus” program both in Russia and CIS countries (Abkhazia and Ukraine), as well as the renewal of the public transport park in Nicaragua. The rise of motor vehicles production in 2012-2013 is not the result of lean principles adoption. The production level in 2015 reaches the level of 2010 (before the introduction of lean programs).

6. Results

It is revealed that more than half of the organizations have implemented not complete systems of lean production, but separate tools. Improvements are taking place, however, without the restructuring of all business processes, organizations cannot achieve the set results, and the general inertia of employees and management brings the company back to a state that was before improvements. The hypothesis of a relationship between the presence of lean manufacturing projects in the Russian economy and the economic growth has not been confirmed, this dependence is not clearly defined.

The hypothesis of an increase in labor productivity after the implementation of lean manufacturing projects has not been confirmed, this dependence is not clearly defined. The problem lies in the fact that more than half of the organizations have implemented incomplete lean manufacturing systems,

any separate tools. Publications are mostly propaganda aimed at improving the image of companies or consultants involved in the project. In September 2017, the Presidium of the Presidential Council for Strategic Development and Priority Projects approved the passport of the priority state program “Improving Labor Productivity and Employment Support”. The program provides for a large-scale introduction of lean manufacturing in the manufacturing industry. Continuing research in the search for objective results of lean improvements contributes to improving the efficiency of Russia's economic growth, allowing realistic analysis of the results of investments in improving production.

7. Conclusion

The lean production is still far from being a mass phenomenon in Russia. Assessing the experience of lean production implementation at Russian enterprises, we conclude that the results and improvements in the operation of enterprises are often not related to true lean technologies. The implemented projects did not provide enterprises with survival and did not improve their adaptive abilities. Improvements occur without the restructuring of all business processes, organizations cannot achieve the set results. Despite the fact that only one business sector has been researched, the results reflect an objective picture of the implementation of these projects in Russia. The GAZ group of companies is considered to be the standard, successfully implementing lean production, however, the study shows that the development of this organization is often associated with other factors, for example, the successful lobbying of some government programs (school bus and others).

In the present conditions, it is inexpedient to replicate models with questionable efficiency, which is done everywhere. It is necessary to look for and eliminate the reasons for the failure of lean projects implementation, otherwise the concept that allowed Toyota to become a world-class company will again not be suitable for us due to the strength of the mentality. According to Prigogine (2009) “... gemba kaizen can only be mastered ... piece-wise implementation not only discredits the beginning, but also leads to costs (psychological and material)”. We consider it necessary to continue such studies on other business sectors. Work has begun on the study of lean manufacturing in the service sector in conjunction with Rudenko et al. (2017), Simonova and Rudenko (2017).

Acknowledgment

The paper is based on research carried out with the financial support of the grant of the Russian Science Foundation (Project No. 14-38-00009. The program-targeted management of the Russian Arctic zone development). Peter the Great St. Petersburg Polytechnic University.

References

- Albliwi, S.A., Antony, J., Arshed, N., Ghadge, A. (2017). Implementation of Lean Six Sigma in Saudi Arabian organisations: findings from a survey. *International Journal of Quality & Reliability Management*, vol. 34, iss. 4, pp. 508-529.
- Antony, J. (2017). Lean Six Sigma for higher education. *International Journal of Productivity and Performance Management*, vol. 66, iss. 5, pp. 574-576.
- Edwards, D. (2010). *Vihod is krizica*. Moscow: Alpina Publisher.
- Ford, G. (2014). *Segodnia i zavtra*. Moscow: AST.
- Gastev, A.K. (2011). *Kak nado pabotat. Praktichekie instrymenti yspeha organizacii*. Moscow: Librocom.
- Goncharova, O. (2016). *Berejlivih ne hvataet*. *Vedomosti*, vol. 4205.
- Imai, M. (2011). *Kaizen. Klukh k yspehy Yaponskih korporacie*. Moscow: Alpina Publisher.
- Karasyuk, E. (2012). *Clon na tancpole*. Moscow: Mann, Ivanov and Ferber.
- Modarress, B., Ansari, A., Lockwood, D.L. (2014). Kaizen costing for lean manufacturing: a case study. *International Journal of Production*, vol. 43, iss. 9, pp. 1751-1760.
- Lean-card (2009). Lean production in Russia and the world, [online]. Available: <http://www.leaninfo.ru/2009/07/24/lean-map> [2017, March 02].
- Liker, J. (2010). *Dao Toyota: 14 princepov menedgmenta vedychei kompanii mira*. Moscow: Alpina Publisher.
- Ohno, Taiichi. (2008). *Toyota Prodakhen system: za predelami krypnomachtabnogo proizvodstva*. Moscow: Institute for Comprehensive Strategic Studies.
- Prigogine, A. (2009). *Zapicki concyltanta. Ne regte gemby na hasti*. Advice from a consultant: Do not cut gemba into pieces *Vedomosti*, vol. 2465.

- Rosstat (2017), [online]. Available: <http://www.gks.ru/> [2017, November 1].
- Rudenko, D., Pogodaeva, T., Golubev, E. (2017). Transition towards an entrepreneurial university: a case study of the Tyumen State University. *International Journal of Business and Globalisation*, vol. 18, iss. 1, pp. 96-111.
- Salah, S., Rahim, A., Carretero, J.A. (2010). The integration of Six Sigma and lean management. *International Journal of Lean Six Sigma*, vol. 1, iss. 3, pp. 249-274.
- Shah, R., Ward, P.T. (2007). Defining and developing measures of lean production, *Journal of Operations Management*, vol. 25, pp. 785-805.
- Simonova, L., Rudenko, D. (2017). *Russian business practice: Issues of corruption and trust. In Financial Environment and Business Development* (pp. 611-622). Springer International Publishing.
- Atkinson, S.A., Goodger, A., Caldwell, N., Hossain, L. (2012). How lean the machine: how agile the mind? *The Learning Organization*, vol. 19, iss. 3, pp.183-206.
- Snee, R.D. (2010). Lean Six Sigma—getting better all the time. *International Journal of Lean Six Sigma*, vol. 1, iss. 1, pp. 9-29.
- Timans, W., Ahaus, K., van Solingen, R., Kumar, M., Antony, J. (2016). Implementation of continuous improvement based on Lean Six Sigma in small-and medium-sized enterprises. *Total Quality Management & Business Excellence*, vol. 27, iss. 3-4, pp. 309-324.
- Womack, D. (2004). *Lean Solutions: kak kompanii i kliyenty mogut sozdat' tsennost' i bogatstvo vmeste*. Moscow: Alpina Pablisher.

27. HUMAN RESOURCES MANAGEMENT IN REGIONAL GOVERNMENT

Abstract: Human resources management is largely influenced by the personality, expertise, specific features and experience of managers at all levels of management. Parallels in this respect can also be seen in public administration. In this article we have been mapping the current situation, status, tasks and organizational structure of the local government in the Slovak Republic. From historical point of view, we tried to provide a wide range of knowledge and development of the public administration subsystem in area of Slovak Republic. At the same time, we had focused on the authorities and the role played by the top managers of this environment. However, as they are dependent on the citizens, we also mapped the results of the elections to the bodies of the self-governing regions. For this reason, we decided to describe out the situation in the elections of self-governing regions, which have been taking place since 2001. For this purpose, we have used methods of scientific abstraction, analysis, synthesis, comparison, and methods of historical and mathematical statistics. However, the assessment of this work was not economic, but election results. The results of our work point to the importance of using not only passive but also active voting rights.

Keywords: citizens, elections, human resources management, leader, Self-government.

JEL Classification: H72, H79, N93, N94, R58

1. Introduction

The Slovak Republic has managed to establish itself among other countries of the world despite ten years of unfreedom, oppression and struggle. Its stability and progress is the result of awareness of the community and society. It is built on a democratic basis and adheres to the principles of democracy. As noted by Wilbur (2013) “In the democratic regime the State would be a servant”.

In parallel with these facts, the importance of self-the proportion of bureaucratic administrative apparatus in the state has increased.

A parallel can be found also in the area of construction the public administration mechanism in the Slovak Republic. The duality of public administration and the existence of the parity of its underlying subsystems is a guarantee of a democratic way of governance.

In connection with this, the scope of competencies passed from state to self-government was also modified. Self-government is responsible for securing the statutory public tasks and the economic development of the managed territory.

However, the mirror of the self-governing is not only the achieved socio-economic results, but especially the results of the elections. In the election process, it is just a citizen who decides of self-governing regions (Act 303/2001 Coll. on elections to the bodies of self-governing regions). The voters engage their representatives to carry out the tasks and build strategies for further socio-economic development of the region. Therefore, the quality and life level of the region's inhabitants is linked to the primary act – elections.

The main goal of this paper is to show to map the situation in the area of elections to self-governing regions. For this reason, we have decided to map out the situation in the election results since 2001. In connection with these facts, we have decided to use qualitative research methods. The results of our work are based on the method of scientific abstraction, analysis of literature, synthesis, comparison and methods of historical and mathematical statistics. Our results therefore provide a historical and contemporary picture of the current situation in the self-governing region. At the same time, they point to changes in attitudes and access of the inhabitants of individual regions of Slovak Republic to the management issues of these units.

¹ Ing. Martina Klierová Ph.D.; Študentská 2, 911 50 Trenčín, Slovakia, martina.klierova@tuni.sk

* Corresponding author

2.Theoretical Background

Over the years, the State status and its role has changed. This was also the case with the status and role of its citizens. Together with the changing conditions and opportunities, the issue of human resources management in this environment has become the subject of change. The subject of our interest is the theoretical approach to issues of state administration and self-government management.

2.1. Regional Self-Government of Slovak Republic

The character of the activities of state society management is a sign of the state administration subsystem. The State Administration therefore acts as a representative of the good management activity of the administrative authorities. On the contrary, the character of the natural-legal activities is related to the subsystem of self-governments. According to Click (2015), the self-government is a system in which the citizens of a country (or smaller political unit, such as a state) rule themselves and control their own affairs. Self-governments are free from external government control or outside political authority.

Hence, the self-government is therefore the opposite of centralized state administration. Its scope is directly proportional to the degree of democracy in the country. It acts as a representative of the democratic power execution. Otherwise, self-government is an integral part of the modern understanding of the democratic State. As noted by Kútik, Králik (2015) “Any and all activities undertaken within a state can be perceived as activities performed under the social reality or domains of social life. Any activity associated with performing the functions of the state, is goal-oriented.”

If we want to understand the issue of managing the current form of regional self-government, it is necessary to look at the context of wider history. There were already published articles of public administration in Slovakia, e. g. Koišová, Masárová, Habánik (2016); Masárová, Koišová, Habánik (2017); Kútik (2016).

The origin of the oldest self-governing forms on the territory of the Slovak Republic dates back to the second half of the 13th century. During this period, the depopulation of cities with dependence on the territorial state administration is taking place. For the first time, their inhabitants were allowed to set up their own executive bodies. However, we can speak of its modern form only from the second half of the 19th century. In this period, the feudal social establishment ceased, the abolition of the absolutist regime and the establishment of bourgeois constitutional equality (The Oktrojan Constitution). These facts have become a stepping stone leading to the guarantee of fundamental human rights and freedoms, the people's assembly or the independence of self-governing bodies. Nižňanský (2002, p. 6) notes in relation to the degree of independence that its size "depends on the power ambitions of the political groups, the state administration, the character and scope of the respective local government, etc."

Its regional appearance -the regional government, it is a bit worse. It is also possible to talk about it in the time of Austria-Hungary or the first Czechoslovak Republic, but only in 2001 it received its satisfaction. As noted by Buček (2017) “The modernization argument for reform has also changed -now strongly moved in favour of its technological and managerial meaning in Slovakia.”

In the field of political administration, the municipalities were principally involved in Hungary as a self-governing corporation. They were divided into two categories, namely: *commitates* (counties, stools) and municipalities with municipal law. It is the Committees that can be described as the first administrative-territorial units that have been the highest authorities in Hungary. As such, they were subsequently divided into lower territorial units - districts. In the municipalities lead was the main leader, but he did not act as a municipal administration. His job was the government's confidant. The leader of the official apparatus of executive power in the county and the first elected official was therefore his deputy (Lipscher, 1966, p. 27).

Committees have begun to become an aristocratic unit. Elected representatives of aristocracy took part in its administration and intervened in a significant way in the field of judiciary. The strength and status of them was an obstacle of the reforms of Maria Theresa and her son Joseph II. Therefore, he decided to carry out the reform of the public administration. The reform also included the abolition of the state's self-government. He replaced the state administration, consolidating his position and gaining control of the monarchy. The hard resistance of the aristocracy to the reform steps has led to the rejection of this reform. Joseph II. therefore, recalled it before his death and brought it back to the original status (Žudel, 1984, p.14).

Another milestone in the development of regional self-government was the internal political tension between Vienna and the Hungarian National Movement (1849-1860). The aristocracy units were merged into larger units – to the military commandos, headed by a military commander. Part of these districts were counties. These counties managed to cease larger or smaller peripheries, the breakdown of Austria-Hungary, the emergence of Czechoslovakia, and so on. Despite these turbulences that marked the new European order, there can be no devastation or degradation of this environment. As noted by Ivanová, Koišová (2014) “Slovakia and the Czech Republic used to be two parts of a country.”

The model of the county arrangement remained in force even after the establishment of the first Czechoslovak Republic. As a result of the landscaping, it lasted only one decade. In 1940 its great return took place, albeit in its altered form. Consequently, the law of SNR no. 14/1949 Coll., the 6 territorial districts and 79 districts were established. This arrangement lasted until 1990. The reason was the abolition of the regions. Another significant reform step is taking place in 2001. Higher territorial units – self-governing regions, as the second level of self-government under Act no. 302/2001 Coll. about the self-government of higher territorial units, introduced into a real environment of self-government. At the same time, the area of competence was extended to the self-governing region (Act No. 416/2001 on the passage of certain execution from state administration bodies to municipalities and higher territorial units). In connection with this, the scope of competencies passed from state administration bodies to self-government was also modified. Self-government is de facto responsible for securing the statutory public tasks and the economic development of the managed territory. This fact was preceded by the definition of higher territorial units and the manner of performing their individual activities (Act No. 221/1996 Coll., On the Territorial and Administrative Arrangement of the Slovak Republic).

As a result of these systemic changes, the conditions for the economic and social development of municipalities and regions are improving. As noted by Sopkuliak (2016) “Local government expenditures can significantly stimulate local and regional development, if they are used effectively and economies of scale are achieved”. Hošťák (2015) noted that “Persisting and widening regional disparities encumber the ability of a country to promote economic growth and social cohesion, while balanced regional development can be considered as a key determinant of sustainable economic growth.”

In parallel with these facts, the importance of self-the proportion of bureaucratic administrative apparatus in the state has increased. It is possible to talk not only about the obligated elected bodies of the self-governing region (the self-governing council and the president of the self-governing region), but also about the non-elected bodies of the self-government (chief inspector, commission, office).

The organization and management of this human base is therefore a burning issue. As noted by Hamalová et. al (2014) “... employees are considered to be property and wealth of the organization.” This points to the fact that human resources are, from the point of view of ensuring the basic tasks of self-government, the most important element of the chain in activities of this institute. They represent the human potential, which is made up of all elected representatives and its employees. The result of their activity is a satisfied citizen. This is the very important role played by human resources management. As an of subsystem management, it has the role of contributing to increasing effective management and efficient use of finance (Hajšová, 2016). It should be kept in mind that this is a complex and multifaceted process. It must be adapted to the environment and the conditions in which it is implemented. Employees of the self-governing region represent human resources, through which the basic tasks are ensured (Act No. 302/2001 Coll., On Self-Government of Higher Territorial Units).

It follows from the foregoing that the possibility of deciding for itself was not automatically imposed on a citizen. Participating in life and action obliges us to actively access and interest in this issue.

2.2.Human Resources Managementof Regional Self-government

We place the human resources management in self-government as the most important activity for ensuring the basic tasks of self-government and ensuring the satisfaction of its clients (citizens). Human resources should be supported, respected and built with managers. A healthy relationship between managers and employees is a prerequisite for success and performance. Human resources should be managed in accordance with the strategy of the local government and its need.

In conjunction with, it is necessary to respect the existing human potential and the possibilities of its development. As noted by Stojanovic (2012) “Human resources represent a basis on which strategy

of social-economic development is built upon. All other resources: economic resources, geo-strategic position, level of technological development, in comparison to human resources seem to be less important.” Therefore, this issue also concerns the organization, search and selection of employees who are the most beneficial for ensuring the tasks and fulfillment of goals in a particular self-government.

Methods of managing human resources in a self-government are the same as in a private sector, determined by the personality of the senior employee. Its theoretical and practical, experience, expertise and interest are key issues in this area. Moreover, in the self-government environment, it is also important for the manager to dispose with ethical and moral values (honesty, honesty, recognition, respect, respect, etc.).

Human resources management is ensured within the self-governing region by the highest executive body -the chairman of the self-governing region. This senior manager - Top manager - whose primary activities are managerial functions, operates on management objects (Sedlák, 2008). The personality, general and specific knowledge, experience, integrity, performance, skills and charisma of the chairman of the self-governing region are important in terms of quality and result from the function that the manager holds. As noted by Vojtovič (2008, p. 318) “Therefore, the rightful leading person is the strategist, the manager and the leader at the same time, each of which requires talent.”

At the same time, the manager should have attributes such as general education and insight, organizational skills, autonomy, rationality, flexibility of thinking and the arts to negotiate, responsibility, principle, discipline or emotional balance.

In real environment, the fact, that the work team achieves better results, assuming system management by top managers, has been confirmed. This management from the top manager requires additional qualitative features and characteristics (Table 1.). The reason is, that in the framework of the administration of a higher territorial unit it performs a range of competencies (e.g. legal, financial-property, decision-making, etc.) as well as steps leading to solving specific problems of its own clients, citizens and subjects of self-government.

Table 1. Characteristics of top manager

L (lead)	Ability to go among people and lead them directly
E (enable)	Readiness to listen to a wide variety of opinions
A (articulate)	Ability to communicate about vision and goals
D (decide)	Ability to not deviate from basic goals
E (encourage)	Recognizing of own weaknesses
R (reward)	Ready to share credit for success / blame for failure

Source: Own processing using Goodwin, 2005

The mirror of the job evaluation of a top manager in the local government is therefore not only the achieved socio-economic results, but especially the results of the elections. In the election process, it is just a citizen who decides who will occupy the highest managerial position of the self-governing region, as well as the composition of the "regional parliament". Elected bodies in SR conditions according to Act 303/2001 Coll. on elections to the bodies of self-governing regions are the chairman of the self-governing region and the self-governing region council.

As Noded by Miller (2013) “Self-government is, at root, a culture of public responsibility among a citizenry; that is, a widely accepted norm that citizens can and should take a role in public decision-making. People must believe that they have the right, duty, and ability to govern themselves.”

3. Methodology of the Research

The author of the article has used some of the basic methods of scientific research and used it to obtain the information needed to process with the problem. The author used the method of literature review, method of analysis and comparison. The author of the study begins with the historical overview of the development of the public administration system in the Slovak Republic. In this review we had used the literature relating to this issue. To highlight the importance of human resource management, we pointed out the relationship between the state and the role of managers in this environment. The contribution also used statistical data processed by the Statistical Office of the Slovak Republic and Transparency International of Slovakia. Here we are limited by two facts. The first fact is the right to elect local self-government representatives in the area of SR, which allows regular recurring elections

since 2001. The second fact is the date of launching the Transparency Assessment Project of the competent authorities, the first results of which only affect the year 2011. Therefore, the author with deduction method puts the results of the elections into conformity (from 2001 to the present) and the results of self-government transparency (from 2011 to the present). In view of these facts, the following hypothesis has been put forward. H: More than 80% of current chairmen candidate to the post of chairman of the self-governing region.

4. Research Results and Discussion

The election of a top manager is carried out by citizens through the law enshrined in the Constitution of the Slovak Republic, third section, p.30. Elections to the bodies of self-governing counties shall be held by secret ballot on the basis of universal, equal and direct electoral rights. The chairman is the elected candidate who has obtained the most valid votes. Similarly, this is also the case with the embassy. Similarly, this is also the case with the council. Councils may be similarly placed in to the senior management because they also participate in the administration of the self-government institute.

Historically, the first elections to the bodies of self-governing regions of the independent Slovak Republic were made by decision of the Chairman of the National Council of the SR no. 320/2001 Coll. on 1 December 2001. The last elections were held on 4 November 2017 on the basis of Decision No. 166/2017 Coll. on the basis of the approved amendment to the Act on the conditions for the exercise of electoral law, they were the first to take a single-vote system. In addition, the region chairman and elected deputies in these elections will have an extended period of office for 5 years. It is a one-off measure that will make the elections in 2021 in parallel with municipal elections in 2022.

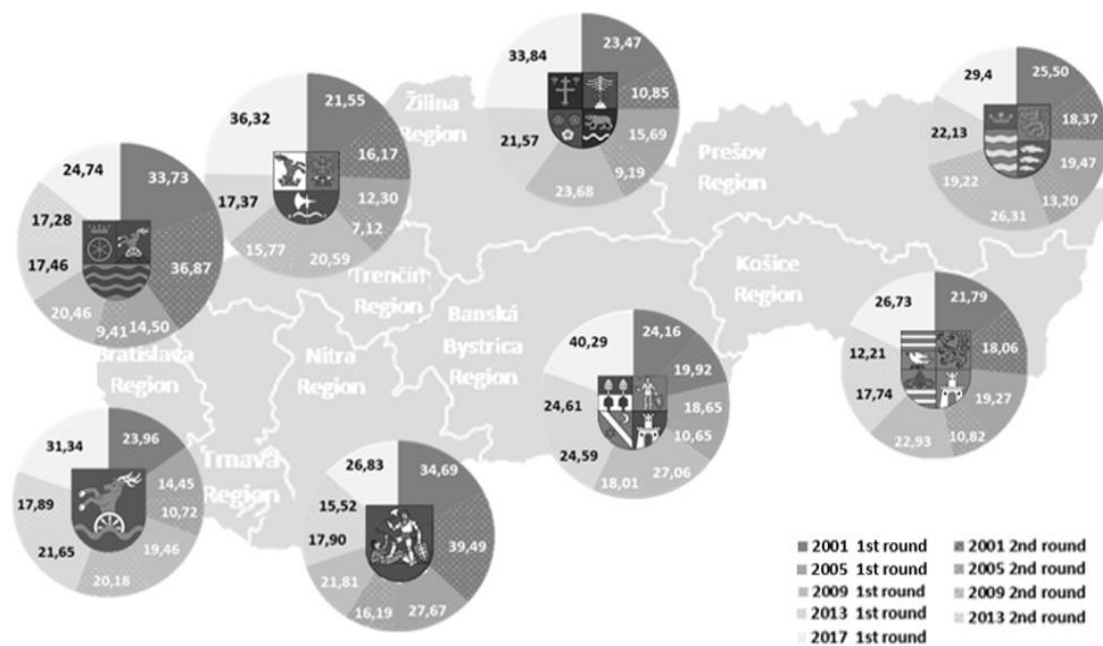


Figure 1. Percentage participation of citizens in elections to bodies of self-governing regions

Source: Own processing reports to the Statistical Office of the Slovak Republic

The year 2017 is in the SR connected with elections to the bodies of self-governing regions. Based on the results, it can also be marked as a year of changes. The first important fact is the attitude of citizens towards this issue. The results of elections to the bodies of self-governing regions confirm that the interest in active participation in elections is increasing (Figure 1). Compared with previous year, it is possible to talk about the 10% increase in voter participation. The first fact influencing election results is the leader's personality and popularity. Only few of voters read the candidates' programs. Voters usually decide on the basis of emotional factors (sympathy), media reports, or confidence the candidate can build. These factors also significantly contributed to participation in the Banská Bystrica Region (40.29% participation). This result was mainly influenced by the result of previous elections to the bodies of the self-governing region. In 2013, the extremist party got power in their hands. However, the consequences of the defiance behaviour have caused considerable problems. Therefore,

the inhabitants of the region decided to mobilize their power and energy, as evidenced by the result of the elections in 2017.

So we can say that the chairman of the Banská Bystrica region has not been able to make the most of his management role. This "failure" was also helped by his "deputies". On the contrary, the chairmen of the Trenčín and Nitra regions were able to make full use of their abilities and possibilities (Table 2). They were able to communicate effectively through the results and visions of the region in the future.

Table 2. Representatives of the highest authorities of municipalities since 2001

Reg.	Year	Chairman	Votes (%)		Reg.	Year	Chairman	Votes (%)	
			1 st round	2 nd round				1 st round	2 nd round
Bratislava	2001	Roman	56.49	-	Trnava	2001	Tomeček	37.57	61.48
	2005	Bajan	41.29	67.39		2005	Mikuš *	26.47	54.74
	2009	Frešo	41.29	60.50		2009	Mikuš	52.99	-
	2013	Frešo	48.38	74.24		2013	Mikuš	40.04	60.26
	2017	Droba	20.42	-		2017	Viskupič	42.91	-
Trenčín	2001	Štefanec **	44.40	67.92	Nitra	2001	Belica	40.87	61.37
	2005	Sedláček *	28.45	51.83		2005	Belica	41.80	74.08
	2009	Sedláček **	45.55	59.08		2009	Belica	60.27	-
	2013	Baška	53.46	-		2013	Belica	46.87	55.61
	2017	Baška	49.98	-		2017	Belica	34.11	-
Žilina	2001	Tarčák	32.12	80.31	B.Bystrica	2001	Marčok **	30.84	52.36
	2005	Blanár	30.36	51.37		2005	Murgaš	38.82	50.88
	2009	Blanár	63.20	-		2009	Maňka	35.40	53.70
	2013	Blanár	54.02	-		2013	Kotleba *	21.30 *	55.53
	2017	Jurinová	43.68	-		2017	Lunter	48.54	-
Prešov	2001	Chudík *	27.73	50.11	Košice	2001	Bauer *	17.12 *	59.38
	2005	Chudík	39.89	53.03		2005	Trebuľa	30.25	57.52
	2009	Chudík	47.17	54.06		2009	Trebuľa	60.25	-
	2013	Chudík	53.78	-		2013	Trebuľa **	48.58	53.07
	2017	Majerský	40.36	-		2017	Trnka	37.80	-

Explanation: * 2nd place ** Do not participate in the next election

Source: Own processing reports to the Statistical Office of the Slovak Republic

At the same time, we would like to draw attention to the fact that the chairmen of self-governing regions are interested in top manager post. This is confirmed by their candidacy for next execution season (exception Marčok, Štefanec). That is why we can confirm our hypothesis.

This success we can attributed to a number of facts. In the case of Trenčín region we can talk about transparency, openness and attitude towards its customers (Physical Person / Legal Person). These facts have also been reflected in the most recent report Transparency International of Slovakia 2017 (Openness of Self-Government Project; Table 3.), i.e. place A, rating A-, score 74.8%, position change +7.

Another important fact is the suppression of party affiliation – the emergence and promotion of independent candidates. However, significant changes were not made in the positions of the chairmen, but in the field of deputies in regional councils a rapid change has occurred. Of the 416 regional posts, 161 were occupied by independent candidates (about 39%). This fact denounces a degree of mistrust in the party, which may be affected by the political situation in the state as such.

And here comes the question, who is behind the results and interest of citizens in elections to the bodies of self-governing regions? We believe that this is not just a citizen or voter. Equal responsibility lies on the representatives of the regions and the State. First of all, it is about edification and providing enough space for communication. Secondly, the representatives approach to the issue and the third, sharing of information. If the field was modified by these elements, we believe that participation in the region would be much higher.

Table 3. Open Government

Reg.	Year	Chairman	Grade	Rating	Rank	Reg.	Year	Chairman	Grade	Rating	Rank
Bratislava	2011	Frešo	C	47%	III.	Trnava	2011	Mikuš	C-	41%	VII.
	2013	Frešo	C+	52%	II.		2013	Mikuš	C	48%	III.
	2015	Frešo	C+	50%	IV.		2015	Mikuš	C	50%	VI.
	2017	Frešo	C	50%	VI.		2017	Mikuš	C	49%	VII.
Trenčín	2011	Sedláček	D+	35%	VIII.	Nitra	2011	Belica	C	46%	V.
	2013	Sedláček	D-	28%	VIII.		2013	Belica	C	46%	VI.
	2015	Baška	C-	41%	VIII.		2015	Belica	C	49%	VII.
	2017	Baška	A-	75%	I.		2017	Belica	C+	55%	III.
Žilina	2011	Blanár	C+	52%	II.	B. Bystrica	2011	Maňka	C+	53%	I.
	2013	Blanár	C-	42%	VII.		2013	Maňka	B+	65%	I.
	2015	Blanár	C+	52%	III.		2015	Kotleba	B-	56%	I.
	2017	Blanár	B-	57%	II.		2017	Kotleba	C+	51%	V.
Prešov	2011	Chudík	C	47%	IV.	Košice	2011	Trebuľa	C	46%	VI.
	2013	Chudík	C	47%	V.		2013	Trebuľa	C	48%	IV.
	2015	Chudík	C+	54%	II.		2015	Trebuľa	C+	50%	V.
	2017	Chudík	C+	53%	IV.		2017	Trebuľa	C	48%	VIII.

Source: Our processing reports to the Transparency International Slovakia, 2017

5. Conclusion

The article maps the current situation, status, tasks and organizational structure of the local government in the Slovak Republic. At the same time, we focus on the authorities and the role played by the top managers of this environment. The chairman of the self-governing region does not cooperate and direct only the employees of the self-governing region office. As the manager, he has to work with all citizens of the region. By building these communications networks and endeavoring to develop their own region, many of them candidate for these posts more than once (H1 was generally confirmed). From our article it is obvious that not only the personal assumptions of the top manager are important, but also the active participation of citizens in the region. By choosing top managers through direct secret elections, they are just citizens who create the future of their region. The results clearly confirmed that if the voters are indifferent (for example, the Banská Bystrica region), the development of the region may be jeopardized. At the same time, it is important to show satisfaction with the functionality of the region, which can be re-evaluated using the election results. It does not have to be decisive for voters whether the candidate has the prerequisites for the exercise of the management function or not. However, this can have fatal consequences, especially for the inhabitants of the regions. Therefore, it is advisable to consider whether this problem should not be solved “from above”.

References

- Buček, J. (2017). Why and When Countries Implement Local Public Administration Reforms: A Long-Term View of Reform Dynamics in Slovakia, 1990-2015. *Urban Book Series*. pp. 33-70.
- Click, L. (2015). *What is Self-government?* [online]. Available: <https://study.com/academy/lesson/what-is-self-government-definition-lesson-quiz.html>. [2017, November 23].
- Hajšová, M. (2016). Dôležitosť manažmentu ľudských zdrojov v samospráve. *Sociálno-ekonomická revue*. vol. 14, iss.2, pp. 84-90.
- Hamalová, M. et al. (2014). *Teória, riadenie a organizácia verejnej správy*. Bratislava: Wolters Kluwer.
- Hošták, P. (2015). Energy intensity as a parameter of regional development in Slovakia. *International Scientific Conference on Knowledge for Market Use - Women in Business in the Past and Present*. pp.209-216. Olomouc: Palacky Univ, Dept Appl Econom.
- Goodwin, D.K. (2005). *Team of Rivals*. New York: Simon & Schuster.
- Ivanová, E., Koišová, E. (2014). Interregional disparities in the Slovak and Czech Republic. *Political sciences, law, finance, economics and tourism*, vol IV. pp. 405-412.

- Koišová, E., Masárová, J., Habánik, J. (2016). Public Administration in The Territory of the Slovak Republic Until 1989. *Sociálno-ekonomická revue*, vol.14, iss.4, pp. 87-94.
- Kútik, J. (2016). Miesto a úloha samosprávy v systéme verejnej správy. In J. Králik, K. Janas, *Ekonomika a manažmentsamosprávy*. pp. 9-54. Trenčín: TnUAD.
- Kútik, J., Králik, J. (2015). *Verejná správa a krízový manažment*. Bratislava: Veda.
- Masárová, J., Koišová, E., Habánik, J. (2017). Public Administration in The Territory of the Slovak Republic After 1990. *Sociálno-ekonomická revue*, vol.15, iss. 1, pp. 52-64.
- Miller, P.D. (2013). *What the founders meant by self-governance*, [online]. Available: <http://thefederalist.com/2013/12/10/what-the-founders-meant-by-self-governance/>. [2017, November 23].
- Nižňanský, V. et al. (2002). *Samospráva vyššieho územného celku*. Bratislava: Nadácia otvorenej spoločnosti.
- Lipscher, L. (1966). *K vývinu politickej správy na Slovensku v rokoch 1918 – 1938*. Bratislava: SAV.
- Sedlák, M. (2008). *Základy manažmentu*. Bratislava: Iura Edition.
- Sopkuliak, A. (2016). Expenditure structure of local self-government in Slovakia 2012-2014. *19th International Colloquium on Regional Sciences*. pp. 774-780. Cejkovice: Masaryk Univ, Fac Econ & Adm, Dept Reg Econ & Adm.
- Statistical office of SR (2017). *Volby a referendá*. [online]. Available: <http://volby.statistics.sk/>. [2017, November 23].
- Stojanovic, G. (2012). Establishing development teams – engines of economic development and regional cooperation. *1st International Scientific Symposium Economy of Eastern Croatia – Yesterday, Today, Tomorrow*. pp. 266-278. Osijek: Ekonomski Fakultet Osijeku - Fac Economics Osijek.
- Transparency International of Slovakia (2017). *Transparentnosť miest a žúp*, [online]. Available: <http://samosprava.transparency.sk/>. [2017, November 23].
- Vojtovič, S. (2008). *Riadenie personálnych činností v organizácii*. Bratislava: Iris.
- Wilbur, S. P. (2013). *Pierre-Joseph Proudhon: Self-Government and the Citizen-State*, [online]. Available <http://library.libertarian-labyrinth.org/items/show/2558>. [2017, November 23].
- Žudel, J. (1984). *Stolice na Slovensku*. Bratislava: Obzor.
- Act No. 14/1949 Coll. o územnej organizácii okresov na Slovensku
- Act No. 221/1996 Coll. o územnom a správnom usporiadaní Slovenskej republiky
- Act No. 302/2001 Coll. o samospráve vyšších územných celkov
- Act No. 303/2001 Coll. o voľbách do orgánov samosprávnych krajov
- Act No. 320/2001 Coll. o vyhlásení volieb do orgánov samosprávnych krajov
- Act No. 416/2001 Coll. o prechode niektorých pôsobností z orgánov štátnej správy na obce a na vyššie územné celky
- Act No. 166/2017 Coll. o vyhlásení volieb do orgánov

28. MANAGEMENT OF VALUE FLOW AND OPERATIONAL STRATEGY IN SMALL ENTERPRISES PROVIDING SPECIALIZED SERVICES

Abstract: Small companies providing specialist services in many cases are obliged to use external service providers, this is the case for dental technology services - dentist is the primary service provider and the dental technician is subcontractor. The main objective of this work to present the possibilities of visual management in a dental service associated with the need to produce a prosthetic. The flow of values (information and material) between patient – dentist – dental technician is a key element of the efficient functioning of such an enterprise. The paper presents Value Stream Mapping (VSM) analysis for the selected prosthetic service. Based on the in-depth analysis of the data visualized on the current state map has been stated that the people managing the service process do not strive to shorten the time of implementation, while maintaining reliability through a high level of service. The development and improvement of prosthetic services can be obtained through strategic co-operation with other participants in the process. For the service provider (dentist) it is obvious to recognize all the needs of the patient, also by creating sufficient information flow between the patient and the dental technician, e.g. by implementing standardized communication systems.

Keywords: service improvement, specialist service, Value Stream Mapping, VSM.

JEL Classification: O32, O33, M11, O14

1. Introduction

The efficiency and effectiveness of each enterprise, regardless of its size, is determined by the operational validity of managing multiple processes taking place in parallel. And it is well known that in the management of processes, both large mass production (large enterprises) and smaller ones (e.g. in unit production - in small and medium enterprises), the organization and planning of the process is extremely important (Fidlerova, Prachar, Sakal, 2014; Pustejovska, Brozova, Ingaldi, 2014; Ulewicz, Jelonek, Mazur, 2016). As the basic tools supporting process organization are the visual management tools such as process mapping (VSM – Value Stream Mapping), logical mapping, flow chart, Gantt chart, etc.(Ali, Petersen, Schneider, 2016; Edtmayr, Sunk, Sihm, 2016; Morlock, Meier, 2015). The visual communication is not addressed just for an individual participant (co-worker) and the basis of it is the Visual Management Triangle: seeing as a group, knowing as a group, acting as a group. The company market requires high standard levels in term of quality, efficiency and product/service reliability. In order to meet these requirements, organizations focused on the continuous improvement by implementation of Lean practices (Bevilacqua et al., 2013).

1.1. Visual Management in the Lean Concept

The Value Stream Mapping (VSM) is an element of Lean management concept, and its main purpose is to present a current state map (CSM) and a future state map (FSM). With the VSM tool, presenting the present and future (expected) situation is possible to introduce changes in the flow of materials and information (value) (Haefner et al., 2014). The adaptations of VSM is focused on artifact flow, identifying waiting and productive times in accordance to material and information flow (Ali, Petersen, de França, 2015; Khurum, Petersen, Gorschek, 2014).The small changes consistently improve the process and eliminate all kinds of wastage in the production cycle. In the case of waste of production processes it is called *muda*, and refers to prodigality, extravagance, mismanagement as well as quality defects, loss of time, excessive number of operations, unused potential of people and equipment etc. (Ali, Petersen, Schneider, 2016; Morlock, Meier, 2015). The visual management tools

¹ Ing. Dorota Klimecka-Tatar Ph.D.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, dorota.klimecka-tatar@wz.pcz.pl

* Corresponding author

and technique can provide consistent benefits in *muda* reduction and elimination (Bevilacqua et al., 2013). The application of VSM has been expanded to many industry sectors. The popularity of visual management in the lean concept is caused by the possibility to apply it in solving different kind of issues related to reduce waste or process planning (Romero, Arce, 2017; Tyagi et al., 2015; Werner, Cruz, 2013).

1.2. The Concept of a Learning Organization Providing Service – Lean Service

In industrial practice most Lean methods are targeted at use in the manufacturing industry, which results in a finished product (physical/material/tangible effect of the process). In the service industry, in spite of frequent application of Lean concepts and high involvement in Lean principles, many techniques used in the context of production are not immediately applicable. Lean principles are as follow: value, value stream, flow, pull and excellence (Resta et al., 2015). Consequently, Lean concepts and methods require working out a model for Lean Service to ensure its application to service activities. This model consists of five stages (Andrés-López, González-Requena, Sanz-Lobera, 2015):

1. Establishing and clarifying the Lean Service principles.
2. Determine the customer's role in the Lean Service.
3. Identification of wastage (*muda*) during Lean Service delivery.
4. Implementation: evaluation of Lean Service methodology.
5. Lean Service model verification: performance monitoring and continuous improvement.

In addition, the Lean Service model is divided into two interrelated cycles: the conceptual cycle and the practical cycle. The conceptual cycle provides the right transition from lean manufacturing to Lean service, taking into account the characteristics of the service and the role of the customer (the role of all participants) as co-creators in the service process. The practical cycle ensures that the conceptual cycle achieves the goals set in accordance with the principles of Lean management (Figure 1).

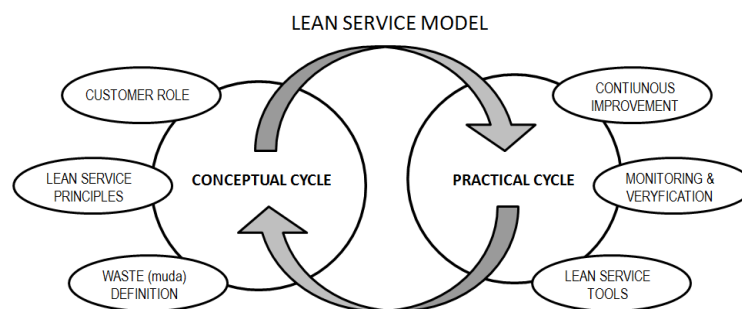


Figure 1. Lean Service model divided into two interrelated cycles: conceptual cycle and practical cycle

Source: Based on: Andrés-López, González-Requena, Sanz-Lobera, 2015

The Lean Service principles should therefore be supplemented based on Lean production (Andrés-López, González-Requena, Sanz-Lobera, 2015):

- Principle 1: Define the service value - the value in services is the required need, which service is able to realize. The value in this case is defined by the customer.
- Principle 2: Identify the flow of value - as value added in services is a customer need, so the value of the stream is determined by the sequence of actions that allow them to be satisfied.
- Principle 3: Flow optimization - focuses on optimizing continuous stream through a sequence of service activities that create value perceived by the customer.
- Principle 4: Enter the pull system: in the implementation of the pull system in service means the distribution of customer demand throughout the value stream, that is, providing only what the customer actually needs.
- Principle 5: Striving for excellence: in accordance of the customer requires it is the knowledge of customer needs (what, where, when, how?).

Normally (in manufacturing industry), the evaluations of the company's activity and the efficiency of the process are prepared on the basis of input-output parameters. Due to the dynamic variability of input and output parameters, it is very difficult to obtain a clear benchmarking of competitiveness in

the service industry. This is characteristic for service processes (in particular in specialist services such as medical, dental, etc.) (Byun, Park, Hong, 2017). Management of the value flow in specialized service organizations needs a comprehensive approach to the problem of improvement. Usually, the specialized service organizations are multi-level networks, there is more than one participant in the process and the service realization is centralized in one unit which oversees the implementation of the service at various levels. In the implementation of specialized services is extremely important for unlimited and full access to information, the rapid expansion of knowledge and access to data - all available knowledge in this field (Kianto, Sáenz, Aramburu, 2017; Littlejohn, Campbell, Collins-McNeil, 2012; Gagnon et al., 2015). Specialist knowledge causes that insufficient attention is devoted to identify interaction between activities which generating overall results for the client. The technical parameters could highly affect on the final product utilitarian properties (Klimecka-Tatar, Pawlowska, Orlicki, 2014, Radomska, Klimecka-Tatar, Pawlowska, 2016). The more difficult it is to manage the service process, which depends on the cooperation of a group of professionals with different specialization (Della Bona, Wozniak, Watts, 2011; Demejean-Orliaquet, Leger Gerbaut, Tubert-Jeannin, 2009; Harvey, 2015). The typical example of a multilevel service is (comprehensive operation of the subsystems) a dental service associated with the need to produce a prosthetic (Klimecka-Tatar, 2016). In this context, it is critical for organizations to look for innovative solutions, as well as to develop strategies that aim to design new work practices and to manage knowledge base on the Lean Service principles. In the world literature, the gap has been found in the management of B2B business, in particular in micro and small enterprises that provide specialized services. In numerous publications, one can observe a tendency to introduce improvement plan only in large enterprises with complex organizational structure, with normalized and standardized work. The main objective of this work to present the possibilities of visual management in a dental service associated with the need to produce a prosthetic. Visualization of the material and information flow (current and future state map) enables detection of areas deteriorating process efficiency and introduction of an improvement plan in accordance with the Kaizen philosophy, using the available improvement tools, especially PDCA.

2. Research methodology – case study in mapping of services delivery

As follows from the principle 1 and it is emphasizes in the Lean Service model the customer play active role in the service process, and more over the customer participates in the process creation (Figure 2).

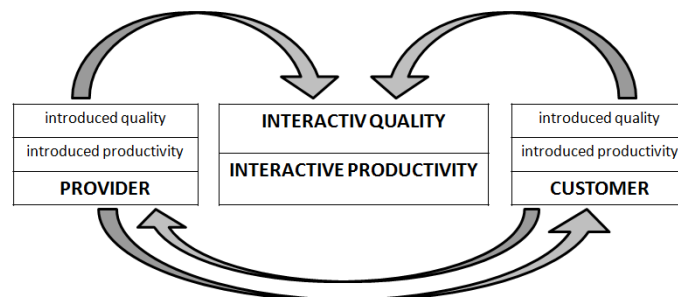


Figure 2. Interaction between customer and provider in Lean Service model

Source: Based on: Andrés-López, González-Requena, Sanz-Lobera, 2015

The customer in the service delivery system, especially in Lean Service model, is an element in process operations: customers transform their role in the value network, being a value stream creation partner. As already noted, in service activities, value is defined by the customer. Customer needs, expectations and satisfaction are highly subjective, not measurable through indicators, in contrast to manufacturing processes. The concept of co-creation should be related to the management of services, integrating the customer as input into the process and a degree of satisfaction. Therefore, process mapping must be in correlation of customer expectations and service perceptions (Arfmann, Topolansky Barbe, 2014; Lo Sasso et al., 2015; Spagnol, Min, Newbold, 2013).

Small companies providing specialist services in many cases are obliged to use external service providers, this is the case for dental technology services - dentist is the primary service provider and

the dental technician is subcontractor. The flow of values (information and material) between patient – dentist – dental technician is a key element of the efficient functioning of such an enterprise.

Value Stream Mapping is capable of systematically visualizing, analyzing and optimizing multistage manufacturing processes also from the quality assurance point of view (Haefner et al., 2014). The short-cyclic improvement routines ensure continuous improvement of the processes, towards intermediate target conditions by the determination and attainment of the intentional state (ideal-state) (Kuhlang et al., 2013). The number of elements that interact during the flow of values have been involved on each stage of the current and future state mapping (Figure 3).

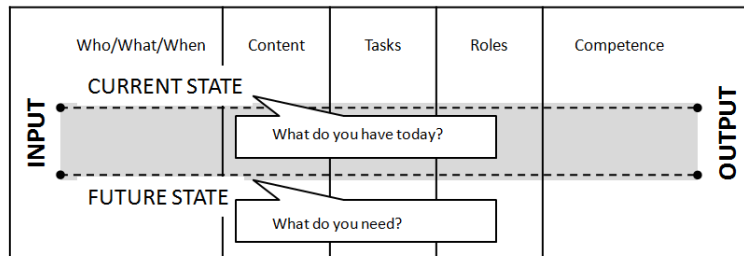


Figure 3. Elicitation of information based on flow template

Source: Based on Ali, Petersen, Schneider 2016

It is very difficult to assess the quality of dental work, which is due to the difficulty of managing them and the individual approach of the patients (Klimecka-Tatar 2016). In the evaluation of quality (added value), various factors may be difficult to predict (Mubeen et al., 2017). On the flow of information and requirements creating may affect not only the individual needs of the patient, but also demographic, therapeutic, medical needs as well as attitude (Doméjean-Orliaguet et al., 2009; Resta et al., 2015; Zhao, Zhang, Wu, 2017). Based on the data obtained during the observation of the prosthetic service process and in accordance to the conceptual research framework (Table 1), the visualization of information and materials flow map has been analyzed.

Table 1. The conceptual research framework of creating Lean Service model for prosthetic service delivery

Unit for analysis	Identification of product – service systems operation	Lean service action
Structural process and technology	Determination of the tendency to use a range of technologies during operations to achieve production efficiency and the effectiveness of service provision	Use of information technologies in order to reduce the necessary actions, which have no added value
Capacity	Determining demand among customers defining the activity with different levels of demand	The use of clustering techniques for standardization of products/service family in order to compensate services providing (heijunka)
Facilities	Focus on product and service testing, as well as on maintenance areas	Service facilities should be distributed and located optimally with the needs of the customer.
Planning and control	Tend to focus on the optimization of product availability	Lean service is proactive and seeks to reduce waste and focus on customers rather than correcting failures
Quality control	Tend to use product assurance methods combined with customer satisfaction assessments.	Tend to emphasize the prevention of failure demand in service.
Product/service range	Tend to have limited range combined with “bundles” of supporting services	Services standardization in case of frequently repeatable demand in order to reduce costs while maintaining customer expectation.
New product/service introduction	Tend to complement services co-created with the customer	Service engineers and managers work together with customers when developing new services
Performance measurement	Tend to use product availability, response time and customer satisfaction	Lean service providers tend to take a systems perspective, where services are more dynamic and hence require feedback - in positive and negative sense.
Supplier relations	Tend to integrate internal and external supply chains into the delivery process to achieve cost effective flexibility in supply.	Tend to maintain a strong focus on supplier relations in order to achieve effective information flow.

Source: Own study

In this study the flow of information outlining the requirements and the process value on the basis of the service in a patient (client) - dentist (service provider) - dental technician (subcontractor) system has been characterized.

3. Results and Discussion - Comparative Analysis in Terms of Information Flow and its Impact on Service Delivery

The analysis of the dentists' service process requires a means of integrating different outputs into a common metric. It is consistent with the idea that, at least in this context, dental practice expansion in response to higher demand would result in an at least a proportionate increase in output, independent of how this is measured (Gutacker et al., 2015). However, the development and improvement of prosthetic services can be obtained through strategic co-operation with other participants in the process. For the service provider (dentist) it is obvious to recognize all the needs of the patient (unless they are beyond medical and anatomic conditions). As is evident from the data presented in previous work (Klimecka-Tatar, 2016), this is a particular type of service where each participant in the process has different knowledge. The patient has knowledge of the quality requirements but without knowledge of precise technical parameters or medical treatment, the dentist has medical knowledge, and the dental technician – technical and material knowledge. As can be seen from the logic flow map (Figure 4) of the prosthetic service implementation process, unfortunately there is no communication between the patient and the dental technician. Consequently, the dentist is a fully decision-making unit.

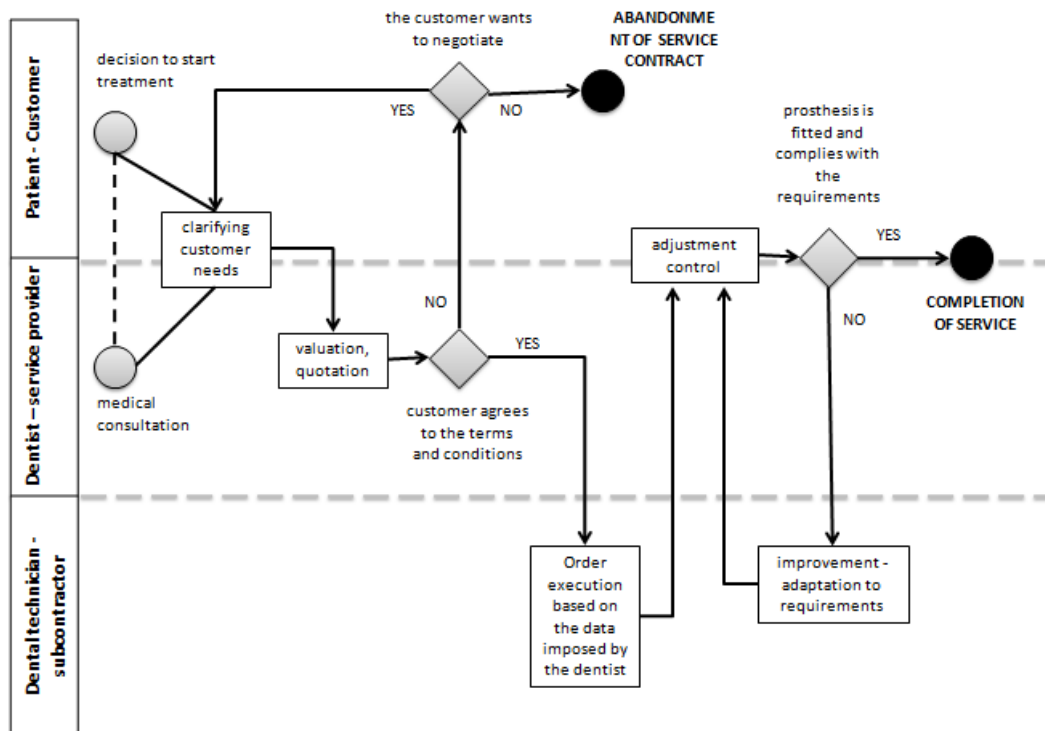


Figure 4. The current state map – logic map (CSM) of service system combined of medical consultation and dental prosthesis

Source: Own study

The dentist practice which providing services with dental technical participation should use this type of model to: identify and prioritize actions, define and delegate responsibility for processes, perform internal benchmarking organization, customize and update the similar processes carried out in the organization, determine the structure of measuring performance, understand relationships and interconnection - between processes, consolidate content and knowledge in organization's cells. The dentist practice as a learning networks should use the visual management tools for define tasks, activities, roles, by illustrating ideas that can be applied for better service interfaces, practices and outcomes (Carvalho, Goodyear, 2017).

In Figure 4 the current state map (CSM) and in Figure 5 the future state map (FSM) of service system combined of medical consultation and dental prosthesis have been presented. The maps represent a system in small dental laboratories (small enterprises in the field of medical/prosthetic services).

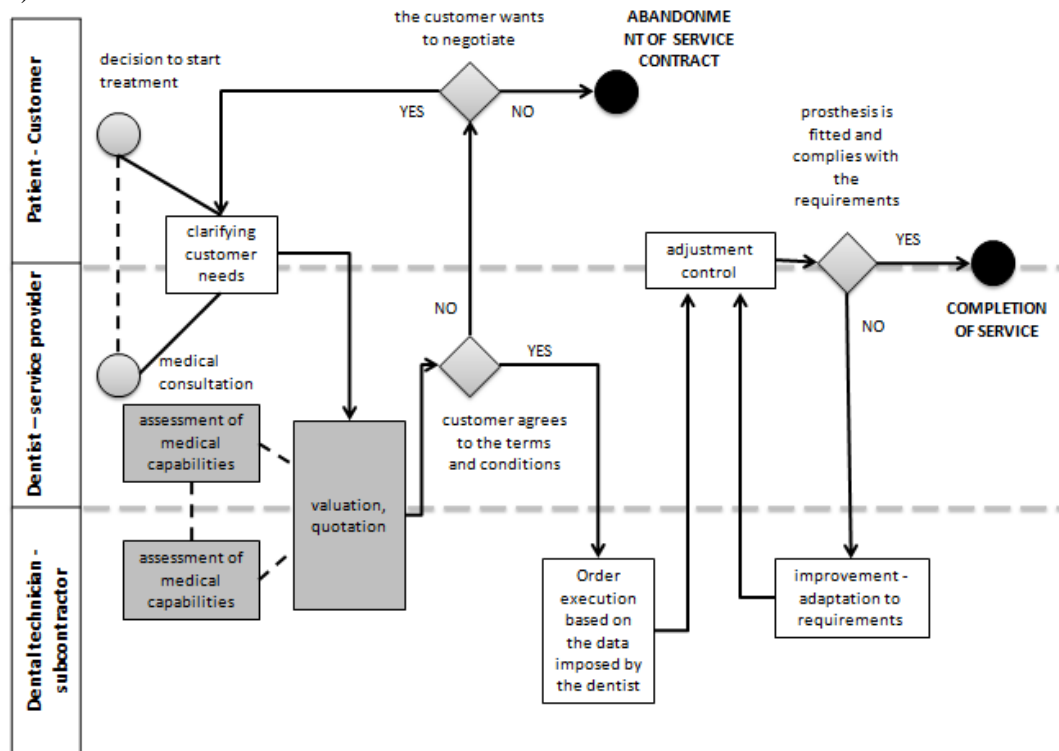


Figure 5. The future state map – logic map (FSM) of service system combined of medical consultation and dental prosthesis

Source: Own study

Based on the in-depth analysis of the data visualized on the current state map, it has been observed that the use of advanced technologies in SMEs is avoided during the service process due to the possible negative effects of their use. People managing the service process do not strive to shorten the time of implementation, while maintaining reliability through a high level of service (lack of customer focus). They do not have full knowledge of the service (e.g. the dentist has no full knowledge of the technical properties of the materials) and understanding of creating value for the client/patient. There is no tendency to maintain a quality control system, which guarantees the high quality of service. They are unable to provide implementation with various support services, which may limit variability. The customer and key subcontractor have no impact on the development of new products and services.

The Service Value Stream Management (SVSM), with mapping tools, gives the ability to detect critical features of service providing and improve its performance. The SVSM has been specially adapted to the conditions of services, where the lack of visibility of the process and property makes the concept of value streams and waste (*muda*) disposal elimination less tangible. During the creation the logic map – future state map of service flow is necessary to follow the rules: start thinking Lean, learn about Lean, create the plan of VSM - choose the value stream to be improved (i.e. a frequently requested service), create the current state map CSM, identify places for improvement - set the target for the improvement, create the future state map FSM - focus on requirements, demands and flows, make a comparative analysis – FSM vs. CSM, prepare implementation plan. In the current state map (CSM) of service system combined of medical consultation and dental prosthesis, it has been noticed that there are two critical points in the service implementation. The critical points of service appear as a typical cyclic loop of process flow and result in a loss of time and materials. Therefore, the flow of information indicate two regions to improve (compare the FSM vs. CSM, Figure 4 and Figure 5).

The first critical point: determination of the patient's requirements and the valuation/quotation of the service based on the medical and technical data as well as the knowledge of the dentist and technician. The second critical point when the product is adjusted to customer requirements.

Dentist as a manager of this kind of service should promote innovation by improving management systems and external relations in order to facilitate knowledge-sharing and the conversion of individual knowledge into service participants' knowledge, also there is the proposition for implications of practice setting for dentists, dental technical and patients. Therefore, the short-cyclic improvement routine is integrated into the organizational framework of service management in order to improve of value streams in different levels of service action.

4. Conclusion

In the planning and implementation of services, the use of Lean philosophy is very beneficial. It contributes to increasing organizational competitiveness and customer satisfaction, as well as reduction of material and time losses. The carried out analysis of current and future logic map has shown that the introduction of Lean principles in any service activity must begin with a deep understanding of the inherent aspects of services and strict knowledge of customer value. From this point of view, this article is an attempt to achieve the Lean Service model adapted to specialist services in which participants with different levels of knowledge participate (patient-dentist-technician). Creating access to the relevant information flow between the service model forming units it is possible to significantly reduce the complications during service implementation. This is particularly important in the case of specialist services in the medical and prosthetic industry, and it is possible to implement even in small and medium-sized enterprises. Based on the in-depth analysis of the data visualized on the current state map has been stated that the people managing the service process do not strive to shorten the time of implementation, while maintaining reliability through a high level of service. The development and improvement of prosthetic services can be obtained through strategic co-operation with other participants in the process. For the service provider (dentist) it is obvious to recognize all the needs of the patient. Therefore, there is a need to create information flow between the patient and the dental technician by implementing standardized communication systems between all participants in the process.

References

- Ali, N.B., Petersen, K., de França, B.B.N. (2015). Evaluation of simulation-assisted value stream mapping for software product development: Two industrial cases. *Information and Software Technology*, vol. 68, pp. 45-61.
- Ali, N.B., Petersen, K., Schneider, K. (2016). FLOW-assisted value stream mapping in the early phases of large-scale software development. *Journal of Systems and Software*, vol. 111, pp. 213-227.
- Andrés-López, E., González-Requena, I., Sanz-Lobera, A. (2015). Lean Service. Reassessment of Lean Manufacturing for Service Activities. *Procedia Engineering*, vol. 132, pp. 23-30.
- Arfmann, D., Topolansky Barbe, F.G. (2014). *The Value of Lean in the Service Sector: A Critique of Theory & Practice*, USA: Center for Promoting Ideas.
- Bevilacqua, M., Ciarapica, F. E., Mazzuto, G., Paciarotti, C. (2013). Visual Management implementation and evaluation through mental workload analysis. *IFAC Proceedings Volumes*, vol. 46, iss. 7, pp. 294-299.
- Byun, J.E., Park, H.W., Hong, J.P. (2017). An international comparison of competitiveness in knowledge services. *Technological Forecasting and Social Change*, vol. 114, pp. 203-213.
- Carvalho, L., Goodyear, P. (2017). Design, learning networks and service innovation. *Design Studies*, [online]. Available <https://www.sciencedirect.com/science/article/pii/S0142694X17300649>. [2017, November 11].
- Della Bona, A., Wozniak, W.T., Watts, D.C. (2011). International dental standards – Order out of chaos? *Dental Materials* vol. 27, pp. 619-621.
- Demejean-Orliquet, S., Leger Gerbaut, L., Tubert-Jeannin, S. (2009). Caries management decision: Influence of dentist and patient factors in the provision of dental service, *Journal of Dentistry*, vol. 37, pp. 827-834.
- Doméjean-Orliquet, S., Léger, S., Auclair, C., Gerbaud, L., Tubert-Jeannin, S. (2009). Caries management decision. Influence of dentist and patient factors in the provision of dental services. *Journal of Dentistry*, vol. 37, iss. 11, pp. 827-834.
- Edtmayr, T., Sunk, A., Sihm, W. (2016). An Approach to Integrate Parameters and Indicators of Sustainability Management into Value Stream Mapping. *Procedia CIRP*, vol. 41, pp. 289-294.

- Fidlerova, H., Prachar, J., Sakal, P. (2014). Application of Material Requirements Planning as Method for Enhancement of Production Logistics in Industrial Company. In K. Velisek, P. Kostal, M. Nad, (Eds.), *Novel trends in production devices and systems*, Book Series: Applied Mechanics and Materials, vol. 474, pp. 49-54.
- Gagnon, M.P., Payne-Gagnon, J., Fortin, J.P., Paré, G., Côté, J., Courcy, F. (2015) A learning organization in the service of knowledge management among nurses. A case study. *International Journal of Information Management*, vol. 35, iss. 5, pp. 636-642.
- Gutacker, N., Harris, A., Brennan, D., Hollingsworth, B. (2015). The determinants of dentists' productivity and the measurement of output. *Social Science & Medicine*, vol. 124, pp. 76-84.
- Haefner, B., Kraemer, A., Stauss, T., Lanza, G. (2014). Quality Value Stream Mapping. *Procedia CIRP*, vol. 17, pp. 254-259.
- Harvey, J. (2015). *Complex service delivery*. Milwaukee, Wisconsin, USA: ASQ Quality Press.
- Khurum, M., Petersen, K., Gorschek, T. (2014). Extending value stream mapping through waste definition beyond customer perspective. *Journal of Software: Evolution and Process*, vol. 26, iss. 12, pp. 1074-1105.
- Kianto, A., Sáenz, J., Aramburu, N. (2017). Knowledge-based human resource management practices, intellectual capital and innovation. *Journal of Business Research*, vol. 81, pp. 11-20.
- Klimecka-Tatar, D. (2016). Flow of technical information in the production process of prosthetic restorations. *Technical Transactions. Mechanics*, iss. 3-M (10), pp. 87-92.
- Klimecka-Tatar, D., Pawlowska, G., Orlicki, R., Zaikov, G.E. (2013). Effect of cobalt content on the corrosion resistance in acid, alkaline and ringer solution of Fe-Co-Zr-Mo-W-B metallic glasses, In A. Damore, A.K. Haghi, G.E. Zaikov (Eds.), *Bioscience methodologies in physical chemistry: an engineering and molecular approach*, (pp. 195-204). Apple Academic Press, Oakville/New York 2013.
- Kuhlang, P., Hempen, S., Edtmayr, T., Deuse, J., Sihn, W. (2013). Systematic and Continuous Improvement of Value Streams. *IFAC Proceedings Volumes*, vol. 46, iss. 9, pp. 993-997.
- Lavie, D., Drori, I. (2012). Collaborating for knowledge creation and application: The case of nanotechnology research programs. *Organization Science*, vol. 23, iss. 3, pp. 704-724.
- Littlejohn, L., Campbell, J., Collins-McNeil, J. (2012). Comparative analysis of nursing shortage. *International Journal of Nursing*, vol. 1, iss. 1, pp. 22-27.
- Lo Sasso, A.T., Starkel, R.L., Warren, M.N., Guay, A.H., Vujicic, M. (2015). Practice settings and dentists' job satisfaction. *Journal of the American Dental Association* (1939), vol. 146, iss. 8, pp. 600-609.
- Morlock, F., Meier, H. (2015). Service Value Stream Mapping in Industrial Product-Service System Performance Management. *Procedia CIRP*, vol. 30, pp. 457-461.
- Mubeen, S., Patel, K., Cunningham, Z., O'Rourke, N., Pandis, N., Cobourne, M.T., Seehra, J. (2017) Assessing the quality of dental clinical practice guidelines. *Journal of dentistry*, vol. 67, pp. 102-106.
- Pustejovska, P., Brozova, S., Ingaldi, M. (2014). The crucial logistics units in metallurgical production. *Proceedings of Carpathian Logistics Congress - CLC 2013*, pp. 572-576. Cracow: TANGER 2014.
- Radomska, K., Klimecka-Tatar, D., Pawlowska, G. (2016). Tribological properties and corrosion resistance of biomedical Co-Cr-W-Mo-Ga casting alloys with the addition of its re-melted scrap. *Journal of The Balkan Tribological Association*, vol. 22 iss. 2, pp. 1433-1440.
- Resta, B., Powell, D., Gaiardelli, P., Dotti, S. (2015). Towards a framework for lean operations in product-oriented product service systems. *CIRP Journal of Manufacturing Science and Technology*, vol. 9, pp. 12-22.
- Romero, L.F., Arce, A. (2017). Applying Value Stream Mapping in Manufacturing. A Systematic Literature Review. *IFAC-PapersOnLine*, vol. 50, iss 1, pp. 1075-1086.
- Spagnol, G.S., Min, L.L., Newbold, D. (2013). Lean principles in Healthcare. An overview of challenges and improvements. *IFAC Proceedings Volumes*, vol. 46, iss. 24, pp. 229-234.
- Tyagi, S., Choudhary, A., Cai, X., Yang, K. (2015). Value stream mapping to reduce the lead-time of a product development process. *International Journal of Production Economics*, vol. 160, pp. 202-212.
- Ulewicz, R., Jelonek, D., Mazur, M. (2016). Implementation of logic flow in planning and production control. *Management and production engineering review*, vol. 7, iss. 1, 2016, pp. 89-94.
- Werner, D., Cruz, Ch. (2013). Precision Difference Management using a Common Sub-vector to Extend the Extended VSM Method. *Procedia Computer Science*, vol. 18, pp. 1179-1188.
- Zhao, L., Zhang, H., Wu, W. (2017) Knowledge service decision making in business incubators based on the supernet work model. *Physica A: Statistical Mechanics and its Applications*, vol. 479, pp. 249-264.

Dorota Klimecka-Tatar^{1*}
Czestochowa University of Technology
Poland
Kamila Kowalik²
Czestochowa University of Technology
Poland
Silvie Brožová³
VŠB – Technical University of Ostrava
Czechia

29. SERVICE QUALITY MODEL BASED ON THE 4Q'S MODEL AND THE SYSTEM APPROACH TO SERVICE QUALITY MANAGEMENT

Abstract: In this paper the two propose of a model of the service quality based on the 4Q's model and a management system approach to quality have been presented. The first part of the article contains the theoretical framework of the service quality: the 4Q's model and its origin and the use of the system approach to defining research concept. Also the role of the first impression and customer service as the determinants of the service quality has been underlined. A review of quality management methods, service quality evaluation methods, as well as the results of the analysis have justified the need to loop the quality model due to the important connection between the perceived quality and experience and perception as the factors building the expected quality. The result of the research in the form of anonymous survey about the validity of the specified service quality's determinants became the basis for creating the service quality. In the work the modified service quality model have been presented. The service quality model is specified by elements: perception, experience, expected quality, first impression quality, input quality, process quality, output quality, perceived quality, customer service.

Keywords: service management, service quality, service quality model, system approach to quality.

JEL Classification: O21, O14, L84, O15

1. Introduction

In recent years dynamic development of the service sector has been observed. It has caused gradual intensification of competition which contributed to the use of new competitive fighting tools. Nowadays, the principle of the service enterprises functioning is providing high quality of services. The service quality is a comprehensive and complex issue as a result of theoretical consideration of quality adapted to the service process specification. In literature there is still lack of one universal description of this term because of its multidimensionality (Gulc, 2017; Klementova, Zavadsky, Zavadska, 2015; Nowacki, Szopiński, Bachnik, 2017). The most common characteristics are based on the origin and grouped into five sets. The first is product-based objective approach which determines service quality as an amount of an attribute possessed by the service.

1.1. Quality of Service in the Process, System and Customer Approach

According to the process-approach the service quality depends on its compliance with the standard. The opposite of this perspective is the demand-approach- the most popular because of its customer orientation (Kasiri et al., 2017). It defines the service quality as the fulfillment of customers' needs and expectations that are continually observed. The philosophical definition is also worth mentioning. In pursuance of it the service quality is the manifestation of perfection of the service delivery. The last one is value-based definition that analyzes the benefits of the service and the costs of acquiring it (Chu, Hsu, 2017; Blut, 2016; Fragoso, Espinoza, 2017; Li, Li, 2018; Lovelock, Wirtz, 2007, p. 418; Zemblytė, 2015). All theoretical considerations (despite the acceptance of different quality determinants) emphasize the role of quality in services and the necessity of its improvement.

¹ Ing. Dorota Klimecka-Tatar Ph.D.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, dorota.klimecka-tatar@wz.pcz.pl

² MSc. Kamila Kowalik; Dąbrowskiego 69, 42-201 Częstochowa, Poland, kamilakowalik93@gmail.com

³ Doc. Ing. Silvie Brožová, Ph.D.; 17. listopadu 15, Ostrava – Poruba, Czechia, silvie.brozova@vsb.cz

* Corresponding author

Service quality management requires the choice of an approach to defining service quality. The lack of one unambiguous definition of this term caused elaboration of many different service quality models over the years. Each one of them has created based on the chosen meaning of the service quality which the most often was general concept of quality and quality of the industrial product. The dynamic development of the service sector and unlimited possibilities of understanding the role of quality in services contributes to interest in the service quality issues (Lee, Cheng, 2018; Ganesh, Haslinda, 2014; White, Nallur, Clarke, 2017; Ulewicz, 2014).

For several years, companies have been putting an emphasis on the principle of customer orientation. This is particularly important in service sector where the competition is large and the company success depends mainly on the customers' satisfaction. This perspective includes three dimensions of service quality such as technical, functional and corporate image (Ganesh, Haslinda, 2014; Kang, James, 2004). Grönroos service quality model is shown in Figure 1.

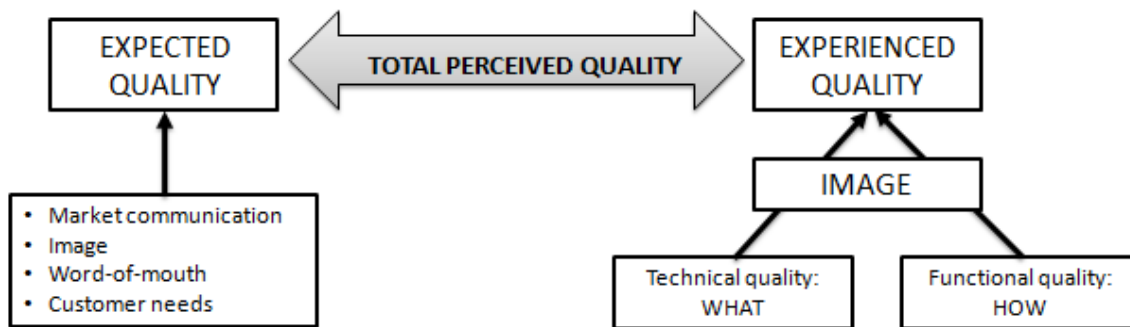


Figure 1. Grönroos service quality model

Source: Based on Ganesh, Haslinda, 2014

According to model presented in figure 1, total perceived quality is the customers comparison between the perceived quality and the expectations. Perceived quality comes from two sources (Ramezani Ghotbabadi, Feiz, Baharun, 2015). First of them is technical quality which is the result of the service process and answers the question: what was done (Ganesh, Haslinda, 2014). The outcome of the service can be measured in an objective manner. Technical quality is focused primarily on technical equipment and solutions and employees' knowledge, experience, and abilities (Seth, Desmugh, Vrat, 2005). The functional dimension, also called process-related, refers to ways of receiving the service by the customers (KursunluogluYarimoglu, 2014). There are seven main factors defining it such as: internal relationship, contact with the customer and employees' behaviour, attitude, accessibility, and appearance (Ganesh, Haslinda, 2014). It might minimize the impact of negative factors lowering the level of technical and functional quality. An important part of this model is also customers' expectations that are dependent mainly on their needs, marketing and external factors. The quality is defined as satisfactory when the customer experiences meet their expectations.

1.2. Quality Model

The integrated service quality model instead of the types of quality related to the service result, distinguished the sources of the service quality (design quality, production quality, delivery quality and relational quality) (Gummesson, 1993, p.218). Design quality refers to the project of the service which is the first phase of quality formation. An important attribute characterizing design quality is the consideration of the customer requirements. These types of quality are dependent of service performance and project compliance. Relational quality is defined by how the customer receives the service while it is being served (Çifci et al., 2016; Evenson, 2010, p. 22; Ingaldi, 2016; Oliveira, Silveira, Luce, 2015; Tasci, 2016).

The combination of both approaches to quality determinants have led to the development of the 4Q's service quality model that is presented in Figure 2. This model is called as the integrated one because it appreciates the importance not only of customer expectations and needs but also of particular goods and service partial qualities – as fragments of total service quality (Bergman, Klefsjo, 1994, p. 284).

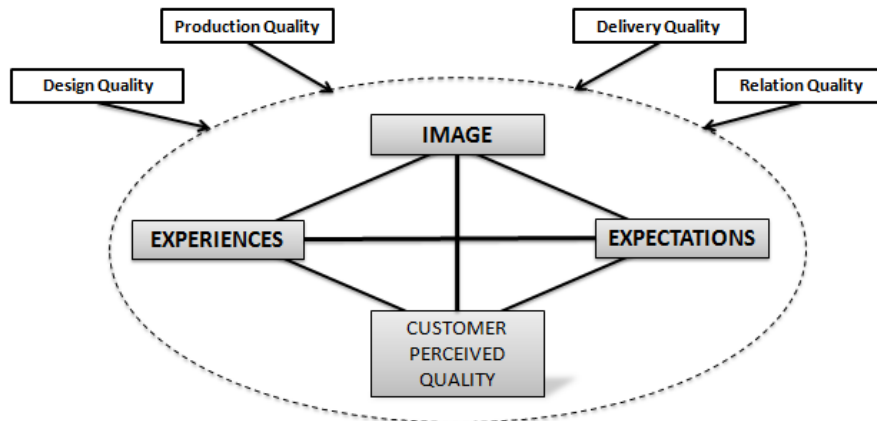


Figure 2.The 4Q's service quality model

Source: Based on Bergman, Klefsjo, 1994

The system approach, often applied in manufacturing enterprises, can also be used in services. The basis of defining service quality in the system approach is treating service process as a system. This approach distinguishes three elements of the system quality: input quality, process quality and service quality (Johnson, Tsiros, Lancioni, 1994; Kao, Lin, 2016; Klimecka-Tatar, 2017; Meidutė-Kavaliauskienė, Aranskis, Litvinenko, 2014). Input quality is dependent on technical and organizational conditions such as the equipment and knowledge, and skills of employees. Process quality is determined by the interaction between the customer and the service company. It is largely shaped by the staff and its attitude to customer (Jain, Aggarval, 2015). Also worth mentioning is the meaning of organizational culture and the role of management.

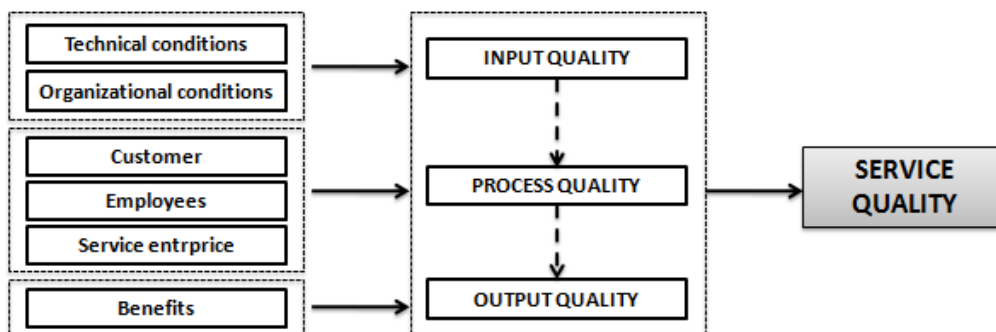


Figure 3.The system approach to service quality

Source: Based on Meidutė-Kavaliauskienė, Aranskis and Litvinenko, 2014

Output quality refers to the result of the service and its tangible and intangible benefits to the customer (Cheng, Choi, Wong, 2016). The presented system approach to service quality is shown in Figure 3.

2. Research Methodology

The input quality, process quality and output quality is related to the system approach to service quality defining the service as a system. The comparison between expected and perceived quality comes from the 4Q's model. In reference to the quoted literature and the approach to perceiving quality of service, the following determinants of the service quality have been specified: perception, experience, expected quality, first impression quality, input quality, process quality, output quality, perceived quality, customer service (Evans et al, 2000).

It has to be noticed that the positive first impression is also the best starting point for evaluating the perceived service quality because that constitutes the filter of customers' opinion on the following stages of the service process (Cheng, Choi, Wong, 2016; Evenson, 2010; Högnäs, 2015, p.17; Jain, Aggarval, 2015). The customer service has been specified as a valid factor that is present in every stage of the service process, starting with the first impression until output quality. The importance of the

customer service in creating the first impression has already been clarified. However, it is worth pointing out its role in the system approach to service quality. The main goal of the paper is to divide the place of the first impression in the service quality model. To confirm the validity of the presented approach to defining the service quality and its dimension and determinants, a survey has been conducted. A sheet of anonymous survey contained five statements for which the respondents assigned ratings indicating their compliance or noncompliance. The research has been conducted in the third quarter of 2017, on a group of 100 people (using specialist services - medical, cosmetics, etc.) - the research has the pilot nature, and their main goal is to indicate the determinants and quality model in relation to 4Q's.

For evaluation purpose, the typical Likert scale- five point scale there has been used. The note 1 means, "strongly disagree" and 5 means "strongly agree" (Sullivan, Artino, 2013). In the survey participated people of different genders and ages, including 50% males and 50% females. The structure of the survey respondents is shown in table 1.

Table 1. The characteristics of respondents - percentage structure of respondents' features

Age	Males (%)	Females (%)	Total(%)
18-24	14	22	36
25-39	17	14	31
40-59	17	8	25
60<	2	6	8
			100

Source: Own study

3. Results and Discussion

In Tables 2-6 the results of the questionnaire answers have been presented. The first statement of the questionnaire is: The first impression after entering the service company causes the creation of my opinion about the quality of the services (Table 2). According to the data presented in table 2, more than half of the respondents (63%) appreciate the role of the first impression in creating opinion of the services. As many as 34% respondents strongly agree with this sentence. A significant group of these respondents (74%) are people up to 40 years old. Such a high result is a confirmation of the important role of the first impression which social psychology draws attention to. It is worth noticing that 31% of them do not have any opinion. It may be caused by the lack of the awareness of the impact of this phenomenon or the caution in assessing. The difference between female (76%) and male (50%) percentage result expressing agreement with this sentence. Only 14% of the respondents do not agree with the above statement.

The second statement of the questionnaire is: The customer service and staff attitude is often more important for me than the technical conditions and quality of the equipment. Despite of the fact that not all service companies have high quality equipment, many of them function and have satisfied customers. The results are presented in table 3. The data shows that the large part of the respondents (41%) agree with this statement. Also in this case the advantage of females positive opinions can be seen. This time, most agreeing respondents (71%) are older than 40 years old. This data is also characterized by high number (37%) of neutral answers. Every fifth respondent objects opposed to the truthfulness of this expression.

The last three questions have been related to the perceived service quality. First of them concerns the impact of perceived service quality on expectation for the next service (Table 4). The data presented in table 4 indicates a high impact of the perceived quality of the previous service on the expectations that the customers have for the next service. About 58% of the respondents, including 72% of females and 44% of males, notice the meaning of the perceived service in shaping expectation in the future. A quarter of the respondents answered neutral response. Only 17% of them disagree with the presence of the perceived service quality influence on the further expectations.

In table 5 have been presented the opinion of respondents for statement: The perceived service quality becomes my experience which builds my expectations. Including this statement in the survey has been dictated by the need to verify the validity of the left-sided looping of the model. According to the data in table 5, it should be noticed that there is no doubt that the respondents treat previous

perceived service quality as a experience and the basis of determining their expectations.About 93% of them (96% females and 90% males) agree with these statements, including 59% respondents which gave rather highest degree. It is worth seeing that less than 10% do not have any opinion and no one disagrees.

Table 2. The percentage structure of respondents’ opinion to statement of the questionnaire:The first impression’s influence on the customers’ opinion of the service quality

Response	Males%	Females%	Total %
Stronly Disagree	3	2	5
Disagree	6	3	9
Neutral	16	7	23
Agree	12	17	29
Strongly Agree	13	21	34
			100

Source: Own study

Table 4. The percentage structure of respondents’ opinion to statement of the questionnaire: Whether perceived service quality affects the expectation for the next service

Response	Males %	Females %	Total %
Stronly Disagree	1	0	1
Disagree	9	7	16
Neutral	18	7	25
Agree	13	28	41
Strongly Agree	9	8	17
			100

Source: Own study

Table 6. The percentage structure of respondents’ opinion to statement of the questionnaire:The perceived service quality’s impact on the perception of the following service

Response	Males %	Females %	Total %
Stronly Disagree	4	2	6
Disagree	7	4	11
Neutral	17	10	27
Agree	8	16	24
Strongly Agree	14	18	32
			100

Source: Own study

Last but not least statement of the questionnaire is: Perceived service quality has an impact on the perception of another service company before taking advantage of offered services. In Table 6 the respondents’ opinion has been shown. More than 50% of the respondents, including 68% females and 44% males, agree or strongly agree with this statement. It means that the respondents, being also the customers, see the meaning of the perceived quality in perception of another service. It should also be noticed that 27% of the respondents neutrally evaluated this expression and 17% of them disagree with it.

Table 3. The percentage structure of respondents’ opinion to statement of the questionnaire:Whether the customer service is more important that technical conditions

Response	Males%	Females%	Total %
Stronly Disagree	8	3	11
Disagree	7	4	11
Neutral	18	19	37
Agree	13	16	29
Strongly Agree	4	8	12
			100

Source: Own study

Table 5. The percentage structure of respondents’ opinion to statement of the questionnaire: The experience as a consequence of perceived service quality

Response	Males %	Females %	Total %
Stronly Disagree	0	0	0
Disagree	0	0	0
Neutral	5	2	7
Agree	14	20	34
Strongly Agree	31	28	59
			100

Source: Own study

The presented in table 2-6 results and review of the literature give the ability to create the empirical service quality model. This proposition contains a model that is partly based on the 4Q's model which comprehends customer perceived service quality as a comparison of expectations and experience formulated on the basis of the corporate image, simultaneously appreciating quality sources. The second part of the model is the system approach which understands the service as a system that has input, process flow and output. The modified service quality model is presented in Figure 4.

The quality expected by customer is formed based on the perception and experience. The perception should be understood as the image of the service company and the image of its services quality determined by the customer through the previous perceived service quality.

The experience comes from earlier services for which the customer already decided. The subjective assessment of perceived quality becomes, according to the survey results, the experience and the important determinant shaping expectations for the next service.

The definite expected quality is afterward verified during the service process delivering. The research has shown, that first impression has huge impact on creating the first opinion on the service company and consequently, on quality of the services. Then, the model contains the system approach to service quality, presenting the service process flow. It starts with input quality which is related to the technical (interior design, equipment) and organizational (cleanliness, working environment, management, treatment of the customer) conditions.

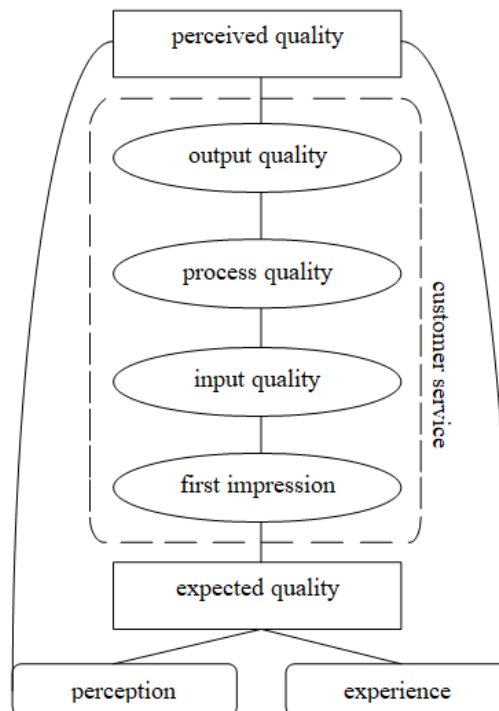


Figure 4. Proposition of the service quality model

Source: Own study

Equally important link is the process quality referring to the core of the service (service providing). During the service process flow everything matters. It means that the process itself, striving to provide benefits to the customer, is as valuable as all other impulses received by the customer such as: the atmosphere, employees' attitude, behavior, care, and empathy.

The last element of the system approach is output quality which cannot be ignored. The customer decides to use the services of the particular company because expects certain benefits. The benefits of the service are tangible and intangible and their quality is evaluated by the customer. Each of the last four presented determinants of the service quality is surrounded by the customer service as the most important factor of service quality. The expected quality, verified by the four presented dimensions, changes into customer perceived quality being understood as a customer subjective assessment of

particular specified determinants. The perceived quality of the previous service becomes ultimately customer experience and the basis for perception of the next service which loops the presented model.

4. Conclusion

Due to the dynamic development of the service sector which will undoubtedly continue, the issues related to all aspects of service quality should be researched, developed, and improved. Quality of services has been defined in many different ways and new approaches may appear in the future. Based on the 4Q's model and the system approach to the service quality the modified service quality model has been elaborated. First of all, the model contains the meaning of the first impression as a factor determining customers opinion on the quality of the further service process stages. Then the role of the customer service in the service process providing has been emphasized. Finally, there is the loop in the model formed on the perceived quality as the basis for perception and experience that specify customers expectations. The service quality model, proposed by the authors is the introduction to further research on the quality of service assessment in relation to perception and the first impression of customers. A benefit in proposed type of model is the fact that customer perception of quality is based on four components – take into account both the system approach and expectations. Unfortunately, in accordance to the model, it is a big disadvantage to strengthen the first impression, which in the case of not meeting the requirements may intensify the negative feelings and reduce the quality of the service in the time perspective. Therefore, the application of such a service quality management model should be addressed to enterprises that want to acquire new customers but already have a strong service base.

References

- Bergman, B., Klefsjo, B. (1994). *Quality: from Customer Needs to Customer Satisfaction*. London: McGraw-Hill Inc.
- Blut, M. (2016). E-Service Quality. Development of a Hierarchical Model. *Journal of Retailing*, vol. 92, iss. 4, p. 500-517.
- Cheng, L.M., PingChoiChoi, W., Yiu Ming Wong, A. (2016). A novel client service quality measuring model and an eHealthcare mitigating approach. *International Journal of Medical Informatics*, vol. 91, pp.16-31.
- Chu, B., Hsu, Y. (2017). Non-audit services and audit quality - the effect of Sarbanes-Oxley Act, *Asia Pacific Management Review*. In press. [online]. Available: https://ac.els-cdn.com/S1029313216301282/1-s2.0-S1029313216301282-main.pdf?_tid=2a31e314-1099-11e8-9dda-00000aab0f27&acdnat=1518511246_b4c940cb47ef23cfd2aafc757762c5f [2018, January 30].
- Çifci, S., Ekinci, Y., Whyatt, G., Japutra, A., Molinillo, S., Siala, H. (2016). A cross validation of Consumer-Based Brand Equity models. Driving customer equity in retail brands. *Journal of Business Research*, vol. 69, iss. 9, pp. 3740–3747.
- Evans, R., Kleine, R., Landry, T., Crosby, L. (2000). How First Impressions of a Customer Impact Effectiveness in an Initial Sales Encounter. *Journal of the Academy of Marketing Science*, vol. 28, iss. 4, pp. 512-526.
- Evenson, R. (2010). *Customer Service Training 101: Quick and Easy Techniques That Get Results*, Second Edition. New York: AMACOM Books.
- Ganesh, R., Haslinda, A. (2014). Evolution and Conceptual Development of Service Quality in Service Marketing and Customer Satisfaction. *International Review of Management and Business Research*, vol. 3, iss. 2, pp. 1189-1197.
- Gulc, A. (2017). Models and Methods of Measuring the Quality of Logistic Service. *Procedia Engineering*, vol. 182, pp. 255-264.
- Gummesson, E. (1993). *Quality Management in Service Organizations*. New York: ISQA.
- Högnäs, S. (2015). The Importance of the First Impression in Hotel Customer Service. *Vaasa, Vaasa University of Applied Sciences*, p. 17. [online]. Available: https://www.theseus.fi/bitstream/handle/10024/96496/Sandra_Hognas.pdf?sequence=1 [2018, January 30].
- Ingaldi, M. (2016). Use of the Servperf Method to Evaluate Service Quality in the Transport Company. *Independent Journal of Management & Production*, vol. 7, iss. 1, pp. 168-177.
- Jain, P., Aggarwal, V. (2015). Service quality models: a review. *BVIMSR's Journal of Management Research*, vol. 7, iss. 2, pp. 125-136.
- Johnson, R.L., Tsiros, M., Lancioni, R.A. (1995). Measuring service quality: a system approach. *Journal of Services Marketing*, vol. 9, iss. 5, pp. 6-19.
- Kang, G., James, J. (2004). Service quality dimensions: an examination of Grönross's service quality model. *Managing Service Quality*, vol. 14, iss. 4, pp. 266-277.

- Kao, Ta-Wei, Lin, W.T. (2016). The relationship between perceived e-service quality and brand equity. A simultaneous equations system approach. *Computers in Human Behavior*, vol. 57, pp. 208-218.
- Kasiri, L.A., Guan Cheng, K.T., Sambasivan, M., Sidin, S.Md. (2017). Integration of standardization and customization. Impact on service quality, customer satisfaction, and loyalty. *Journal of Retailing and Consumer Services*, vol. 35, pp. 91–97.
- Klementova, J., Zavadsky, J., Zavadska, Z. (2015). The Measurement and Evaluation of the Service Quality through Customers' Satisfaction. *Procedia Economics and Finance*, vol. 26, pp. 126-130.
- Klimecka-Tatar, D. (2017). Process Management and Leveling of Service Quality in a Global Dental Product Management System, *Globalization and its Socio-Economic Consequences 2017 (red.) KLIESTIK Tomas*, pp. 961-967. Zilina: University of Zilina.
- Kursunluoglu Yarimoglu, E. (2014). A Review on Dimensions of Service Quality Models. *Journal of Marketing Management*, vol. 2, iss.2, pp.79-93.
- Lee, W.H., Cheng, C.C. (2018). Less is more. A new insight for measuring service quality of green hotels. *International Journal of Hospitality Management*, vol. 68, pp. 32-40.
- Li, F., Li, Sh. (2018). The impact of cross-subsidies on utility service quality in developing countries. *Economic Modelling*, vol. 68, pp. 217-228.
- Lovelock, C., Wirtz, J. (2007). *Service Marketing-People, Technology, Strategy*, Pearson Prentice Hall.
- Meidutė-Kavaliauskienė, I., Aranskis, A., Litvinenko, M. (2014). Consumer Satisfaction with the Quality of Logistics Services, *Procedia - Social and Behavioral Sciences*, vol. 110, p. 330-340.
- Nowacki, R., Szopiński, T.S., Bachnik, K. (2017). Determinants of assessing the quality of advertising services – The perspective of enterprises active and inactive in advertising. *Journal of Business Research*. In press. [online]. Available: https://ac.els-cdn.com/S0148296317305118/1-s2.0-S0148296317305118-main.pdf?_tid=88aca3da-1098-11e8-af29-0000aacb35e&acdnat=1518510983_28f6af4a32fee770cc679d90993f2572 [2018, January 30].
- Oliveira, M.O., Silveira, C.S., Luce, F.B. (2015). Brand equity estimation model. *Journal of Business Research*, vol. 68, iss.12, pp. 2560-2568.
- Ramezani Ghotbabadi, A., Feiz, S., Baharun, R. (2015). Service Quality Measurements: A Review. *International Journal of Academic Research in Business and Social Sciences*, vol. 5, no. 2, pp. 267-286.
- Seth, N., Desmugh, S.G., Vrat, P. (2005). Service quality models: a review. *International Journal of Quality and Reliability Management*, 2005, vol. 22, no.9, pp. 913-949.
- Sullivan, G., Artino, Jr R. (2013). Analyzing and Interpreting Data From Likert-Type Scales, *Journal of Graduate Medical Education*, vol. 5, no. 4, pp. 541-542.
- Tasci, A.D.A. (2016). A critical review of consumer value and its complex relationships in the consumer-based brand equity network. *Journal of Destination Marketing & Management*, vol. 5, iss. 3, pp. 171-191.
- Torres Fragoso, J., Luna Espinoza, I. (2017). Assessment of banking service quality perception using the SERVPERF model. *Contaduría y Administración*, vol. 62, iss. 4, pp. 1294–1316.
- Ulewicz, R. (2014). Application of Servqual Method for Evaluation of Quality of Educational Services at the University of Higher Education. *Polish Journal of Management Studies*, vol. 9, pp. 254-264.
- White, G., Nallur, V., Clarke, S. (2017). Quality of service approaches in IoT. A systematic mapping. *Journal of Systems and Software*, vol. 132, pp. 186-203.
- Zemblytė, J. (2015). The Instrument for Evaluating E-Service Quality. *Procedia - Social and Behavioral Sciences*, vol. 213, pp. 801-806.

Jozef Klučka^{1*}

University of Žilina
Slovakia

Katarína Havierniková²

Alexander Dubcek University of Trenčín
Slovakia

30. BUSINESS PERFORMANCE MANAGEMENT – PROCESS TO IDENTIFY KEY PERFORMANCE INDICATORS IN A COMPANY

Abstract: Business performance management is being developing. The idea copies the entrepreneurial approach based on effective and efficient production or supply of services. In each process however are different and specific attributes that reflects the unique aspect of the process/product and managerial objectives identified in a company strategy. The main aim of this paper is to describe the approaches that cover the framework identifying key performance indicators (KPI) and the relations that correspond to verify the managerial process. The approach to KPI is based on different aspects – they will be identified in the paper by using main methods: literature research and semi structured interview. The approach presented in the paper is also relevant for software developers dealing with products focused on performance management. These are factors that determine the decisions on: specific key performance indicators, software as a tool to monitor the achieved results and managerial system that implement into decision making system results from business performance indicators. In a complex approach the system of KPI covers unique and the most important activities for a company and allows identifying basic for risk management in a company. The research is based on literature study and on discussion with a software developer dealing with the development and sale of software for performance management in a company. The main result of the paper will be the proposed procedure in a company to identify KPI. This result can be applicable in a company and also creates additional value for software developers in this field.

Keywords: business analysis, business objectives, firm performance.

JEL Classification: L21, L25, O12

1. Introduction

Business performance is one aspect of management in a company. Economic theory provides more ways to measure the business performance. Profitability indicators belong to the most often applied performance indicators in empirical studies and also in practice. However, this view can be very simplified and may not reflect the overall efficiency of the business (Hedija Fiala, Kuncová, 2017).

The idea of business performance started in 1919 with DuPont System – what can be seen as hierarchical relations of different financial ratios. In 1959 was applied Ratios au Tableau de Bord – what can be expressed as financial analysis where different financial ratios are applied to monitor performance. The ambition to implement a complex approach to business performance evaluation arisen into EFQM (European Foundation of Quality Management) and Balanced Scorecard. Balanced Scorecard adds to financial measures also dimensions like internal processes, customers and learning & growth. The approach here can be described with the ambition to holistic approach to a company. The further methods to quantify performance management are Discounted Cash Flow (DCF), Economic value added (EVA) and Credit valuation adjustment (CVA) (see also Sandt, 2005).

At the beginning the stress was put on the financial ratios. Du Pont System and Ratios au Tableau de Bord covers financial figures with implicit statement “after all everything is based on financial results of a company”. Constrains of this approach are focused only on financial data and on the past. To overcome a narrow focus was/is implemented by Balanced Scorecard and DCF, EVA and CVA that adds to financial measures also other dimensions (case Balanced Scorecard above).

¹ Assoc. Prof. Ing. Jozef Klučka Ph.D.; Ul. 1.mája 32, 010 26 Žilina, Slovakia, jozef.klucka@fbi.uniza.sk

² Ing. Katarína Havierniková Ph.D.; Študentská 3, 911 50 Trenčín, Slovakia, katarina.haviernikova@tuni.sk

* Corresponding author

Performance management can be seen as a part of governance framework. The results are implemented in organizational strategy, planning and reporting. It provides feedback to decision makers to assist them in improving performance and to key stakeholders (Barbuio, 2017; Hajdu, Andrejkovič, Mura, 2014; Srovnalíková, Karbach, 2016; Lemańska-Majdzik, Okręglicka, 2015; Sipa, Gorzeń-Mitka, Skibiński, 2015). The performance management is a part of management and also provides information to decision makers.

The content of the paper is divided to items:

- Why is it important for an entrepreneur/owner to analyze and forecast its business results?
- What approach implements in order to apply business performance management in a company?
- What is a key performance indicator (KPI) and how to identify and implement it in a company?
- What are fundamental conditions to apply relevant KPI?

Within the meaning of main aim of the article which is to describe the approaches that cover the framework identifying key performance indicators (KPI) and the relations that correspond to verify the managerial process, the particular objectives of the paper deals with KPIs, their identification and implementation in a company.

The reasons for monitoring/measuring business performance are expressed in (Pidd, 2012):

- If you don't measure results, you can't tell success from failure.
- If you can't see success, you can't reward it.
- If you can't reward success, you're probably rewarding failure.
- If you can't see success, you can't learn from it.
- If you can't recognize failure, you can't correct it.
- If you can demonstrate results, you can win public support.

In (Barbuio, 2017) summarizes the reasons to implement business performance and key performance indicators:

- report past outcomes,
- identify where improvements should be made and what resources are required to do this,
- determine quality and robustness of business processes,
- allow stakeholders to independently judge a company's performance.

Business performance management is a managerial tool. Its application in a managerial process depends on variety of factors (Okręglicka, Mynarzova, Kana, 2015). Business performance application is not obligatory on the law, therefore the decision to implement it in a company depends on top management and owners.

SMEs are in many publications described in various ways (see also Ivanová, Kordos, 2017) but concerning to the subject of the paper SMEs are characterized as flexible unites able to manage uncertainty, focused more on technical aspects of production and focusing more on technical solution than on managerial aspects of business. Among SMEs there is an increase in the risk of conducting business (Ivanová, Lemańska-Majdzik, 2016) that is also leading to the dealing with risk management and its aspects in SMEs.

Within the meaning stated the above, the main objective of this paper is to describe the approaches that cover the framework identifying key performance indicators (KPI) and the relations that correspond to verify the managerial process.

2. Literature Review

Managerial decision is the sequence of following stages: problem formulation – data collection and their evaluation – evaluation of alternatives – decision – feedback and evaluation. Managerial decision is also related to time and available resources (tangible, intangible). As nobody can change the past (only to analyse) the managerial decisions are focused on the real time and future. Therefore within business analytics there are three types of analytics: reporting (what happened in the past), descriptive (why did it happen) and predictive (what is going to happen).

Business analytics explicitly defines its relation to business strategy. The approach is based on the sequence presented in Figure 1.

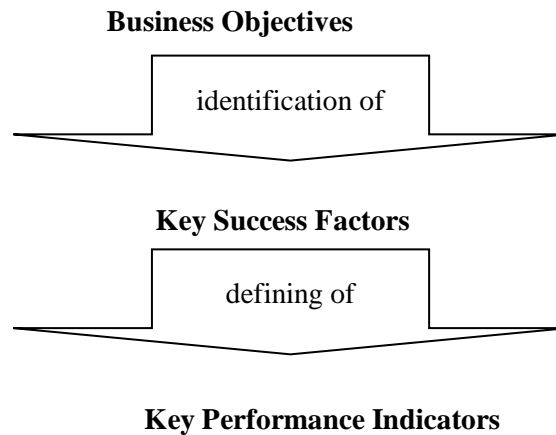


Figure 1. The sequence for business analytics

Source: Own processing

Business objectives are formulated within strategy and created via SMART characteristics (specific, measurable, agreed to, realistic, timely) (see also Strunz, 2013). Strategy is explicitly defined by its vision, mission and objectives. Critical success factors are specific subsets that should be targeted in order to achieve success. Key performance indicators (KPI) are specific measures that cover all relevant fields in a company. KPI's are quantitative measures of different but relevant aspects that determine strategy fulfilment. Therefore KPI's should be: relevant with strategy and critical success factors. Their thresholds must be reasonable, realistic and achievable. They can be based on the experience from the past or as benchmarks when there are available data. Types of KPI's can be differentiated as: focused on process, input, output, leading, lagging, outcome, qualitative and quantitative, effectiveness and efficiency, strategic and operational. For example in the business processes simulation models the results reported as KPI's describe the average length of the process, minimal, maximal and average number of resources used, average waiting times, average number of products made or customers served during a certain time period, etc. (Fousek, Kuncová, Fábry, 2017). System of KPI belongs to the new approaches to corporate performance management which support traditional indicators (Rajnoha, Dobrovič, 2017). Marr (2010) describes 20-point Indicator Design Template. It provides steps that are supposed to be implemented in order to get effective and efficient KPIs. The steps/questions follows: strategic objective, key performance question, who is asking, KPI Identification number, indicator name, KPI owner, what is the data collection method?, what is the formula/scale assessment method?, how often, when and for how long do we collect the data?, who collects the data ?, what is the target or performance threshold ?, how well is the indicator measuring performance?, what are the costs for collecting the data?, what dysfunctional behavior could this indicator trigger?, who is primary and secondary audience for this indicator?, reporting frequency, reporting channel, reporting formats.

There are some specific preconditions that must be fulfilled in KPI case. It is vital that KPI is linked with a company's strategy. Further key characteristics of good KPIs are written in (Barbuio, 2017): controllable/accountable, relevance, verifiable, quantifiable, timely, accessible and cost effective to collect. Predefined KPIs can include the following characteristics (see Arlen, 2017): metric category, metric name, unit of measure, calculation, measurement frequency, measurement procedure, weight, target value, threshold. In (Key Performance Indicators, 2014) KPIs based on good practice consists of the structure:

- Objective and Result
 - Objective
 - Intended result
- Key Performance Indicator
 - KPI Label
 - Description
 - Owner
 - Updater

- Frequency
- Scope
- Calculation
- Metrics used in the calculation.

This structure can be applied in any company to monitor a register of KPIs.

The other question is: how many KPIs should be identified and applied? The answer to the question is not definitive (in many papers dealing with KPI not resolved). It is assumed that because of unique position of each company to specify how many KPIs a company should have is confusing. Based on experience the proposed number of KPIs can be in interval 4 to 10 measures (see Guide to key performance indicators, 2007). It is possible however for companies with complex organizational structure – with more organizational levels that because of technology, position in an organizational structure each department will have some specific KPIs and some common KPIs relevant to the strategy.

The achieved KPIs should be interpreted; the development of KPI can provide additional information as well as comparison specific KPIs to competitors. This approach is based on benchmarking – it is a useful method for comparisons.

Very informative paper to the subject was published by (Garengo, Biazzo, Bititci, 2005; Tóth, Mura, 2014). It covers three determinants that are relevant to the level of performance management implementation in SME. They are: performance management in SMEs: diffusion and characteristics, factors influencing performance management in SMEs and new dimensions of performance management models.

The process of business performance can be defined by following steps – see Figure 2.

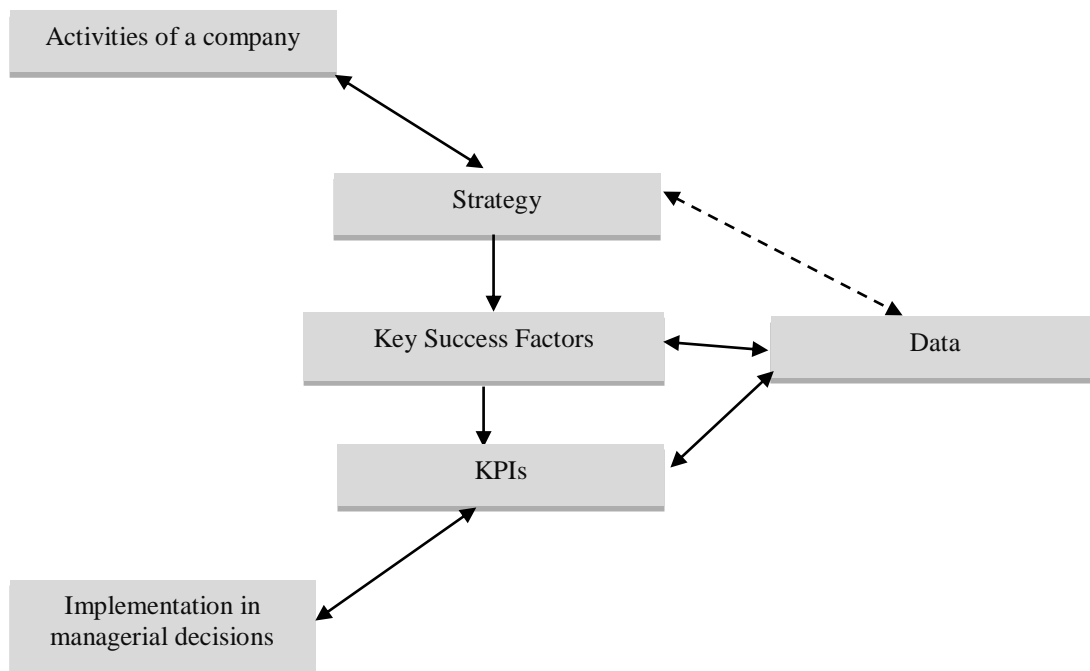


Figure 2. Steps in development and implementation of business performance in a company

Source: Own processing

Activities of a company corresponds to branch, sectors a company is active. Either it provides material products or services. The assignment to a branch/sector determines the business process and technology. In recent years the activities of company is influenced mainly by trend of globalization that has become one of the key features and characteristics of global industry, particularly in driving innovation into a production, manufacturing and service sector (Kordos, 2016). Kordos and Vojtovic (2016) argue that globalization also brings suggestions for strategies to be changed.

Strategy is document/activities that express actions of a company that it is or it will be performing in order to secure the future. It covers approach (thinking) and active performance of activities relevant to objectives of a company.

Data means that not only they must be available but also available in financially reasonable costs. Items of Key success factors and KPIs were explained above.

To summarize – the implementation in a company is a managerial decision and therefore must be approved by the management of a company. It covers to identify new communication channels, financial sources, responsible human resources, disposable IT to allow process data.

Further challenges are relations to current business process and decision making process. Also relation to financial motivation of employees (especially in the introductory phase) seems to be crucial.

The content of performance management includes based on (Broadbent, Laughlin, 2006; Durkalić, 2016): planning work and setting expectations, continually monitoring performance, developing the capacity to perform, periodically rating performance in a summary fashion, and rewarding good performance. These steps describe also relation between performance management and rewarding system in a company.

3. Methodology of the Research

For the main aim of paper achieving, the particular objective of the research was given, which is to identify relevant KPIs and the aspects that determined the managers' decisions concerning this specific phase – identification and implementation of KPIs in a company. For achieving of this objective, the primary data were collected by semi structures interviews. The time period of the research was from January until September 2017. During that period twenty entrepreneurs/owners were interviewed (or their employees responsible for the agenda) from Žilina region. For the interview was prepared “semi-structured form for an interview” providing key fields for discussions. The questions applied in the interview's form were oriented towards KPIs. The research was conducted by consultants employed in a software company. The sample was targeted based on experience from the past (willingness of company representatives) and expectations of positive feedback from owners/employees towards communications with consultants to the subject of the research. The primary objective of the research was strategic for a software company – the idea was that the research (results from it) will provide bases for strategy development of specific software oriented to business performance.

4. Results

Based on the literature research, semi-structured interviews and discussion with a representative of software developer (its products are focused towards small and medium sized companies (SME) also in performance management) was identified following results:

- representatives from SMEs responsible for business performance are hardly able to define KPIs for their company; in fact they have problems to formulate the strategy of a company and therefore KPIs,
- it must be defined (formal conditions) what KPIs must fulfill (differentiate between measures and indicators),
- SMEs technical and technological focus determines informal, not planned approach to performance management,
- in majority the KPIs are oriented backward, on the past,
- KPIs with the highest frequency were dealing with sales and effectiveness of sales representatives,
- depth and breadth of KPIs is based on ad-hoc approach without any consistent methodology,
- the implemented variety of KPIs creates non consistent set of ratios/figures,
- it is not assigned a responsible person for business performance execution,
- KPIs depends also on the status of a company: subsidiaries have specific needs, usually derived from a headquarter directives,
- performance measures are monitored in time scale as well as assigned to departments/products,
- performance measures are formally presented as numbers; the graphical presentations are rare the concept of a dashboard is not applied),
- because of limited human resources there are problems with data and responsible person for the agenda,
- KPIs are enormously different because of branches/sectors a company is providing /producing its core activities.

Results proofed that:

- the theoretical aspects of business performance and its application in interviewed companies is limited and extremely differentiated; the approach can be expressed as “ad hoc approach”; it was not identified any approach based on different theoretical models – see authors (Hudson, Smart, Bourne, 2001, Garengo, Biazzo, Bititci, 2005).
- for specific companies top priority is sales; therefore ratios concerning other businesses aspects were not covered in their business performance outputs; this finding is partially controversial to results in (Ates et al. 2013). Up to them (based on statistical research concerning performance management in 37 SME`s) for SMEs less significance is set to strategy; “short-term priorities” and “technical excellence” are crucial; efforts on internal orientation leads to short-term performance.

5. Conclusion

The application of business performance measurement in business decision making is determined also on factors:

- business know-how – it covers not only knowledge of interior environment but also relations and identification of possible consequences of external environment to a company,
- proficiency of executive officers/owners to be able to formulate key success factors,
- preparedness and competency to interpret outputs/results,
- availability of reliable data that are regularly updated; each data item must have its owner and also must be identified a responsible person for update and monitoring results;
- proficiency and enthusiasm of staff is the key for success in a company; therefore educational activities tailored for specific needs are important.

Each relevant activity of a company will be monitored by specific KPI. For each KPI will be defined the set of data and responsible person/owner of KPI. The results will support managerial decisions.

Based on the results it can be confirmed that:

- performance management is important and it can be expected further implementation in SMEs in the Slovak Republic,
- focus on KPIs is limited towards key objectives of owners; there are no complex models/system approaches that cover business performance in interviewed companies, (“ad hoc solutions”),
- KPIs (identification and implementation) is limited to a narrow spectrum of enterprise activities; for the future due to experience and software support can be expected that business performance will achieve broader and more efficient framework,
- presented results are limited due to the scope of data (20 SMEs); in the near future authors plan to prepare a questionnaire that will be delivered to the larger number of SMEs and also the scope of the research will be complex oriented (not only focused on KPIs).

The scope of business performance solution can be broadening towards two new topics:

- risk management,
- future development, forecast.

The idea of risk management in SME can be covered. Key risk indicators (KRI) measures that are related to specific risks company are faced. There also should be incorporated for each specific KRI minimum, maximum, demanded level of measures. These figures should be implemented into corporate strategy.

The future development can be also expressed within the framework of predictive analytics. There can be applied different mathematical-statistical methods to evaluate future forecasts; to express future trends.

Acknowledgements

This paper was supported by Grant Agency VEGA [No 1/0918/16]: Risk management of SMEs in the context of clusters` involvement activities in the Slovak Republic.

References

Arlen, Ch. (2017). *KPIs in Service, Service Performance*, [online]. Available: http://www.serviceperformance.com/articles-2012/KPIs_in_Service.pdf [2017, December 10].

Ates, A., Garengo, P., Cocca, P., Bititci, U. (2013). The development of SME managerial practice for effective performance, *Journal for Small Business and Enterprise Development*. vol. 20, iss. 1., pp. 28-54.

- Barbuio, F. (2017). *Performance Measurement: A Practical Guide to KPIs and Benchmarking in Public Broadcasters, Commonwealth Broadcasting Association*, [online]. Available: <http://publicmediaalliance.org/wp-content/uploads/2017/08/PerformanceMeasurementAPracticalGuide.pdf> [2017, December 09].
- Broadbent, J., Laughlin, R. (2006). *Performance management Systems: A Conceptual Model and Analysis of the Development and Intensification of New Public Management in the UK*. Research papers, School of Business and Social Sciences, Roehampton University, [online]. Available: [//rrp.roehampton.ac.uk/bsspapers/2](http://rrp.roehampton.ac.uk/bsspapers/2) [2017, December 10].
- Durkalić, D. (2016). Impact of trade openness on economic development: case from Serbia. *Acta Oeconomica Universitatis Selye*, vol. 5, iss. 2, pp. 79-87.
- Fousek, J., Kuncová, M., Fábry, J. (2017). Discrete Event Simulation – Production Model In SIMUL8. In: European Conference on Modelling and Simulation (ECMS). Budapest, 23.05.2017 – 26.05.2017, pp. 229-234. Dudweiler: Digitaldruck Pirrot GmbH.
- Garengo, P., Biazzo, S., Bititci, U.S. (2005). Performance measurement systems in SMEs: A review for a research agenda. *International Journal of Management Reviews*, vol. 7, iss. 1, pp. 25-47.
- Guide to key performance indicators (2007). PriceWaterhouseCoopers, [online]. Available: https://www.pwc.com/gx/en/audit-services/corporate-reporting/assets/pdfs/uk_kpi_guide.pdf [2017, December 01].
- Hajdu, Z., Andrejkovič, M., Mura, L. (2014). Utilizing experiments designed results during error identification and improvement of business processes. *Acta Polytechnica Hungarica*, vol. 11, no. 2, pp. 149-166.
- Hedija, V., Fiala, R., Kuncová, M. (2017). Is profitability a good proxy for efficiency? Evidence from the subsector of tour operators. *Review of Economic Perspectives*, vol. 17, iss. 4, pp. 425-440.
- Hudson, M., Smart, A., Bourne M. (2001). Theory and practice in SME performance measurement systems. *International Journal of Operations & Production Management*, vol. 21, iss.: 8, pp. 1096-1115.
- Ivanová, E., Lemańska-Majdzik, A. (2016). *The business environment of the small and medium-sized sector in Poland and Slovak Republic*. Wien: Mercur Verlag. p. 193.
- Ivanová, E., Kordoš, M. (2017). Innovation policy of SMEs in Slovakia under European union innovation policy. *Marketing and management of innovations*. 1(2017), pp.145-158, [online]. Available: [2017, December 01].
- Key Performance Indicators (2014). Developing Meaningful KPIs. Intrafocus, [online]. Available: <https://www.intrafocus.com/wp-content/uploads/2014/09/Developing-Meaningful-Key-Performance-Indicators-V7.pdf> [2017, December 06].
- Kordos, M. (2016). Knowledge Economy Development in Global Economy Environment, *2nd International Conference on Education and Management Science (ICEMS 2016)*, DEStech Publicat, Inc. pp. 142-146.
- Kordos, M., Vojtovic, S. (2016). Transnational corporations in the global world economic environment, *Procedia Social and Behavioral Sciences*, vol. 230, pp. 150-158.
- Lemańska-Majdzik, A., Okreglicka, M. (2015). Identification of Business Processes in an Enterprise Management, *Procedia Economics and Finance*, vol. 27, pp. 394-403.
- Marr, B. (2010). *How to design Key Performance Indicators, Management Case Study*. The Advanced Performance Institute, [online]. Available: www.ap-institute.com [2017, December 08].
- Okreglicka, M., Mynarzova, M., Kana, R. (2015). Business Process Maturity in Small and Medium-sized Enterprises. *Polish Journal of Management Studies*, vol. 12, iss. 1, pp. 121-131.
- Pidd, M. (2012). *Measuring the Performance of Public Services*, Cambridge: Cambridge University Press.
- Rajnoha, R., Dobrovič, J. (2017). Managerial information support for strategic business performance management in industrial enterprises in Slovakia. *Polish Journal of Management Studies*. vol. 15, no. 2, pp. 194-204.
- Sandt, J. (2005). Performance Measurement. Übersicht über Forschungsentwicklung und -stand, *Controlling & Management Review*, vol. 6, pp. 30-48.
- Sipa, M., Gorzeń-Mitka, I., Skibiński, A. (2015). Determinants of Competitiveness of Small Enterprises: Polish Perspective, *Procedia Economics and Finance*, vol. 27, pp. 445-453.
- Srovnalíková, P., Karbach, R. (2016). Tax changes and their impact on managerial decision making. In Okreglicka, M., Gorzeń-Mitka, I., Lemańska-Majdzik, A., Sipa, M., Skibiński, A. (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management, CITPM 2016*, pp. 410-415. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej
- Strunz, H. (2013). *Werkzeuge des Managements*, Wien/Berlin: Mercur Verlag. pp. 271.
- Tóth, Z., Mura, L. (2014). Support for small and medium enterprises in the economic crisis in selected EU countries. *Hradec Economic Days 2014: Economic Development and Management of Regions, PT V*, pp. 424-429.

31. FACTORS AFFECTING THE LEVEL OF COOPERATION BETWEEN ENTERPRISES AND PUBLIC ADMINISTRATION INSTITUTIONS ON LOCAL LEVEL BASED ON EXAMPLE OF POLAND

Abstract: Companies that operate in the contemporary environment and compete for limited resources can achieve their goals more effectively by working with organizations outside the commercial sector, such as universities, business environment institutions or public administration institutions. Although cross-perception of sectors is slowly changing - officials and entrepreneurs are increasingly aware of the mutual benefits of cooperation and strive to build it on partnership - there are still many barriers and unidentified areas of possible cooperation. The purpose of this article is to determine factors affecting the level of cooperation between Polish companies and public institutions on self-governmental level and to identify any barriers that may limit this cooperation. This article uses methods of critical literary analysis and statistical analysis of research conducted among 381 Polish companies based in the Podlaskie Province (Poland). Spearman's rank correlations were used in the statistical analysis to determine the relationship between the level of trust and cooperation between companies and public administration institution and potential for tightening it in the future. In conclusion of the study it should be stressed that the researched companies show a rather low level of willingness to cooperate with public sector institutions. Among the factors influencing current cooperation between enterprises and public institutions evaluated lowest were: the offer prepared by administration, the image of administration in Polish society, the experience of cooperation so far.

Keywords: cooperation, local administration, public institutions, trust.

JEL Classification: H77, L32

1. Introduction

In debates concerning cooperation between the private and public sectors in Poland, the need to facilitate the free development of entrepreneurship, to limit the role of the state and bureaucracy, and also to eradicate the abuse of power, limit corruption and limit public funds is underlined (Brol, 2013). There is no doubt that currently, it is required that the public sector not only steer and influence changes in the commercial sector, but also that it put pressure on its own organizations to increase their efficiency, their effectiveness and improve the quality of their services (Kobylińska, 2015, p. 143). In this way a culture of constant improvement of the management of public institutions is cultivated, making use of the methods and tools used in the private sector, including quality control, benchmarking and outsourcing. Citizens and businesses need more innovative and transparent standards of public services (Perry, Buckwalter 2010). The indicated groups of users increasingly often not only appear as claimants before public institutions, but also become participants in the creation of values in the public sphere (co-production). In foreign literature co-production certainly rapidly becoming one of the most internationally talked about topics in public services and it is currently one of cornerstones of public policy reforms across the globe (Bovaird, 2007; Alford, 2009; Loeffler, 2009; Horne, Shirley, 2009; Osborne, 2015). Co-production is a partnership between citizens, public institutions and private sector to achieve a valued outcome, benefiting all parties involved. Such partnerships empower and allow citizens to contribute more of their own resources (time, will, power, expertise and effort) and contribute to greater control over services decisions and resources (Horne, Shirley, 2009). The idea of co-production in public services is a relatively new trend in Polish literature. The research on this topic that exists in the country, e.g. Kaźmierczak (2014), Sześciło (2015), Kowalik-Ciepielewska (2016) and Sienkiewicz-Małyjurek (2016) does not take up the issue of co-production as a whole but rather chooses to focus on the participation of citizens in this process, failing to take into account the role of businesses.

¹ Urszula Kobylińska Ph.D.; O. Tarasiuka 2, 16-001 Kleosin, Poland, u.kobylińska@pb.edu.pl

* Corresponding author

Despite the fact that there have been large changes in the management of public institutions in Poland in the last 20 years, the level of public trust towards public institutions and public conviction about the possibilities of engaging in the co-production of services remains low. This is the result of various conditions: legal, mental and cultural. Research carried out in Poland shows that institutions of local administration have little influence on the development of businesses in their jurisdiction (only 36% of businesses said that the activities of local authorities had an effect on the development of businesses). Civil servants are of a different opinion - 86% of researched representatives of local administrations were convinced of their influence on the development of businesses. The main reason for which local institutions were unwilling to give assistance was “the fear of bureaucracy”, along with “the lack of knowledge of such a possibility” and “complicated procedures of receiving assistance”. A quarter of respondents indicated that “the proposition of local authorities was not suited to their needs”. This only confirms the proposed argument that there is little or no dialogue between businesses and local authorities (Business and local government, 2014). The relationship between institutions of local administration and private entities can take various forms. Most often it is based on outsourcing the carrying out of public services for residents to these entities, the financing of local events, also taking the form of consultations, agreements and reaching common decisions (Przygodzki, 2016, p. 29).

Companies operating in the contemporary environment, competing for limited resources can more effectively achieve their goals by working with organizations outside the commercial sector such as for example universities, business environment institutions or public administration organizations. In recent years the partnership between the private and public sectors in terms of implementing public tasks has been instrumental in a number of countries including the United States, Great Britain, Germany, France and Italy (Dobrowolski, 2014, p. 138). Polish experience in the field of cooperation between the two sectors has been scarce although the legal basis defining its principles appeared more than 10 years ago (the first public-private partnership law was passed in Poland in 2005). The necessary condition for public-private interaction is in particular the trust between a private entity and its public partner. It determines the willingness of stakeholders to cooperate and willingness to share risk. Public actors should create public trust through their activities. In the future it may become the basis for better cooperation with the commercial sector in implementation of public tasks. The public sector must ensure transparency of activities, assess joint actions not only through the prism of the economy, but also from the point of view of the public interest and accountability of decision-makers for decision-making. The indicated factors are sine qua non conditions of creating inter-organizational trust and intensified cooperation of both sector.

The purpose of this article is to determine factors affecting the level of cooperation between Polish companies and public institutions on self-governmental level and to identify any barriers that may limit this cooperation. In particular the following aspects were analyzed: what factors have the greatest impact on the level of cooperation between public and private sector and how do positive changes in particular factors can improve their cooperation in the future. Critical literary analysis and statistical analysis of research conducted among 381 Polish companies based in the Podlaskie Province (Poland) have been used in this paper. Spearman’s rank correlations have been used in the statistical analysis to determine the relationship between the level of companies’ trust in public administration institutions, cooperation with them and the potential for its strengthening in the future.

2. Literature Review

Taking into account the character of the relationship between the public and private sectors, the following types/levels of interaction can be identified: (Brol, 2013, p. 61)

1. the public sector regulates the activities of the private sector,
2. the public sector creates public goods for the private sector,
3. the public sector delivers goods to the private sector for a fee,
4. the private sector delivers private goods to the public sector for a fee (or: the public sector buys private goods produced in the private sector),
5. the public and private sectors produce goods together,
6. the private sector delivers public goods,
7. the private sector influences public regulations.

Currently identifiable trends in highly developed countries show that the last three levels of interaction are most highly sought-after with regard to the effectiveness as well as the efficiency of

public services provided. However, factors necessary for the stimulation and promotion of these relations include: mutual trust between both sectors, an awareness of the advantages of cooperation, legal and procedural transparency, and an immaculate image of public administration in society.

The number of public-private co-authored research publications in the Web of Science database is another way of showing collaboration established between the public and the private sectors. This type of partnership is more frequent in the United States and much more so than in the EU in this last case, the figures for the United States are more than double of those for the EU (Innovation Union..., 2011, pp. 203-204). The Netherlands, Denmark, Finland and Sweden have reached levels of co-publications well above those for the United States. In Poland, the number of publications regarding the cooperation of both sectors according to the quoted database is not impressive, although it is systematically growing. The reasons for this situation can be found in the lack or a small number of good practices, and thus research in this area, and consequently, the possibility of describing them in publications. As shown by the results of the Polish research (Biznes i samorząd..., 2014) referred to earlier in this article, the main obstacle to communication between businesses and administrative institutions is a lack of trust and social capital. Civil servants and administration workers fear that deepened relationships with businesses will lead to accusations of corruption. The availability of information and the transparency of the business system, as well as clearly defined criteria for civil servants would allow trust to be built and accusations of corruption to be avoided.

Mayer and others (1995) claim there are some key factors that build trust for cooperation between sectors: the perception of partner's competence based on his or her knowledge, experience and certifications; the assessment of partner's success, kindness (loyalty, fairness) and honesty (following the principles, keeping the commitments). It is noteworthy that all these factors affect trust in inter-organizational relationships, but friendliness applies to personal relationships only and the other factors shape impersonal relationships.

Most researchers also claim that trust is gradual and grows over time. At the beginning there is a stage of trust development (trustworthiness estimation), then trust is based on knowledge (when assumptions turn into positive expectations related to the partner) and finally there is relational trust which reflects the relationship quality (Lewicki, Bunker, 1996). There is an opinion in the literature that the need to achieve organizational goals in a turbulent environment is the cause of inter-organizational cooperation generation and for that trust is needed. Researchers note that organizations work together because of the lack of specific resources they cannot get at the specific time and place (Barringer, Harrison 2000; Andriof, Waddock, 2002; Selsky, Parker, 2005) and also to gain a competitive advantage. Disturbance in relationships based on trust and credibility do not allow for the full benefit of cooperation, including inter-organizational and cross-sectoral cooperation. Today functioning and development of organizations in each sector increasingly depends not only on them but also on their relationship with the environment.

Researchers also point to the relationship between GDP and development of trust, and emphasize that countries with a high GDP show a higher level of trust in general (Durlauf, Fafchamps 2004; Zak, Knack 2001; Beugelsdijk, de Groot, Anton van Schaik, 2004; Knack, Keefer, 1997; Steijn, Lancee, 2011; Algan, Cahuc, 2010). Lewicki, Mc Allister and Bies (1998) define trust in the context of inter-organizational cooperation and perceive it in categories of some positive expectations related to the partner's behavior, while they perceive distrust as certain negative expectations about the conduct of the other party. Trust is undoubtedly a prerequisite for initiating cooperation between organizations. Increasingly promoted in the literature as a prerequisite for initiating joint projects the model of cooperation between companies and institutions outside the sector requires elimination of the phenomena that threaten trust building (for example corruption, lack of clear administrative procedures, poor image of administration institutions). There are three basic factors that make an entity credible and thus affect trust in it and willingness to cooperate with it. These are: (1) ability to carry out specific activities; (2) kindness that entails acting in the best interests of the party and (3) honesty that results from the consequences and observance of certain principles (Sankowska, 2012).

Undoubtedly, trust is a factor that stabilizes the organization's functioning over a long period of time. In terms of establishing cooperation between companies it is actually one of its foundations. Relationships between companies based on cooperation and trust give a better chance for success. Trust between partners can exist only if there is mutual certainty that the benefits of cooperation between companies outweigh the benefits that these companies could achieve by acting on their own.

3. Research Methods

Keeping in mind the aforementioned theoretical considerations, it was of significance for the author of this article to research the factors influencing the decision to engage in cooperation between entities from the commercial sector and institutions of local administration with regard to the possibility of strengthening such cooperation in the future. The analyses presented in this article are based on excerpts from more extensive research carried out on businesses in Poland (in the Podlasie Voivodeship). The study was carried out as part of an international research project "Business Readiness for Cross-border Networking" implemented under an agreement between the Polish Academy of Sciences and the Belarusian State Academy of Sciences in the years 2014-2016. Quantitative research carried out in the late 2014 and early 2015 covered 381 Polish companies of industries leading in the Podlaskie Province. The research problem was formulated in the form of the following questions: how do respondents assess the current level of cooperation between the studied companies and institutions of the local government; what is the degree of interest of the studied companies in strengthening the cooperation with institutions of the local government in the near future; to what extent do the individual factors influence the current level of cooperation between the respondent companies with local institutions; to what extent may positive changes in various factors contribute to the improvement of cooperation in the near future?

In terms of the area of companies' cooperation with public administration institutions (on the local level) the following variables were assessed: transparency of administration activities, financial and organizational support for entrepreneurship development, cooperation offer prepared by administration, level of fiscal and organizational barriers to start-up a business, level of corruption, image of administration in society, previous experience of cooperation. Respondents assessed not only how much each factor influences the level of cooperation, but also to what extent the positive changes in the various factors could influence improving the level of cooperation in the future (Likert scale 1-7).

The above-mentioned factors determining the level of cooperation between companies and public administration institutions were selected on the basis of critical analysis of the literature and discussions with representatives of business and academic environment. The method of a survey was used for collecting primary information, partial results of which are presented in this article. The following statistical measures were used to interpret the study results: scattering measures – coefficient of variation (V) and measures of central tendency - mean (\bar{x}), median (Me), dominant (D), as well as standard deviation (s). Spearman's rank correlations were used for statistical analysis to determine the relationship between the level of companies' trust in the public sector, their cooperation and possibilities for its future strengthening. The analyzes were carried out using the statistical package STATISTICA.

4. Discussion on the Study Results

The purpose of this article is to determine factors affecting the level of cooperation between Polish companies and public institutions on self-governmental level and to identify any barriers that may limit this cooperation. The studied companies were asked to assess their level of trust to administration institutions of local government and to evaluate their cooperation with the indicated entities (Table 1).

Respondents rated very low both trust and cooperation with institutions outside the sector (average rating for cooperation - 3.29) and therefore trust (3.38). Taking into account the respondents' attitudes on the studied issues it should be noted that the indications did not exceed 4.0 (1-7 scale), even to the question of future cooperation (average indication 3.75). Such a situation may constitute the evidence of constantly low trust and weak relations of these two worlds in Poland: business and administration. A positive quite strong correlation was also found in respondents' ratings by means of Spearman's rank correlations in the case of assessments of the level of trust and companies' cooperation with local government institutions. Those companies that showed a higher level of trust in local administration institutions assessed higher also the level of cooperation with these organizations, which may be confirmed by the fact that greater trust encourages greater inter-organizational cooperation.

Table 1. Level of trust and cooperation between the studied companies and administration institutions (local government)

Specification	\bar{x}	M_e	D	n_D	s	V
Level of trust	3.38	3	4	122	1.26	37.29
Level of cooperation	3.29	3	4	91	1.53	46.20
The degree of interest in strengthening cooperation in the next 2-3 years	3.75	4	4	91	1.75	46.77
Spearman's rank correlations: ($p < 0.0500$)						
Assessment of the level of trust and cooperation	0.735					
Assessment of the current level of cooperation and possibilities of its strengthening in future	0.615					

Source: Own studies

Considering the current level of companies' cooperation with public administration institutions and the desire to strengthen this cooperation in the future it turned out that companies would restrainedly like to cooperate more closely in subsequent years (Spearman's rank correlation of 0.61). Such situation may be due to the still too little awareness of officials about the impact of enterprises on economic development of the city or municipality and initiation of projects for cooperation. Mutual unwillingness to undertake joint activities means that potential partners not only have limited knowledge of each other problems and limitations, but also of possible scenarios for collaboration. The dialogue in this case is possible if it is substantive and essential. The mode of communication should be open and based on mutual trust. This is a lack of goodwill, initiative and willingness to talk that constitutes the most limiting factor in building a common communication platform between business and administration.

The studied companies were also expected to assess the impact of the listed factors on current cooperation with public administration institutions. The analysis of variables was selected on the basis of literature review and after consultation with business and science experts. Among the factors influencing the initiation of cooperation between sectors are the following: *transparency of administration activities, financial and organizational support for entrepreneurship development, cooperation offer prepared by administration, level of organizational and fiscal barriers, level of corruption, previous experience of cooperation, the image of administration in society.*

Among the factors affecting the current cooperation between businesses and public institutions, the lowest ratings were given to: previous experiences of cooperation with government institutions (2.79), corruption level (3.18), a ready-prepared offer of cooperation from local government institutions (average rating - 3.36), the image of administration in Polish society (3.4) (Figure 1). Most respondents for the majority of variables gave similar answers oscillating around or lower than 4.0. These are not optimistic assessments, though local authorities have far more potential than government institutions to initiate cooperation and involve companies in various projects, such as joint local projects, outsourcing public or private tasks, joint development of strategic documents, initiating clusters in the region, etc.

In light of these ratings, the least highly rated factors can be treated as key barriers to undertaking cross-sectoral cooperation in Poland and it is these that must be offset first in order to improve the environment for cross-sectoral cooperation. Actions taken on both sides will be undoubtedly important: not only the administrative institution, which must play a greater role as the leader in laying the groundwork for possible cooperation, but also the public image of governmental institutions be changed to one which is more friendly towards businesses. On the other hand, businesses in Poland must break the stereotypes of the lack of sense of common initiatives, great effort and a low bargaining position in negotiations with institutions of the public sector.

In turn, respondents deem that an improvement in financial and organizational support for businesses from local government institutions could improve cross-sectoral cooperation to the greatest extent (average rating - 4.53). Similarly to a low fiscal and organizational barrier (4.33), and a ready-

made offer of cooperation from public institutions (4.33), this could strengthen cooperation between entities (Figure 1).

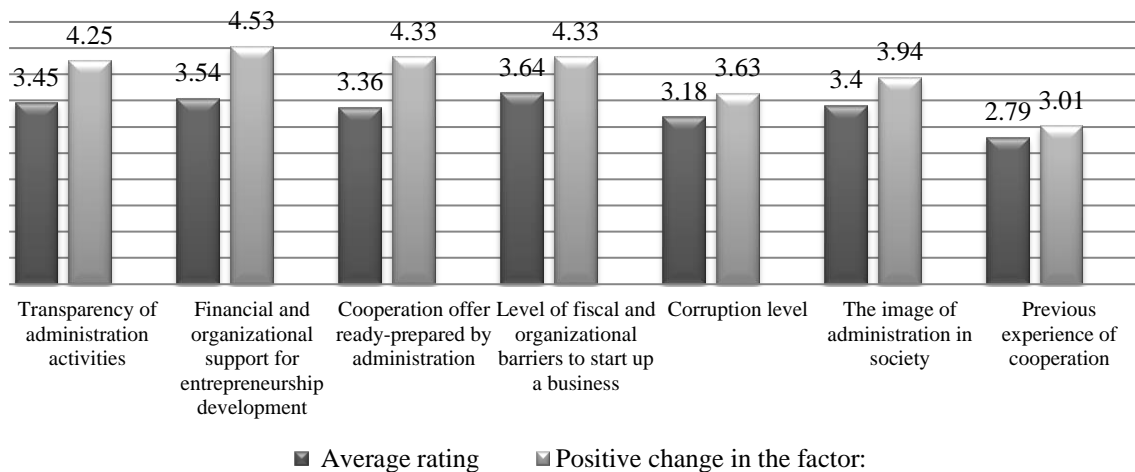


Figure 1. Assessment of the influence of individual factors on the current level of cooperation between businesses and local government institutions and possibilities of its strengthening in future

Source: Own studies

An assessment of the effect of individual factors on the current level of cooperation and the possibility of it being strengthened in the future as a result of positive changes showed a high correlation in the case of variables such as: previous experiences of cooperation, lowering corruption levels, the transparency of actions taken by local administrations (Table 2).

Table 2. Spearman's rank correlations for the assessment of the influence of each factor on the current level of cooperation and potential for its future strengthening as a result of positive changes in these factors

Spearman's rank correlation (p <0.05)	
Transparency of administration activities	0.646
Financial and organizational support for entrepreneurship development	0.467
Cooperation offer prepared by administration	0.432
Level of fiscal and organizational barriers to start up a business	0.493
Level of corruption	0.667
Administration image in society	0.604
Previous experience of cooperation	0.802

Source: Own studies

Therefore it can be stated that an increase in the rating of current cooperation is accompanied by an increase in the average ratings regarding the willingness to strengthen it in the future.

5. Conclusion

Problems in the contacts between the public and private sector are a result of fundamental differences stemming from differing aims and mechanisms shaping the way in which they function. As shown by the research referred to in this article, there are many barriers which must be overcome through mutual talks, but above all concrete actions, making the current model of the coproduction of services a reality, with a high level of engagement from citizens and businesses. First of all, citizens should be encouraged to engage more in decisions on public affairs, as a consequence of which citizens that have learned this new model of co-management will be more willing to engage their businesses in common projects with the public sector.

The aim of the study presented in this paper was to determine factors affecting the level of cooperation between Polish companies and public institutions on self-governmental level and to identify any barriers that may limit this cooperation. Conclusions were formulated on the basis of the results of questionnaire surveys carried out among companies from Podlaskie Province (Poland). Among the factors affecting current cooperation between enterprises and public institutions the lowest

assessments were for the following variables: the offer prepared by administration, image of administration in Polish society, previous experience of cooperation. On the other hand in respondents' opinion positive changes in such factors as: financial and organizational support for companies from the administration could most likely improve cooperation among the sectors. Similarly, lower levels of fiscal and organizational barriers and also the offer of cooperation prepared by administration could increase the level of cooperation between enterprises and public institutions. The assessment of the impact of each factor on the current level of cooperation and the potential for its future strengthening as a result of positive changes have shown a strong correlation in the case of such variables as: transparency of administration activities, lowering the corruption level, previous experience of cooperation (Spearman's rank correlation in the range of 0.6-0.8).

As shown by the research results indicated in this article, there are many barriers that must be overcome in the field of mutual talks, but first of all specific actions that implement the contemporary model of coproduction of public services, with high involvement of citizens and enterprises. In the first place, local authorities should encourage citizens to become more involved in deciding on public issues, and as a consequence, the new model of co-management will teach citizens more willingly to involve their enterprises in joint projects with the public sector.

References

- Alford, J. (2002). Why Do Public-Sector Clients Coproduce? *Administration and Society*, vol 34, iss. 1, pp. 32-56.
- Algan, Y., Cahuc, P. (2010). Inherited Trust and Growth. *American Economic Review*, vol. 100, iss. 5, pp. 2060-2092.
- Andriof, J., Waddock, S. (2002). Unfolding stakeholder engagement. In J. Andriof, S. Waddock, B. Husted, S. Rahman. *Unfolding stakeholder thinking: Theory, responsibility and engagement* (pp. 19-42). Sheffield, UK: Greenleaf.
- Barringer, B., Harrison, J. (2000). Walking a tightrope: Creating value through interorganizational relationships. *Journal of Management*, vol. 26, iss. 3, pp. 367-403.
- Beugelsdijk, S., de Groot, L.F., Anton van Schaik, B.T.M. (2004). Trust and Economic Growth: A Robustness Analysis. *Oxford Economic Papers New Series*, vol. 56, iss. 1, pp. 118-134.
- Biznes i samorząd – wzajemne relacje. Raport z badań Rzetelnej Firmy (2014), [online]. Available: <file:///C:/Users/Urzsula/Desktop/Arty2016/biznes-samorząd.pdf> [2017, October 10].
- Bovaird, T. (2007). Beyond engagement and participation: user and community coproduction of public services. *Public Administration Review*, vol. 67, iss. 5, pp. 846-860.
- Brol, M. (2013). Przyczyny trudności we współpracy sektora publicznego i prywatnego. *Studia Ekonomiczne, UE w Katowicach*, vol. 129, pp. 59-67.
- Dobrowolski, Z. (2014). Zdolność organizacji publicznych do współdziałania publiczno- prywatnego. *Zarządzanie Publiczne*, vol. 2, iss. 26, pp. 137-147.
- Durlauf, S.N., Fafchamps, M. (2004). Social Capital. In: S.N., Durlauf, P. Aghion (Eds.), *Handbook of Economic Growth*. Amsterdam: North-Holland.
- Horne, M., Shirley, T. (2009). *Co-production in Public Services*. London: Cabinet Office.
- Innovation Union Competitiveness report*. (2011). European Union, pp. 198-212. [online]. Available: <http://ec.europa.eu/research/innovation-union/pdf/competitiveness-report/2011/iuc2011-full-report.pdf> [2017, October 10].
- Każmierczak, T. (2014). *Koprodukcja usług publicznych*, [online]. Available: http://www.eapn.org.pl/wp-content/uploads/2014/06/EAPN_ekspertyza_TK.pdf [2017, October 10].
- Knack, S., Keefer, P. (1997). Does social capital have an economic pay-off? A cross country investigation. *Quarterly Journal of Economics*, vol 112, iss. 4, pp. 1251-1288.
- Kobylińska, U. (2015). Innowacje w administracji publicznej w Polsce na poziomie samorządu terytorialnego. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, vol. 402, pp. 142-152.
- Kowalik-Ciepielewska, A. (2016). *Koprodukcja w polityce opieki i edukacji przedszkolnej*. Warszawa: Instytut Studiów Politycznych PAN.
- Lewicki, R.J., Bunker, B.B. (1996). Developing and Maintaining Trust in Work Relationships. In R.M. Kramer, T. Tyler, (Eds.), *Trust in Organizations. Frontiers of theory and research* (pp. 114-139). CA: Sage Publications.
- Lewicki, R.J., Mc Allister, D.J., Bies, R.J. (1998). Trust and Distrust: New Relationships and Realities. *Academy of Management Review*, vol. 23, no. 3, pp. 438-458.
- Loeffler, E. (2009). A future research agenda for co-production. Overview paper Swindon: Local Authorities Research Council Initiative.

- Osborne, S., Radnor, Z., Strokosch, K. (2016). Co-production and the co-creation of value in public services: A suitable case for treatment? *Public Management Review*, vol. 18, iss. 5, pp. 639-653.
- Perry, J.L., Buckwalter, N.D. (2010). The public service of the future. *Public Administration Review*, vol. 70, supplement 1, pp. 235-245.
- Przygodzki, Z. (2016). *Ekomiasto i zarządzanie. Zrównoważony, inteligentny i partycypacyjny rozwój miasta*. Łódź: UŁ.
- Sankowska, A. (2012). Zaufanie organizacyjne a transfer wiedzy. *Przegląd Organizacji*, vol 7, pp. 3-5.
- Selsky, J.W., Parker, B. (2005). Cross-Sector Partnerships to Address Social Issues: Challenges to Theory and Practice. *Journal of Management*, vol. 31, iss. 6, pp. 849-873.
- Sienkiewicz-Matjurek, K. (2016). Innowacyjność koprodukcji w zarządzaniu publicznym na poziomie lokalnym. *Zeszyty Naukowe Organizacja i Zarządzania Politechniki Śląskiej*, no 89, pp. 421-435.
- Steijn, S., Lancee, B. (2011). *Does income inequality negatively affect general trust? Examining three potential problems with the inequality-trust hypothesis*. GINI Discussion Paper No. 20, [online]. Available: http://www.gini-research.org/system/uploads/274/original/DP_20_-_Steijn_Lancee.pdf [2017, October 10].
- Sześciło, D. (2014). *Rynek – prywatyzacja – interes publiczny. Wyzwania urynkowienia usług publicznych*. Warszawa: Wydawnictwo Naukowe Scholar.
- Zak, P.J., Knack, S. (2001). Trust and growth. *Economic Journal*, vol. 111, iss. 470, pp. 291-321.
- Zaufanie społeczne*. (2014). no 18. Warszawa: CBOS.

32. METHODS OF MEASURING THE INTELLECTUAL CAPITAL IN A COMPANY

Abstract: Measurement of intellectual capital is a very difficult process, because it concerns the factors that are immeasurable and unstable. Since it is quite problematic to give an unambiguous assessment of intellectual capital it has not been successful so far to create worldwide universal standards and methods of measurement for this category. Some researchers propose, however, to apply a wide spectrum of methods for measurement of the value of intellectual capital. Such an approach based on multiple-criteria analyses allows indicating and evaluating factors of the highest significance for creating the values of intellectual capital and, as a consequence, reaching the enterprise targets. The general purpose of this article is then presentation selected methods of measurement of intellectual capital necessary for effective enterprise management. This article defines the concept and essence of the intellectual capital and provides general characteristics of the measurement of intellectual capital as well as describes the metrics of intellectual capital measurement.

Keywords: intellectual capital, measurement of intellectual capital, metrics of intellectual capital measurement.

JEL Classification: O34, L26

1. Introduction

The works concerning the intellectual capital have been published for many years and still new ones appear. The intellectual capital is a field of interest for many researchers who try to present the issues connected to the intangible assets in their works in the most clear and comprehensible way.

One of the issues that is the endless source of studies are the methods of measuring the intellectual capital in a company which enable understanding the influence of the intangible assets in the process of creating value in a company. The choice of a given method of measuring the intellectual capital depends mostly on understanding the importance of this factor as well as on the level of commitment and readiness of the management staff to manage the intellectual capital inside the company.

The key aim of this article is the presentation of the selected methods of measuring the intellectual capital which are necessary to effectively manage a given organisation. In the first part of the work the term and essence of intellectual capital are discussed. The next part concerns the general characteristics of measuring the intellectual capital.

2. Literature Review

Over the years, many scientific works concerning intellectual capital were published. This results in some problems with time to fully research all aspects of the case. In this article only selected definitions of intellectual capital and selected methods of its measurement were presented.

2.1. Term and Essence of the Intellectual Capital

There are many definitions of intellectual capital in the literature, however neither of them has been regarded the correct and generally accepted yet. A large number of terms is connected to the first period of interest in the “invisible assets” (from the beginning of the eighties to the middle of the nineties of the 20th century), when the issue was so new that the theoretical discussions of that time concerned mostly, and sometimes exclusively, the attempts to define the intellectual capital (Zakery, 2017). The variety of definitions of the intellectual capital also results partly from the fact that the impulse concerning the necessity of different outlook on the intangible assets comes from the business practice and that is why now the theoretical explanations and the concepts explaining and describing the essence of this term are sought (Kasiewicz, Rogowski, Kicińska, 2006, p. 70).

¹ M.Sc. Justyna Kogut Ph.D. Student; Chrobrego 31, 26-600 Radom, Poland, j.kogut@uthrad.pl

* Corresponding author

One of the definitions says that the intellectual capital is the intellectual material, knowledge, information, intellectual property and experience that must be used to create wealth. It is also treated as the sum of all the knowledge owned by a unit in the organization that give the competitive advantage to the company on the market (Wosiek, 2012, p. 17; Dyr, Ziółkowska, 2017).

The intellectual capital is regarded also as “the knowledge that may be changed into the value”. Edvinsson and Malone (2001, p. 39-40) in their shared definition underlined that the intellectual capital is “the knowledge, experience, organisational technology, relations with clients and professional skills that let the company to get the competitive advantage”. The authors also claim that the intellectual capital does not have the character of the assets but obligations, so it is a capital borrowed from different groups of stakeholders, among others the clients and employees.

The intellectual capital is also the knowledge and skills of a given society. The company means an intellectual society in this context and an element of the intellectual capital is the organisational culture as well as the social capital (Wosiek, 2012, p. 17).

Based on the presented definitions, the following characteristics of the intellectual capital can be defined (Beyer, 2014):

- it is based on knowledge,
- fills the gap between perceiving the market value of the company and the presentation of the companies in a traditional financial reporting (the accounting value),
- includes all the immeasurable elements shaping the difference between the total value of the company and its financial value (the difference between the total value and the traditional and financial capital),
- does not fit the traditional accounting model (tries to value such actions as the employees’ competences or the clients’ loyalty that for many years may not influence the profits of the company and does not appreciate the short-term successes that seldom influence the future position of the company to a lesser extent),
- the proper using it provides the company with a base to gain the competitive advantage on the market,
- includes different categories, sometimes of different character and nature.

In the subject literature on may encounter also the elements creating the intellectual capital, so its structure. Most often it consists of: human, structural and relational capital.

The human capital should be associated with the knowledge. It is treated as an individual and unique trait of a unit that may be a subject of the market turnover (Pietrzak, Balcerzak, 2016). The feature of the human capital is the fact that it is a part of a man. The resources of the human capital are not generated by the genetic traits of a given population once for all, but it can be gathered and enlarged. The human capital cannot be bought, but only created by investing in people, in ourselves, in the goods and services provided by specialized institutions (Kogut, 2017a).

The structural capital is the organizational abilities of a company to meet the expectations of the market. It includes the routine processes in the company and supporting structures, searching for an optimal intellectual capacity by the employees, and a general commercial capacity as a result. The structural capital includes: technologies, organizational culture, methods and concepts of management, databases, formal and informal procedures, patents, copyrights, trademarks, etc. (Rodrigues, 2017).

The relational capital concerns the relations of the net of coworkers, their satisfaction of the company and the loyalty towards it. it is also knowledge concerning the competition’s strategy and external conditioning including the economic situation in the country and the government policy (Bombiak, 2013).

2.2. The Characteristics of Measuring the Intellectual Capital

Measuring the intellectual capital is basic and one of the most important elements in the process of managing it. The further managing of this capital depends on result of these measurements. The measuring indicates those elements of the intangible assets that are best developed in the company and those that even if exist, they do not have a specified value (are poorly developed). Thanks to that measurements, the managing staff has the full image of the intangible assets which lets building the appropriate strategies of their further development or creating and gaining or selling and sharing (Dyr, Ziółkowska, 2014). Then the aim of measuring is indicating the current value of particular elements of the intellectual capital for the internal stakeholders.

Bontis, Keow and Richardson (2000) presented factors in favor of the big role of the intellectual capital in the company's activity:

- the intellectual capital is intangible, but disclosed and explicit, it lets start the new resources that will let the company compete more effectively and achieve success,
- the intellectual capital combines the market intangible assets with the intellectual property rights, with personal resources and infrastructure that lets the company function,
- the intellectual capital shows assets and processes that are usually omitted in the traditional financial reporting – the intangible assets (trademarks, patents, brands) include the sum of knowledge and its practical usage in the company,
- the intellectual capital is a specific intellectual material that in the form of knowledge, information, intellectual property, experience may be used for generating the value of the company,
- the intellectual capital is a final product in consequence, as opposite to the information that is a raw material,
- the intellectual capital is a part of the market value of the company or is a part of the market premium.

Currently there is no standard measurement of the intellectual capital. The difficulty of this process is that the intellectual capital concerns mostly the quality of the assets, not so much their quantity, and its measurement should focus on future, not on the past. Measuring is the most difficult part of the complicated process of managing the intellectual capital. One of the reason of the lack of standardization is using the current accounting systems that were created in times when the basic factor of the competitiveness of the companies were the tangible assets. The other reason is the lack of a unified system of the intellectual capital taking into consideration the multidimensionality of its category and the dependency between the given categories, elements or constituents of the intellectual capital. It should be underlined that the most of the values describing the intellectual capital of an organization is decidedly qualitative (Skrodzka, 2015, pp. 7, 11).

Nowadays the intellectual capital is one of the key strategic resources of the economic entities, so the companies must identify own corporation competences and the available resources in order to evaluate their own strategic position. Measuring the intellectual capital may be used as a basic element of studying the strategic potential of the company and it can improve the process of formulating the business strategy in this way (Kogut, 2015).

3. Methodology of the Research

The metrics of measuring the intellectual capital express the synthetic level of the intellectual capital of the whole company, its units and in the intersection of the businesses conducted by it. They have a complex form and that is why they need the managers to understand the meaning of the particular metrics, their rules of construction and the mutual relations. In the process of managing the intellectual capital one can use the metrics of measuring the intellectual capital such as: IAMVTM model, the “values discoverer” model, the IAV model and the IC-Index model.

Therefore, the next part of the work presents and describes all four metrics for measuring the intellectual capital. A theoretical analysis was made here.

Literature mainly provides a general knowledge about the methods of measuring the intellectual capital. Therefore, there is very little information on measurement metrics. Therefore, this paper is an attempt to theoretically describe and simultaneously approximate the importance of the metrics in the process of measuring the intellectual capital. For this purpose, leading foreign and domestic literature items were analyzed.

4. Results

The IAMVTM (investor assigned market value) was proposed by Standfield in 1998 and it assumes that the difference between the market value and the accounting value of the company indicates the existence of the intellectual capital. The value of the intellectual capital may be received conducting the following procedure.

Firstly, the real value of the intellectual capital should be calculated as the difference between the market value and the accounting value that Standfield calls also the term of the value of the visible capital.

$$\text{Market value} = \text{accounting value} + \text{realized value of the intellectual capital} \quad (1)$$

Using the idea of “realization”, Standfield underlines that the real value of the intellectual capital can be higher or lower than the difference between the market and accounting values. It is caused by the market fluctuations and the investors’ expectations that determine the market value (Wachowiak, Sopińska, Mierzejewska, 2015).

Standfiels introduces two additional terms: market value indicated by the investor and the market value possible to achieve by the company and the differences between those values are defined as the erosion for the intellectual capital (Maji, Goswami, 2015).

$$\begin{aligned} \text{The market value possible to achieve by the company} &= \text{visible capital} + (\text{realized value IC} \\ &+ \text{erosion IC}) \end{aligned} \quad (2)$$

Secondly, in the IAMVTM, model the most important constituents of the intellectual capital should be identified on the basis of an analysis of the financial and non-financial data and then presented in three groups: human capital, clients’ capital and the structural capital.

Thirdly, the relative weight for each of the elements of the intellectual capital should be determined as the coefficients. The values of the weights should be based on the managers’ experiences in the process of creating value in the company.

Fourthly, estimating weights should be justified by the selected indicators. Standfield distinguished the following constituents that in 21% shape the value of the intellectual capital: organizational learning, integrated relations as well as the products of knowledge and patents. As the determining factors he distinguishes:

- for patents – average age of using the patent, the generated turnover,
- for the products of knowledge – fastness of knowledge inside the organization, the relation of explicit and implicit knowledge,
- for the organizational learning – experience, skills, employee’s knowledge, trainings for an employee, indicator of intelligence in the organization.

Fifthly, the value of the intellectual capital in the monetary unit should be calculated. For this purpose the relative weights of the particular constituents should be multiplied by the whole realized value of the intellectual capital.

Sixthly, the lower market value of the company should be determined by summing up the values of the constituents of the intellectual capital indicated in the fifth step with the accounting value of the company.

Model: “values discoverer” (The Value ExplorerTM) was designed in 2000 by Andriessen and Tissen from KPMG Knowledge Advisory Serviced in the Netherlands and it is based on the key competences of the company. They include: knowledge, processes and cultural aspects (Osinski et al. 2017).

The value of each of the key competences is counted using the following variables: gross profit, durability, potential, strength of influence and cost of capital.

$$V_{CC} = R \times \sum_{t=1}^S \frac{GP \times (1+P)^t}{(1+i)^t} \quad (3)$$

Where:

V_{cc} – value of the key competences,

R – strength of influence (in %),

S – durability (in years),

GP – gross profit,

P – potential (in %),

I – cost of capital.

It is assumed that the cost of capital is the same for each of the key competences. The value of the remaining variables can be estimated using the control list that includes five questions with the possibility of answering “yes/no”. The number of positive answers is summed up to the comprehensible control list in the form of the points from 0 to 5 (Matos, 2013).

The gross profit can be determined in the following way (Kasiewicz, Rogowski, Kicińska, 2006, pp. 132-133):

- step one – the creation of the matrix consisting of key competences and the products manufactured by the company or the categories of products,
- step two – the evaluation of the importance of a given competence in the process of creating a product or a category of products. For this purpose one can assign the point value from 0 to 5 to every matrix cell assuming that: 0 means lack of share, 1 – insignificant share, 2 – significant share, 3 – necessary share,
- step three – the points for given products are summed up,
- step four – the value of the gross profit for a product should be divided by the number of points for given competences at creating a given product,
- step five – the value of the gross profit in each of the matrix cells should be calculated,
- step six – the value of the gross profit in the matrix lines should be summed up. In this the gross profit for one key competence will be indicated.

The durability is the length of the period in which the company is able to keep the competitive advantage thanks to the key competence. In order to indicate the durability, the control list with the 0-5 scale can be used. Based on the intuition and experience, the managers assign a point value to each competence determining the number of years of the competitive advantage.

The potential determines new possibilities on market that the company is able to use. The potential can be indicated taking into consideration the expected growth of the gross profit that can be generated by the product as a result of using the market mechanisms.

The strength of influence indicates how strongly the key competences are rooted in the company and what chance do they have to influence the long-term financial results. In order to estimate the strength of influence, the control strength with the scale from 0 to 5 can be used (when only one employer is a source of the key competence the strength of influence is small). Then the assigned point values are divided into five and multiplied by 100% receiving the percentage of the strength of influence (Pastor, 2017).

Another model of measuring the intellectual capital is the IAV model. It is the method of estimating the intellectual capital and it concerns the measurement of the innovative intangible assets. It was proposed by Sullivan in 2000. The model is based on the assumption that the innovative intangible assets generate not only incomes for the company but they are also signs of its reputations, they strengthen the loyalty of the clients and can create the barrier of entry. The innovative intangible assets and the human capital create the intellectual capital (Dominiak, 2013).

The creator of the model underlines that an organization based on knowledge has two basic sources of value at its disposal: the innovations and complementary business assets that enable the innovation commercialization. The mechanism of shifting the innovation into incomes assumes seven ways of getting the value: direct sale, license contracts, joint Venture, strategic alliances, integration of the business, creating new business or a donation. Sullivan presents a calculation of the value of a company which is active on the market and is created as a result of fusion or takeover using the following formula:

$$V_m = V_{ta} + NPV \text{ of the incomes from the innovative intangible assets} + NPV \text{ from the complementary business assets} + NPV \text{ of the incomes from the structural capital} \quad (4)$$

Where:

V_m – market value of the company,

V_{ta} – accounting value of the intangible assets

The IAV model needs a more accurate analysis of profits for their division into those generated by the intellectual capital (without the structural capital), complementary business assets and the structural capital (Samul, 2016).

The IC-Index model was created as a result of cooperation between Roos, Roo, Dragonetti and Edyinson. It was used for the first time in 1997 for measuring the intellectual capital and the results were published and added to the annual report of Skandia.

IC-Index is a model of the point card but the ideas are borrowed from the resource theory of a company, model of balanced results card, method of economic added value (EVA) and managing value in a company.

This model combines the list of individual indicators into one, synthetic indicator. The choice of indicators and determining their contribution to the aggregated index depend on the predominant elements of the intellectual capital in a given company, its strategy, the character of the conducted activity and the everyday economic operations (Grimaldi, 2015).

The IC-Index concept proposed by G. Roos and J. Roos is based on a hundred and eleven indicators. The creators of the model suggest that every measure included in the IC-Index must be: relevant, precise and easy to measure. The list of the indicators can be divided into four types of measures (Kasiewicz, Rogowski, Kiciński, 2006, p. 137):

- cumulative – direct measures presented usually in the monetary units, useful for indicating the products of inflection, the turning point in the bent life cycle of the product,
- competitive – the percent measures or indexes that compare a part of the company activity with the sector average (benchmarking),
- comparative – the measures including two variables that comparing with measures with one variable are a better source of information about the dynamics of the intellectual capital of the company (Wolak-Tuzimek, 2016),
- combined – the mixed measures expressed in a monetary unit or as an indicator including more than two variables enabling a new outlook on a company (Kogut, 2017b).

G. Roos underlined that the character of the selected indicators decides about the subjectivity of the method and because of that it loses the universal character of the measure. Because the individual indicators have one-dimensional numeric value, the IC-Index measures only the changes in the flows of the intellectual capital. What is more, the technique described above makes one particular event in the company history influence the change of the IC-Index value in years after this event (Cricelli, Greco, Grimaldi, 2014).

To conclude, all described intellectual capital measure metrics have advantages and disadvantages. Table 1 presents a summary of all the most important features of each of the intellectual capital metrics described above.

Table 1. Advantages and disadvantages of models of measuring the intellectual capital

Model	Advantages	Disadvantages
IAMV TM	Measurement of the intellectual capital and identification of its components.	Subjective attitude of managers in determining the monetary value of intellectual capital components.
Value discoverer	The model identifies the main competences of the organization, provides a practical hint when making strategic decisions, enables the creation of a hierarchy of intangible assets from the point of view of achieving strategic goals.	Subjective data selection. It provides value measures, but does not propose efficiency measures. It requires a very detailed analysis of the factors shaping the position of the organization.
IAV	It emphasizes the importance of complementary business assets in creating goodwill.	It requires a detailed analysis of profits in order to divide them into those generated by the intellectual capital, complementary business assets, and structural capital.
IC-Index	Flexible and dynamic model. It monitors changes in intellectual capital flows, indicating changes in future profits. It contains elements of value creation analysis based on the use of intangible assets, and not on just their possession.	A complex model that is difficult to build in practice. Computational advanced. A subjective selection of measurement indicators. Lack of universal character of the measurement. Non-objective benchmarking. It only measures changes in intellectual capital flows.

Source: Pike, Roos, 2004

The need to systematically measure intellectual capital and show the dependence between its effectiveness and the functionality of the company's operations may result from the specific nature of the functioning of a given enterprise. Therefore, it is worth mentioning some quite important recommendations regarding its measurement in practice (Kogut, 2017):

- firstly, selection of the method that seems best for organization - one or several until they are fully verified,
- secondly, the procedures regarding the chosen method of intellectual capital should also be followed,

- intellectual capital should be measured cyclically (in the first phase the frequency of the measurement should be higher in order to develop own rules of procedure, selection of appropriate methods, etc.),
- employees should be involved in the measurement process to the same extent as the managerial staff.

The presented analysis is an attempt to broaden knowledge about the methods of measuring the intellectual capital. Although there are many such methods and only the most popular without a specific division are described in the subject literature. Therefore, it is important to continually bring closer this subject, which is an area of interest for both theoreticians and practitioners.

5. Conclusion

The intellectual capital which in the modern economic reality has a key importance for the development of the companies and is the basic generator of the competitive potential, is a category which is difficult to measure. Its intangible character and the multitude of elements that create it make the management a demanding challenge for the managers and an important activity in the process of business management at the same time. The necessity to shed some light on the concept of the intellectual capital and methods of measuring it is particularly significant because it greatly influences the competitiveness of the organization.

There are many methods of measuring the intellectual capital. Their division into four different groups include also: indicators, metes, metrics and systems. The metrics of the intellectual capital include: the IAMVTM model, "values discoverers" model, IAV model and the IC-Index model. Each of them has strong and weak points. What is more, none of them has been regarded the best and universal. That is the reason it can be only tried to adjust the given tools to the particular conditions of functioning of the company. It is sure that the best method of measuring the intellectual capital in a given organization may be developed by a specially appointed team of experts of various fields which can adjust to the market, the company strategy and its business model.

The advantage of using metrics to measure the intellectual capital is certainly that they are a basic element in the research of the strategic potential of the organization and in this way they improve the process of formulating business strategy. They also increase the awareness of the role of the intellectual capital in the generation of company value and gaining a competitive advantage in employees and management. The use of intellectual capital metrics in incentive systems makes it possible to create a result-oriented company culture, because non-financial measures better reflect the future direction of the company's development and its results than traditional financial indicators.

In summary, the intellectual capital measurement metrics can be effectively applied in any enterprise. Therefore, it is required to gain the experience of management boards in the field of intellectual capital management and to quantify information about the intellectual capital.

References

- Beyer, K. (2014). Kapitał intelektualny przedsiębiorstw notowanych na GPW. *Finanse, Rynki Finansowe, Ubezpieczenia*, nr 67, Zeszyty Naukowe Uniwersytetu Szczecińskiego, pp. 479-488.
- Bombiak, E. (2013). Kapitał intelektualny przedsiębiorstwa – kluczowy majątek współczesnych organizacji. *Zeszyty Naukowe Uniwersytetu Przyrodniczo-Humanistycznego w Siedlcach*, vol. 96, pp. 71-86.
- Bontis, N., Keow, W.Ch.Ch., Richardson, S. (2000). Intellectual capital and business performance in Malaysian industries. *Journal of intellectual capital*, vol. 1, iss. 1, pp. 85-100.
- Cricelli, L., Greco, M., Grimaldi, M. (2014). An overall index of intellectual capital. *Management Research Review*, vol. 37, iss. 10, pp. 880-901.
- Dominiak, P., Mercik, J., Szymańska, A. (2013). Comparative analysis of methods of measuring company's intellectual capital. *Operations Research and Decisions*, vol. 23, iss. 1, pp. 17-28.
- Dyr, T., Ziółkowska, K. (2014). Economic infrastructure as factor of the region's competitiveness. *Central European Review of Economics & Finance*, vol. 6, iss. 3, pp. 5-26.
- Dyr, T., Ziółkowska, K. (2017). The intellectual capital as the regions' competitiveness factor. *Central European Review of Economics & Finance*, vol. 17, iss. 1, pp. 33-51.
- Edvinsson, L., Malone, M.S. (2001). *Kapitał intelektualny*, Warszawa: PWN.

- Grimaldi, M., Cricelli, L., Rogo, F. (2015). Assessment and Management of Intellectual Capital: A Single Case Study on the Construction and Implementation of an IC Index. *Knowledge and Process Management*, vol. 22, iss. 4, pp. 235-249.
- Kasiewicz, S., Rogowski, W., Kicińska, M. (2006). *Kapitał intelektualny*, Kraków: Oficyna Ekonomiczna.
- Kogut, J. (2015). Znaczenie etyki biznesu w zarządzaniu przedsiębiorstwem. In A. Lotko (Ed.), *Zarządzanie i marketing w warunkach zrównoważonego rozwoju i gospodarki cyfrowej*. Radom: Studenckie Koło Nauk o Zarządzaniu UTH Radom, vol. 34, pp. 30-40.
- Kogut, J. (2017a). Human capital as the basis for creating a competitive advantage. *World Scientific News*, WSN 72(2017), pp. 219-234.
- Kogut, J. (2017b). The analysis on the economic situation of family businesses in Poland and in Europe. In L. Janošová, L. Kuchynková, M. Cenek (Eds.), *Proceedings of International Scientific Conference of Business Economics, Management and Marketing*, pp. 128-138. Zaječí: Masaryk University.
- Maji, S.G., Goswami, M. (2015). The Journey of IC Research: Reflections from the Past two Decades. *Asian Journal of Research in Banking and Finance*, vol. 5, iss. 6, pp. 85-102.
- Matos, F. (2013). A Theoretical Model for the Report of Intellectual Capital. *Electronic Journal of Knowledge Management*, vol. 11, iss. 4, pp. 339-360.
- Osinski, M., Selig, P.M., Matos, F., Roman, D.J. (2017). Methods of evaluation of intangible assets and intellectual capital. *Journal of Intellectual Capital*, vol. 18, iss. 3, pp. 470-485.
- Pastor, D., Glova, J., Lipták, F., Kováč, V. (2017). Intangibles and methods for their valuation in financial terms: Literature Review. *Intangible Capital*, vol. 13, iss. 2, pp. 387-410.
- Pietrzak, M.B., Balcerzak, A.P. (2016). Quality of Human Capital and Total Factor Productivity in New European Union Member States. In T. Löster, T. Pavelka (Eds.), *The 10th International Days of Statistics and Economics*, pp. 1492-1501. Libuše Macáková, Melandrium: Vysoka Skola Ekonomicka v Praze.
- Pike, S., Roos, G. (2004). Mathematics and Modern Business Management, *Journal of Intellectual Capital*, no 2, pp. 243-256.
- Rodrigues, L.L. (2017). Corporate governance and intellectual capital reporting in a period of financial crisis: Evidence from Portugal, *International Journal of Disclosure and Governance*, vol. 14, iss. 1, pp. 1-29.
- Samul, J. (2016). Zasoby ludzkie jako składnik zintegrowanych narzędzi zarządzania wynikami organizacji, *Human Resource Management*, vol. 1, pp. 106-115.
- Skrodzka, I. (2015). *Kapitał ludzki polskich województw – koncepcje pomiaru*, Białystok: Wydawnictwo Uniwersytetu w Białymstoku.
- Wachowiak, P., Sopińska, A., Mierzejewska, W. (2015). Measurement of human capital from the perspective of intellectual capital, *Journal of Management and Financial Science*, vol. 8, iss. 21, pp. 131-146.
- Wolak-Tuzimek, A. (2016). Innovative activities of small and medium-sized enterprises in Poland. In T. Löster, T. Pavelka (Eds.), *The 10th International Days of Statistics and Economics*, Libuše Macáková, Melandrium: Vysoka Skola Ekonomicka v Praze, pp. 2056-2065.
- Wosiek, M. (2012). *Kapitał intelektualny w rozwoju regionów Polski wschodniej*, Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego.
- Zakery, A., Afrazeh, A. (2017). Analysing intellectual capital management and growth based on dynamic modelling. *Knowledge Management Research & Practice*, vol. 15, iss. 1, pp. 101-113.

Eva Koišová¹ *

Alexander Dubček University of Trenčín
Slovakia

Jana Masárová²

Alexander Dubček University of Trenčín
Slovakia

33. DISPARITIES IN REGIONAL DEVELOPMENT IN THE SLOVAK REPUBLIC AND POLAND

Abstract: The issue of regional differences is still topical not only in Slovak and Polish Republics, but also in other EU countries. Both Slovakia and Poland, apart from EU membership, are also members of so-called Visegrad group along with Czech and Hungarian Republic. The V4 economic policy scope is to reduce differences within the country. The aim of this paper is to identify similarities and differences in the development of basic economic indicators such as employment, unemployment and gross domestic product in Slovak and Polish regions in the selected time period of 2000-2015. As a research territorial unit, we have chosen the NUTS II level. We used methods of analysis, comparison, and synthesis. By means of statistical methods, we analyzed the time series of selected economic indicators. We used the variance coefficient and variation range to determine the regional disparities. The analyzes were made from data being available in the Eurostat database. The research shows that the regional disparities in selected indicators at NUTS II level are significantly higher in the Slovak Republic than in Poland, which is mainly due to the significant gap between the Bratislava region and other regions of SR. The paper was written under the VEGA project No. 1/0233/16 “Dimensions and factors related to social and economic development of V4 regions”.

Keywords: employment, GDP, region, regional disparities, unemployment.

JEL Classification: R11, O18

1. Introduction

Slovakia and Poland are members of so-called Visegrad Four group countries along with Czech Republic and Hungary. Those countries are located in Central Europe and having been experiencing major economic and political reforms since 1989. The transition from central planning to market economy has been accompanied by various societal influences. Each country went its own way and each of them had to deal with their specific problems. In both countries, however, the transformation process from a centrally planned economy into a market one has triggered significant regional disparities, as some regions have failed to adapt to new conditions. As noted by Habánik et al. (2014), regional disparities are conditioned by economic, social and structural changes, infrastructural facilities, and also influenced by geography and the potential of region. Other authors point out that the differences in development of different regions are due to the different capacities to gain benefits and to eliminate various losses from the reforms (Barjak, 2001; Artelaris, Kallioras, Petrakos, 2010; Smetkowski, 2013; Maier, Franke, 2015).

The goal of the economic policy of developed countries is to increase the standard of living and welfare of society, which cannot be achieved without balancing the levels of individual regions. That is why regional policy is a key area of an economic policy as well as public administration management. By means of suitable measures of particular public administration sectors all developed countries are trying to stimulate development processes to cut disparities in the regions' development, it means, actively work against deepening of regional discrepancies. At the same time, they are trying to make all the sources assigned for public services supplying to be used efficiently, cost-effectively and economically.

¹ Ing. Eva Koišová Ph.D.; Študentská 3, 91150 Trenčín, Slovakia, eva.koisova@tnuni.sk

² Ing. Jana Masárová Ph.D.; Študentská 3, 91150 Trenčín, Slovakia, jana.masarova@tnuni.sk

* Corresponding author

The exploitation of the territory's potential is a basic starting point for the social and economic development of regions and a condition for changes that will lead to a new higher quality of life and competitiveness of region.

Being able to select the most appropriate tools to assuage regional disparities in a particular country, it is essential to analyze the situation, i.e., to process the complex regional analyzes. In this context, the key role is done by the proper choice of criteria to assess regional disparities.

The selection of indicators to assess the level of regional economy is a complicated task. When assessing the level of regional development, simple and available indicators such as unemployment rate, average monthly wage, the share of social benefits recipients, selected demographic characteristics, etc. are often used to identify lagging regions. The crucial importance while selecting indicators is their representativeness and ability to capture different variability.

Regional GDP per capita is the most commonly used indicator to assess regional disparities. This indicator is also used by European Union to assess regional disparities and subsequently define the rules for convergence aid to regions. In the Slovak Republic, several authors (e.g. Buček, Reháč, Tvrdoň, 2010; Matlovič, Matlovičová, 2011 and others) point out to the "weakness" of gross domestic product indicator. Despite this fact, regional GDP per capita is considered to be an appropriate indicator to assess the level of regional economy development.

Other options how to assess regional disparities are labor market indicators, particularly employment rate and unemployment rate, which are considered as indicators of socio-economic development in regions. In particular, unemployment rate is a significant economic indicator with a strong social background.

It is necessary to add that in recent years we have encountered in various scientific works the authors' attempt to affect the level of regional development and to reveal the lagging regions (by some kind of) a comprehensive indicator which takes into account economic social and demographic characteristics of regions as well as selected parameters of technical infrastructure (Rajčáková, Švecová, 2009; Korec, Polonyová, 2011 and others).

In our paper we deal with similarities and differences in the development of basic economic indicators such as: employment, unemployment and gross domestic product in the Slovak Republic and Poland and their following assessment.

2. The Literature Overview

The issue of different development, whether in political, economic or sociological fields, has been the subject of many authors and research teams (Poledníková, 2013; Tvrdoň, Skokan, 2011; Stawicki, 2017; Habánik, Kordoš, Hošťák, 2016, Vojtovich, 2013). Kordos (2016) argues that regional policy in the context of European regional and innovation policies becomes the driving force for the world economy development. Many studies focus on the dynamics of regional development in Central and Eastern Europe countries (CEECs) after the collapse of communism and provided some important findings (Novosák et al., 2017). In research, it is possible to see that the CEECs have seen the economic performance convergence of the whole economy as well as regions (Banerjee, Jarmuzek, 2010; Ezcurra, Pascual, Rapun, 2007; Artelaris, Kallioras, Petrakos, 2010). However, this fact also carries a shortage regarding the uneven development of regions within individual economies. In this area there are relatively large regional differences which have a number of accompanying negative consequences. At the same time, the lagging regions themselves are often helpless. The main cause of these differences according to Korec and Polonyová (2011) is, in a simplified way, the different capabilities of regions to adapt to new economic and social conditions. The above average developed regions are mainly metropolitan regions. Peripheral, e.g. rural areas are lagging behind in many cases. Fiedorowicz and Fiedorowicz (2006) also deal with the impact of metropolis on the development of regions.

There are similar problems outside the Europe as well. Liua et al. (2017) state that affluence is accumulated in developed regions, and experience is shared in here too. According to other authors, the increase in these regional diversifications may result in a concentration of capital, labor and technology in developed regions bringing up an unreasonable burden on the developed region's infrastructure, environmental protection and social security. In poorly developed regions we can see an outflow of funds, technologies and labor. According to Tian et al. (2017) in the future this phenomenon can destabilize the development of welfare in disadvantaged regions. According to

Świadek and Tomaszewski (2011) innovation is an important prerequisite for the development of regions and for weaker regions without external impulses it is not possible to be developed sufficiently.

After 1989, in transforming countries of Central Europe, also in Visegrad Four countries, a considerable differentiation within the regional development began to emerge, both in economic, social and cultural terms. The differences reached such extend that not only in literature, but also in practical questions the terms such as "regional polarization" and "regional disparities" have become very frequent. According to Gajdoš (2007) regional disparities are "a consequence of regional development", where there is an uneven development of regions, resulting in a series of inequalities such as social, economic, cultural, infrastructure, etc., causing regional polarization. According to Korec and Polonyová (2011) these concepts should highlight not only the fact that the differences between regions are very huge, but also the fact that these differences have a number of accompanying negative consequences.

3. Goal, Hypothesis and Methodology

The goal of this paper is to identify the similarities and differences in basic economic indicators development such as employment, unemployment and gross domestic product in Slovak and Polish regions in selected time frame 2000-2015.

Analyzes were made from data available in the Eurostat database. When selecting appropriate indicators, the limited availability of appropriate data appears to be a limiting factor. Many data are not systematically monitored, and another problem is the changing methodology structure of some indicators. This complicates the performance of comparative analyzes in a longer time frame. However, we assume that our limited selection of indicators will provide an overview of regional disparities development in Slovakia and Poland.

We used methods such as analysis, comparison, and synthesis. By using statistical methods, we analyzed the time series of selected economic indicators. To observe and evaluate regional analyzes, in literature we can meet with the application of multiple statistical tools and methods such as standard deviation, variation coefficient, Lorenz curve, Theil index, Gini index, Atkinson indices, cluster analysis and others (Atkinson, 1970; Cowell, 2000, pp. 87-166; Štika, 2004; Canaleta and Arzoz and Gárate, 2004, Ivanová, Kordos, 2017). In our analysis, we will use the variation coefficient and variation range to determine regional disparities.

The variation coefficient is very often used to determine the relative variation rate; we calculate it as the ratio of standard deviation and the arithmetic average of monitored indicator.

$$V = \frac{\sigma}{\bar{x}} \quad (1)$$

The standard deviation represents the difference mean between the values and the average while ignoring the signs. It is often used to measure interregional variability. However, its application is disputable by the functionality of its size on the choice of measurement units and the magnitude of measured values. For these reasons, it is not suitable to compare different variables (Štika, 2004). We calculate it according to:

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \bar{x})^2} \quad (2)$$

where:

N – is the number of observation units,

x_i – is the value of indicator x in observation unit i,

\bar{x} – is an arithmetic mean of indicator x values.

The simplest characteristic of variation is the variation range. It is a difference between the highest and lowest character values. If the maximum value of character is denoted as x_{max} and the lowest value x_{min} , then the variation range S_n is expressed as follows:

$$S_n = x_{max} - x_{min} \quad (3)$$

The variation range is used as a characteristic that complements the mean value. It specifies the interval in which the individual character values can move.

In our research, we have chosen the administrative approach how to divide regions according to the NUTS classification (La Nomenclature des Unités Territoriales Statistiques), which was created and implemented for the needs of EU regional statistics and harmonized data collection. The NUTS II level has been chosen as a research territorial unit. In the Slovak Republic there are four such regions: Bratislava Region, Western Slovakia, Central Slovakia, and Eastern Slovakia. In Poland there are 16 voivodeships at NUTS II level: Łódzkie, Mazowieckie, Małopolskie, Śląskie, Lubelskie, Podkarpackie, Świętokrzyskie, Podlaskie, Wielkopolskie, Zachodniopomorskie, Lubuskie.

4. The Assessment of Regional Differences Development between Slovak Republic and Poland

The regional structure of Slovakia is characterized by significant spatial disparities being set by geographical, cultural, historical, economic and other factors. Regional performance differences have increased since the economic changes in 1989. Uramová and Kožiak (2008) state that for a relatively long time for Slovakia it has been characteristic that there are significant regional disparities, mainly at NUTS II and NUTS III levels. From the geographical point of view the biggest differences in the development of regions in the Slovak Republic are between the western and eastern parts of Slovakia (Lipáková, 2017).

Even in Poland, the biggest differences between particular voivodeships started to emerge in connection with the economy transformation, especially due to the inadequate structure of their economy. The most developed region in Poland is Mazowieckie Voivodship (with the capital of Warsaw), the least developed are the regions in the east of the country such as Lubelskie, Podkarpackie, Podlaskie and Warminsko-Mazurskie.

4.1. Differences in Gross Domestic Product Development in the Regions of Slovakia and Poland

The development of gross domestic product per capita in the Slovak Republic in 2000-2015 was positive, with only a slight decline in 2009 due to economic recession. Markedly higher GDP per capita was created in the Bratislava region where it increased from EUR 9000 in 2000 up to EUR 35400 in 2015, representing an increase of 293.33%. In this region, GDP per capita did not drop even in the crisis year of 2009, only its growth was slowed down. The lowest GDP per capita was reported in Eastern Slovakia region: in 2000 it was only EUR 3100, in 2015 it was already EUR 10100, and this increase means 225.81%.

Regarding the GDP per capita development in Poland, there has been a decline in GDP per capita, not only in the crisis year of 2009, but also in 2002 and 2003. GDP growth per capita has been rising in recent years. The most powerful region is Mazowieckie with the capital of Warsaw, where GDP per capita has been rising from 7400 EUR in 2000 up to 17800 EUR in 2015, i.e. about 140.54%. Other regions are following, finishing with the regions of Lubelskie, Podkarpackie and Warminsko-Mazurskie as the worst performers. From the GDP per capita data in Slovak and Polish regions we have calculated the variation coefficient and variation range. The development of these variability indicators in Slovakia and Poland is shown in Figure 1.

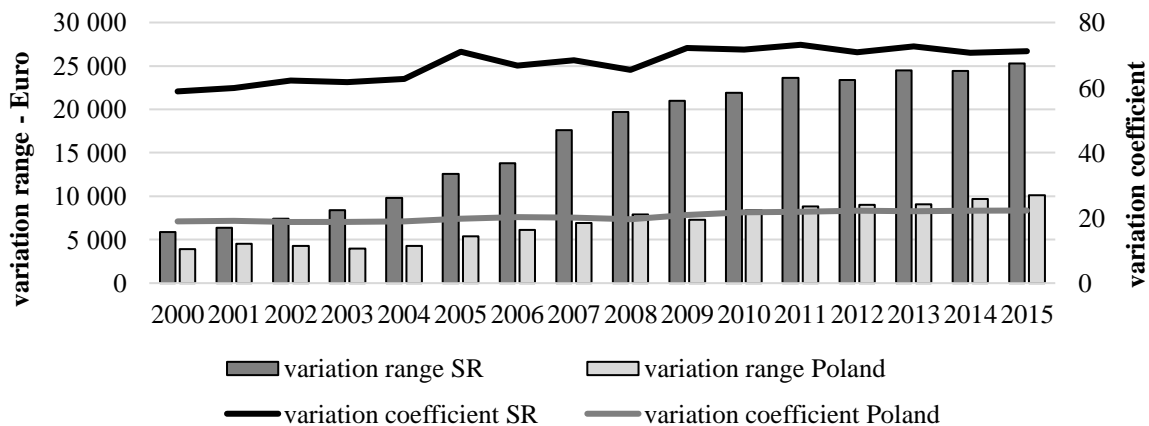


Figure 1. GDP per capita variability in Slovakia and Poland

Source: Own processing, own calculations

The graphical representation shows that the regional differences in the Slovak Republic are substantially higher than in Poland. The variation of GDP per capita in SR has increased significantly in the observed period, from EUR 5900 in 2000 up to 25300 in 2015. The increase of variation coefficient in the Slovak Republic was moderate, from 58.85 in 2000 to 71.23 in 2015.

In Poland, the variation of GDP per capita is much lower than in the Slovak Republic, it was fluctuating with a growing trend, reaching EUR 3900 in 2000 and EUR 10100 in 2015. The variation coefficient in Poland ranged from 18.77 (2002) to 22.29 (2015), showing a slight increase in the period under review.

4.2. Employment Development Differences in the Regions of Slovakia and Poland

In the Slovak Republic employment rate has been fluctuating with a growing trend. The highest employment rate is in the Bratislava Region, reaching 72.1% in 2008. In the following years, due to economic recession, it dropped, but in recent years its development has been positive and reached 71.5% in 2015. The lowest employment rate is in Eastern Slovakia region in the long run, reaching only 51.1% in 2004, gradually moved up to 59.1% in 2016.

In Poland, the employment rate was declining in the first years of the period under review, but since 2004 its progression has been recorded, with the exception of the crisis years. In terms of employment, in most years, the best results have been achieved by Mazowieckie region, in 2001-2002 it was Malopolskie region, in 2004 Podlaskie region. The highest employment rate was recorded by Mazowieckie region in 2015 - up to 68.8% in 2015. On the opposite side of the employment ranking list, there are regions of Zachodniopomorskie and Warminsko-Mazurskie where the employment rate in 2002 reached only 45%.

Regional differences in employment levels in the Slovak Republic and Poland at NUTS II level are shown in Figure 2.

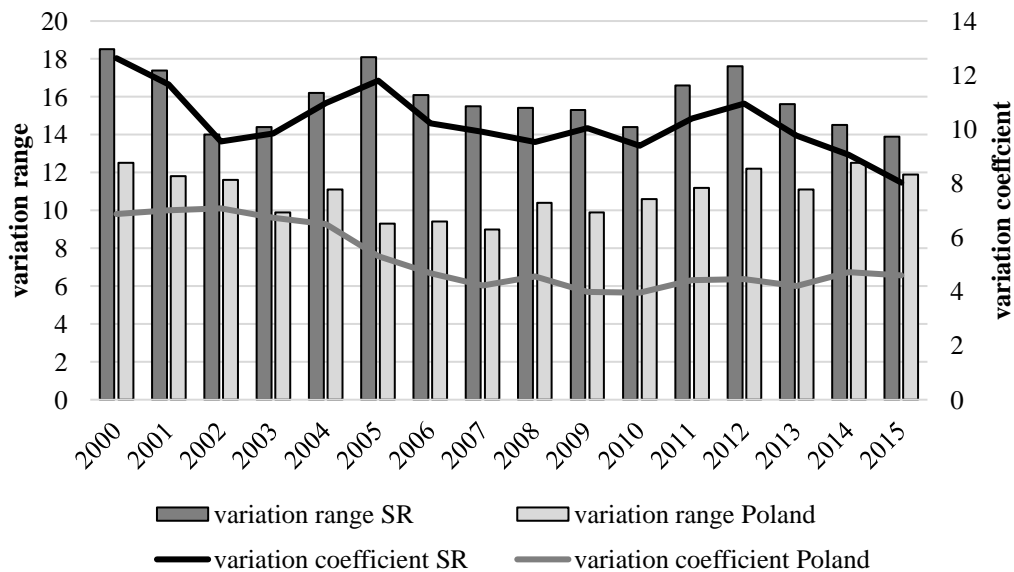


Figure 2. Employment rates variability in Slovakia and Poland

Source: Own processing, own calculations

The employment rate variation range in the Slovak Republic has been fluctuating, with a decreasing trend. The largest variation range was achieved in 2000 (18.5 p.p.), large differences in employment rates were also in 2005 (18.1 p.p.) and in 2012 (17.6 p.p.). The variation coefficient in the Slovak Republic was developed similarly, the highest values were reached in 2000 (12.63), in 2015 they dropped to 8.03.

Even in employment rate, regional differences in Poland are smaller than in Slovak Republic. The variation range fluctuated in the period under review, decreased in the years of 2000-2008, increased in the next years and reached 12.5 p.p. in 2014. The relative indicator of employment variability in Poland (variation coefficient) declined in the pre-crisis period, on the contrary, slightly increased after 2009.

4.3. Unemployment Development Differences in the Regions of Slovakia and Poland

In the Slovak Republic the unemployment is very unfavorable issue, because its high rate negatively affects both the individual unit and the economy as a whole. In observed period, the unemployment rate in the Slovak Republic was growing positively till 2008, then it increased due to recession, and only in recent years a decreasing trend can be observed. The lowest unemployment rate is in Bratislava region; in 2008 it was only 3.4%. Eastern Slovakia is the most affected area by unemployment (2004: up to 25%) as well as Central Slovakia (2004: 22.5%). In the last year, even in these regions, unemployment has dropped below 15%.

In Polish regions unemployment has been increasing at the beginning, after 2004 it was increasing until 2008, when it dropped below 10% in all regions. However, as a result of economic recession, the unemployment rate has risen up to 14.4% in 2011 in the region of Podkarpackie. In recent years, unemployment has dropped in all regions of Poland.

The absolute and relative variability of unemployment rate in Slovakia and Poland is shown in Figure 3.

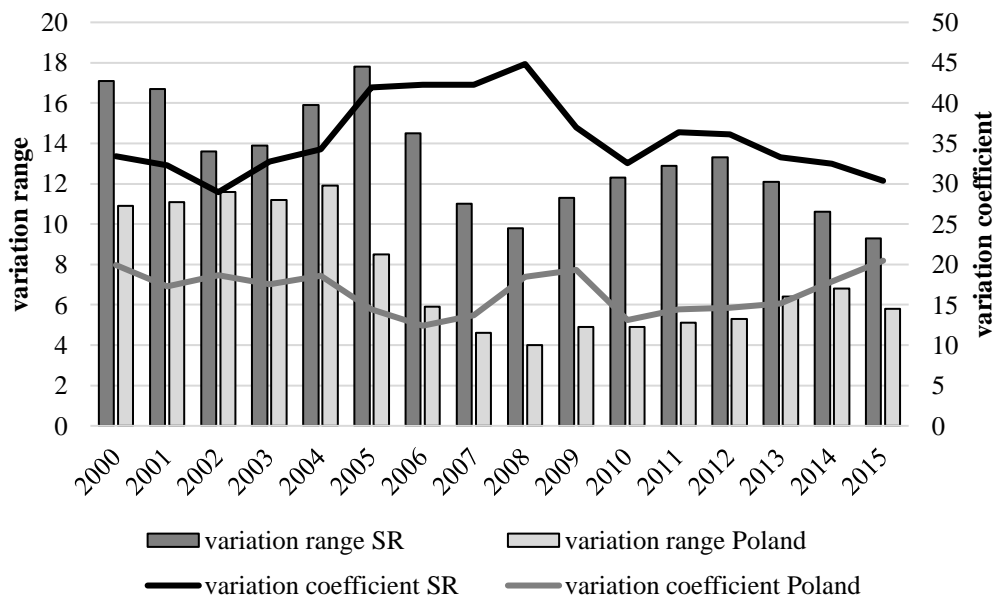


Figure 3. Unemployment rates variability in Slovakia and Poland

Source: Own processing, own calculations

In the years of 2000-2015 the variability of unemployment rate in the Slovak Republic and Poland was fluctuating. In the Slovak Republic, the highest variation of unemployment rate was in 2005 – up to 7.8 p.p. The lowest absolute differences in unemployment rate in the Slovak Republic were in 2015 (9.3 p.p.) and 2008 (9.8 p.p.). The variation coefficient reached the highest values in 2008 (44.84), while the lowest values were recorded in 2002 (28.96), in the last years of observed period.

In Poland, in the first five years of observed period, the variation range was reaching up to 11.9 p.p. in 2004. However, since 2005, absolute disparities in unemployment rates have been decreasing, up to 4 p.p. in 2008; in the post-crisis period there was a slight increase. Relative differences in unemployment rates were fluctuating, ranging from 12.40 (2006) to 20.47 (2015). Even within the unemployment, regional differences in Poland are significantly lower than in the Slovak Republic.

5. Conclusion

Regional disparities are seen as inequalities, especially in economic performance. They are associated with lower utilization of production capacities, available resources and region's internal potential. They are assessable by means of various economic and social indicators. In our paper, we have assessed the differences between the level of regions in the Slovak Republic and Poland by means of indicators such as GDP per capita, employment rate and unemployment rate.

From our calculations follows that regional differences in GDP per capita in both Slovakia and Poland are increasing, however in the Slovak Republic regional differences are substantially higher than in Poland. When it comes to the employment rate, regional differences in the Slovak Republic are fluctuating with a decreasing trend. In Poland, regional disparities regarding employment are significantly lower than in SR, although the absolute differences have increased slightly in recent years, but the relative differences are slightly declining.

Also, the variability of unemployment rate in SR and Poland is fluctuating. In the Slovak Republic, the relative variability has been increasing until 2008, but it has fallen slightly since then. In Poland, the regional development differences were slightly different, since 2011 the relative differences regarding unemployment rate have increased slightly, but they are still lower than in the Slovak Republic.

On the basis of the above findings, we can conclude that there are regional differences in both countries - the Slovak Republic and Poland; however the best results in the surveyed indicators have been achieved by regions with a capital city (the Bratislava Region in the Slovak Republic, Mazowieckie region in Poland). The regional differences within the level of surveyed indicators are significantly higher in the Slovak Republic than in Poland. We realize that in our paper we did not cover the issue of regional differences in a comprehensive way, and therefore, in further research, we also have to focus on exploring the differences through other indicators in terms of economic, social or environmental background.

It is not to be expected that regional differences will be eliminated or mitigated by market and market mechanism. Therefore, there is the role of government, regional policy and public administration to act through available instruments and management methods and to cut down the significant differences in economic and social level of regions; this is the way how to contribute to the growth of entire national economy. In current public administration management it is necessary to continue with the implementation of modern management methods such as ISO standards, benchmarking, reengineering, modeling, crisis and lean management, but also the of mass operation theory and others.

Acknowledgements

The paper was written under the VEGA project No. 1/0233/16 “Dimensions and factors related to social and economic development of V4 regions”.

References

- Atkinson, A. (1970). On the measurement of inequality. *Journal of Economic Theory*, vol. 2, iss. 3, pp. 244-263.
- Artelaris, P., Kallioras, D., Petrakos, G. (2010). Regional Inequalities and Convergence Clubs in the European Union New Member-States, (2010). *Eastern Journal of European Studies*, vol. 1, no. 1, pp. 113-133.
- Canaleta, C.G., Arzo, P.P., Gárate, M.R., 2004, Regional Economic Disparities and Decentralisation. *Urban Studies*, vol. 41, iss. 1, pp. 71-94.
- Banerjee, B., Jarmuzek, M. (2010). Economic Growth and Regional Disparities in the Slovak Republic. *Comparative Economics Studies*, vol. 52, no. 3, pp. 379-403.
- Barjak, F. (2001). Regional Disparities in Transition Economies: A Typology for East Germany and Poland, *Post-Communist Economies*, vol. 13, iss. 3, pp. 289-311.
- Buček, M., Reháč, Š., Tvrdoň, J. (2010). *Regionálna ekonómia a politika*. Iura Edition, Bratislava.
- Cowell, F. A. (2000). Measurement of Inequality. *Handbook of Income Distribution*. Volume 1. Handbooks in Economics, Vol. 16. Eds. Anthony B. Atkinson and Francois Bourguignon. Amsterdam; New York and Oxford.
- Ezcurra, R., Pascual, P., Rapún, M. (2007). The Dynamics of Regional Disparities in Central and Eastern Europe during Transition. *European Planning Studies*, vol. 15, no. 10, pp. 1397-1421.
- Fiedorowicz, K., Fiedorowicz, J. (2006). The Influence of a Metropolis on Regional Development in Poland, *42nd ISoCaRP Congress 2006*, pp. 1-10. [online]. Available: http://www.isocarp.net/Data/case_studies/887.pdf [2017, November 01].
- Gajdoš, P. (2007). Trendy sídelno-regionálneho rozvoja Slovenska ako rozvojové bariéry. In Z. Beňušková, O. Danglová, (Eds.), *Trendy regionálneho a miestneho rozvoja na Slovensku* (pp. 33-52). Bratislava: Ustav etnológie SAV, Centrum pre európsku politiku Bratislava, Katedra etnológie a etnomuzikológie, Nitra.
- Habánik, J., Kordoš, M., Hošťák, P. (2016). Competitiveness of Slovak economy and regional development policies. In: *Journal of International Studies*, vol. 9, no. 1, pp. 144-155.

- Habánik, J. et al. (2014). *Regionálna ekonomika a regionálny rozvoj*. Trenčín: Trenčianska univerzita A. Dubčeka v Trenčíne.
- Ivanová, E., Kordos, M. (2017). Competitiveness and Innovation performance of regions in Slovak Republic. *Marketing and Management of Innovations*, iss.1, pp. 145-158.
- Liptáková, K. (2017). Laubor Market Disparities in the Banská Bystrica region. In *Economic review*. Roč. 46., vol. 3, pp. 245-272, [online]. Available: https://euba.sk/www_write/files/SK/ekonomicke-rozhlady/er3_2017_liptakova_fulltext.pdf [2017, November 13].
- Liua, B., Xua, M., Wanga, J., Xiea, S. (2017). Regional disparities in China's marine economy. In *Marine Policy*, vol. 82, pp. 1-7 [online]. Available: <http://www.sciencedirect.com/science/article/pii/S0308597X17300945?via%3Dihub> [2017, November 13].
- Maier, K., Franke, D. (2015). Trendy prostorové sociálně-ekonomické polarizace v Česku 2001-2011 [Trends in Spatial Socio-economic Polarisation in the Czech Republic 2001-2011], *Czech Sociological Review*, vol. 51, no. 1, pp. 89-123.
- Kordos, M. (2016). Knowledge Economy Development in Global Economy Environment. In *2016 2nd International Conference On Education And Management Science (ICEMS 2016)*, DESTech Publicat, Inc., pp. 142-146.
- Korec, P., Polonyová, E. (2011). Zaoštvávajúce regióny Slovenska – pokus o identifikáciu a poukázanie na príčiny, In *Acta Geographica Universitatis Comenianae*, vol. 55, no. 2, pp. 165-190.
- Matlovič, R., Matlovičová, K. (2011). *Regionálne disparity a ich riešenie na Slovensku v rozličných kontextoch*. Prírodné vedy, Folia Geographica, 18, LIII, Prešov, pp. 8-88.
- Novosák, J., Hájek, O., Horváth, P., Nekolová, J. (2017). Structural Funding and Intrastate regional disparities in post-communist countries. *Transylvanian Review of Administrative Sciences*, No. 51 E/2017, pp. 53-69.
- Poledníková, E. (2013). Usage of AHP and Topsis Method for Regional Disparities Evaluation in Visegrad Countries. In *11th International Conference on Liberec Economic Forum*, Sychrov, Czech Republic, pp. 456-466.
- Rajčáková, E., Švecová, A. (2009). Regionálne disparity na Slovensku. *Geographia Cassoviensis*, vol. III (2), pp. 142-149.
- Smetkowski, M. (2013). Regional Disparities in Central and Eastern European Countries: Trends, Drivers and Prospects, 2013, *Europe-Asia Studies*, vol. 65, no. 8, pp. 1529-1554.
- Stawicki, M. (2017). Regional disparities in level and dynamics of Gross domestic product at Nuts-3 regions in central Europe and the Baltic states. *International Scientific Conference on Economic Science for Rural Development (ESRD) Location: Jelgava, LATVIA, 2017*, iss. 45, pp. 228-234.
- Štika, R. (2004). Regionální rozdíly v Česku v 90. letech v kontextu novodobého vývoje. *Geografie - Sborník České geografické společnosti*, 109, iss. 1, pp. 15-26.
- Świadek, A., Tomaszewski, M. (2011). Endogeniczny czy egzogeniczny rozwój innowacji w przedsiębiorstwach na poziomie regionalnym na przykładzie województwa Zachodniopomorskiego. *Zeszyty naukowe Uniwersytetu Szczecińskiego*. NR 685 Finanse, Rynki finansowe, Ubezpieczenia NR 46, pp. 245-258.
- Tian, X., Geng, Y., Viglia, S., Bleischwitz, R., Buonocore, E., Ulgiati, S. (2017). Regional disparities in the Chinese economy. An emergy evaluation of provincial international trade. *Resources, Conservation & Recycling*, vol. 126, pp. 1-11.
- Tvrdoň, M., Skokan, K. (2011). Regional disparities and the ways of their Measurement: The case of The Visegrad four countries, *Technological and Economic Development of Economy*, vol. 17, iss. 3, pp. 501-518.
- Uramová, M., Koziak, R. (2008). Regional disparities in Slovakia from the aspect of average nominal wage. In *E + M Ekonomie a management*, vol. 2, pp. 2-17. [online]. Available: http://www.ekonomie-management.cz/download/1331826667_e672/01_urmaova.pdf [2017, October 26].
- Vojtovich, S. (2013). The impact of emigration on unemployment in Slovakia. In *Inžinerine Ekonomika-Engineering Economics*, vol. 24, no. 3, pp. 207-216.

Juraj Kolencik¹

University of Zilina
Slovakia

Aurel Pera²

University of Craiova
Romania

Gheorghe H. Popescu³

Dimitrie Cantemir Christian University
Romania

George Lăzăroiu^{4*}

Institute of Interdisciplinary Studies in Humanities and Social Sciences
United States

Octav Neguriță⁵

Spiru Haret University
Romania

34. ALTERNATIVE WORK ARRANGEMENTS AND WORK – LIFE BALANCE BEHAVIORS

Abstract: Following Katz and Krueger (2017), Mas and Pallais (2017), and Spreitzer, Cameron and Garrett (2017), this paper strives to prove that alternative work arrangements may further work-life balance, but they may not be employee-friendly. Using data from U.S. Census Bureau, Current Population Survey and Contingent Worker Survey, we performed an analysis and made estimations regarding U.S. workforce in alternative work arrangements and self-employed workforce by professional and non-professional occupations. Providing flexible scheduling may be expensive to companies as it brings about intricacies in employee synchronization or in the capacity to supervise personnel. Employees have a more beneficial experience when they take up alternative work arrangements deliberately to facilitate a more accommodating working activity regarding what, where, and when labor is achieved. Technological changes that have regulated labor and cut down checking and supervisory expenses, a demographic turn toward senior personnel with experienced employees more seemingly to be self-hired and a fragile labor market leaving employees with limited negotiating power and insufficient opportunities for traditional employment have impacted the increase of alternative work arrangements. As limitations in the present article, more hypotheses should be tested and subsequent directions for future multilevel investigations to see whether the scale of the effect of cyclical labor market conditions is not hefty enough to clarify much of the move from established to alternative work arrangements.

Keywords: alternative, arrangement, behavior, work-life balance.

JEL Classification: F16, J21, J24, J44, J61

1. Introduction

Providing flexible scheduling may be expensive to companies as it brings about intricacies in employee synchronization or in the capacity to supervise personnel (Mas, Pallais, 2017). Employees have a more beneficial experience when they take up alternative work arrangements deliberately to facilitate a more accommodating working activity regarding what, where, and when labor is achieved (Spreitzer, Cameron, Garrett, 2017). Employees' experience in the cutting-edge realm of labor relies on whether the adjustability is generated by the organization to diminish work expenses/boost responsiveness (Regnerova, Regnerova, 2017), pursued by employees to assist them in regulating their labor activities, or a mixture of the two. Even full-time personnel with employment contracts are conditional to some degree taking into account the lifetime employment. Full-time employees may

¹ Ing. Juraj Kolencik Ph.D.; Univerzita 1, 010 26 Zilina, Slovakia, juraj.kolencik@fpedas.uniza.sk

² Assoc. Prof. Aurel Pera Ph.D.; Alexandru Ioan Cuza Street 13, Craiova, Romania, aurelpera@yahoo.com

³ Prof. Gheorghe H. Popescu Ph.D.; Splaiul Unirii 176, Bucharest, Romania, popescu_ucdc@yahoo.com

⁴ George Lăzăroiu Ph.D.; 30-18 50th Street, Woodside, 11377, New York City, United States, phd_lazaroiu@yahoo.com

⁵ Assoc. Prof. Octav Neguriță Ph.D.; Unirii Street 32-34, Constanța, Romania, octav.negurita@spiruharet.ro

* Corresponding author

also be laboring distantly away from the company for some (Holzer, 2017) or all of their time (Mattingly, Wimer, Collyer, 2017) and with labor schedules (Shaefer, Wu, Edin, 2017) that are gradually accommodating. The notion alternative work arrangements encapsulates the array of distinct instances of labor identified in current workplace – from high-skill freelancers (Prowle, Araali, 2017) who opt not to be hired with the purpose of having superior work-life flexibility (Molina, 2017), to low-wage service employees who are available for fluctuating labor hours and hardly able to earn enough to support themselves, to employees with long-run employment contracts (Teubner, Hawlitschek, Dann, 2017) but who labor where they choose when they prefer (Spreitzer, Cameron, Garrett, 2017).

2. Literature Review

The rise in alternative work arrangements may be broadly determined by secular components related to intensifying imbalance and technological changes (Peters, 2017a) making it more effortless to regulate and contract out labor. Expanded requirement for flexible work arrangements (Nordberg, 2017) and a superior work–life balance (Popescu, Comănescu, Manole, 2017) may have been instrumental in the advancement of alternative work arrangements. Secular forces, e.g. intensifying imbalance and technological changes generating determinants for a fracturing of workplaces (Machan, 2017), may be accountable for almost all of the escalation in alternative work arrangements. Such labor comprises autonomous contractors and freelancers, employees who are contracted out from a firm to labor at another, on-call workforce, and impermanent help agency personnel. The practice of unemployment increases the possibility that employees' shift to an alternative work arrangement (Enderstein, 2017) in contrast with a conventional employment relationship. Employees who experience a period of unemployment are more presumably to be hired afterwards (Majerova, 2015) in alternative labor (Katz, Krueger, 2017). Freelance employees have more control upon their labor schedule as a result of the self-determining character of their labor. Consequently, adjustability in scheduling is an aspect of alternative work arrangements. Together with the unstable macroeconomic setting (Chapman, 2017), advances in technology facilitate labor to be performed anytime, anywhere, with adverse consequences for full-time workers (Musova, 2016) in addition to contract and gig employees. Cloud technology assists individuals in laboring in any place, logging into their entity's server, accessing collective files, or replying to emails. And with shared software, employees may effortlessly team up (Havu, 2017) throughout distances. Virtual cooperation has become ordinary even among employees who are collocated (Spreitzer Cameron, Garrett, 2017). Thus, our hypothesis, developed from the literature review, is that alternative work arrangements may further work–life balance, but they may not be employee-friendly.

3. Methodology

Using data from U.S. Census Bureau, Current Population Survey and Contingent Worker Survey, we performed an analysis and made estimations regarding U.S. workforce in alternative work arrangements and self-employed workforce by professional and non-professional occupations. Telecommuting (distant labor that employs computer technology to telework or another setting away from the office) is on the rise. Such distant employees may (not) be in a standard employment connection, indicating another type of alternative work arrangement that also frequently offers adjustability in the effectiveness (De Gregorio Hurtado, 2017) and length of labor hours encompassing flextime and compressed labor weeks. Clients and employees do not gather directly because all labor is performed virtually. It is difficult to precisely appraise the amount of employees in the gig economy as some have a second job besides holding a full-time position or labor for more than a talent platform separately. Albeit gig and contract employees frequently have adjustability in work schedules (Nica, Comănescu, Manole, 2017), full-time workers gradually have schedule flexibility (Spreitzer, Cameron, Garrett, 2017).

4. Results

The results confirm our hypothesis that alternative work arrangements may further work–life balance, although they may not be employee-friendly. As previously shown, numerous jobs have infrequent schedules, whereby employees cannot prepare for their labor program from one week (Popescu Ljungholm, 2017a) to the next. The accommodating amount of hours arrangement enables employees

to make alterations if they require to labor more or fewer hours (Berloff, Matteazzi, Villa, 2017) in a particular week and it favors them to adjust the amount of hours labored if they regularly choose to labor less than 40 hours. Most employees do not appreciate accommodating scheduling or the facility to opt for the amount of hours they labor. Our results demonstrate that employees do value the opportunity to telework and resolutely disapprove employers establishing their schedules without a timely notification, chiefly as they do not feel a need to labor evenings and weekends: jobseeker reluctance to infrequent schedules is embedded more in their aversion for such labor than unpredictability of schedules. Providing flexible scheduling may be expensive to companies as it brings about intricacies in employee synchronization or in the capacity to supervise personnel. Evidence shows that women are more presumably to decide on flexible work arrangements (Popescu Ljungholm, 2017b) than are men. Although women are not likely to appreciate flexible schedules (Peters, 2017c), they place a superior value on teleworking and circumvent infrequent labor schedules than do men: women appreciate teleworking and disapprove employer discrimination more than men do. As men are only somewhat less presumably to telework and to labor infrequent schedules, even with substantial adjusting differentials, such dissimilarities in choices cannot clarify a sizable component of gender wage gaps (Mas, Pallais, 2017) (Figures 1-5).

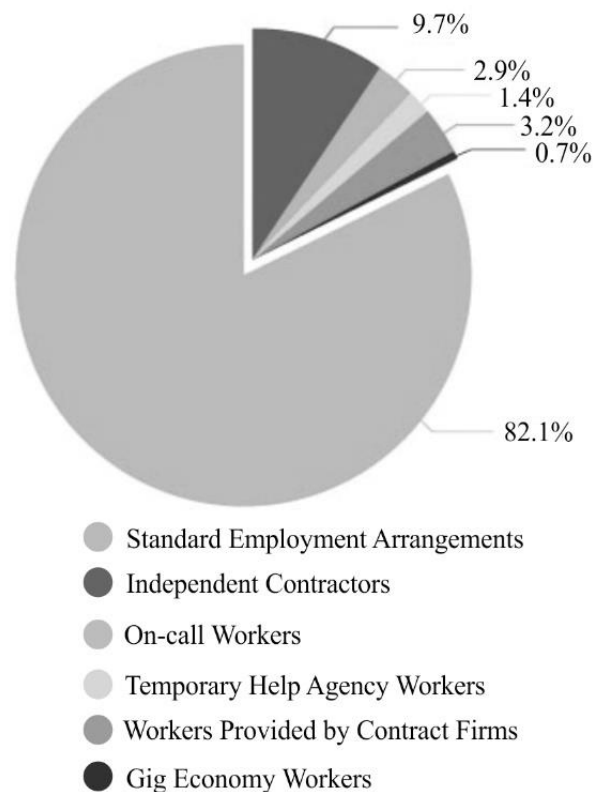


Figure 1. Alternative work arrangements of the U.S. workforce (2017)

Source: ClassAction.com, Rand-Princeton CWS, and our estimations

According to our collected data, analyses and estimations, covering the U.S. labor market, standard employment arrangements are prevalent (Figure 1), alternative work arrangements are on the rise (Figure 2), especially as ones for on-call workers, temporary help agency workers and workers provided by contract firms (Figure 3), and this is illustrated by the substantial self-employed workforce both in professional and non-professional occupations (Figure 4). Flex-time is the most aimed type of alternative work arrangement by gender (Figure 5).

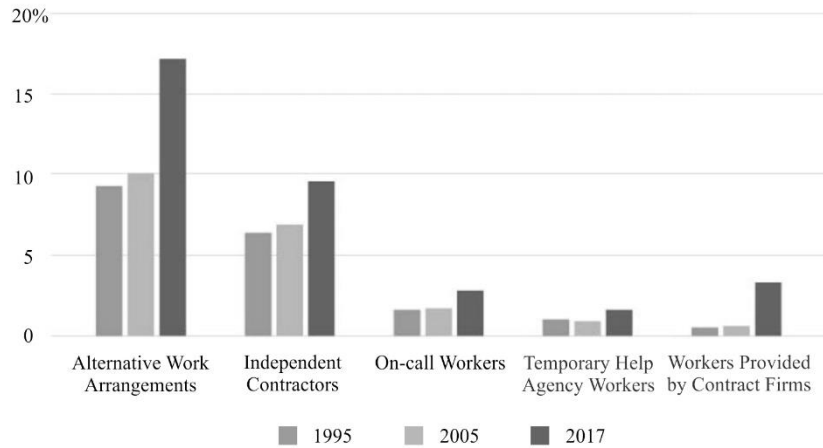


Figure 2. Percentage of U.S. workforce in alternative work arrangements

Source: ClassAction.com, U.S. Census Bureau, Current Population Survey, and our estimations

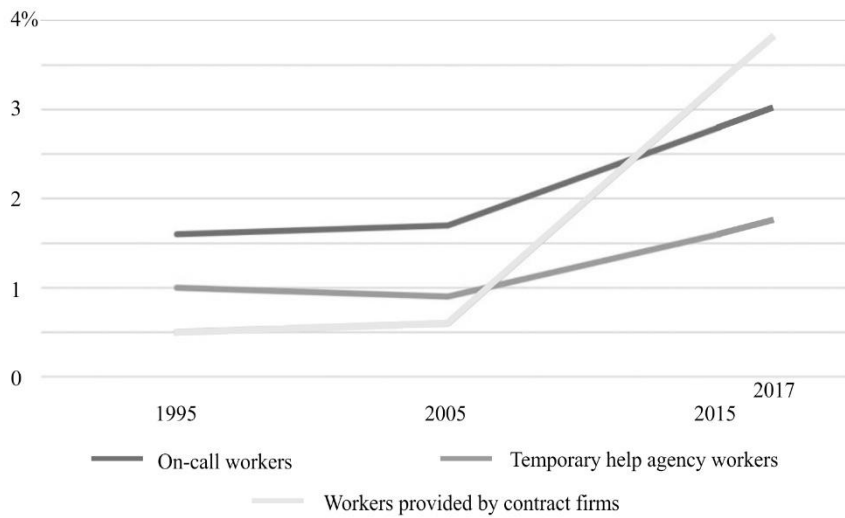


Figure 3. Alternative work arrangements in the U.S. (1995-2017)

Source: U.S. Bureau of Labor Statistics, Rand-Princeton CWS, Karen Lentz/MEDILL, and our estimations

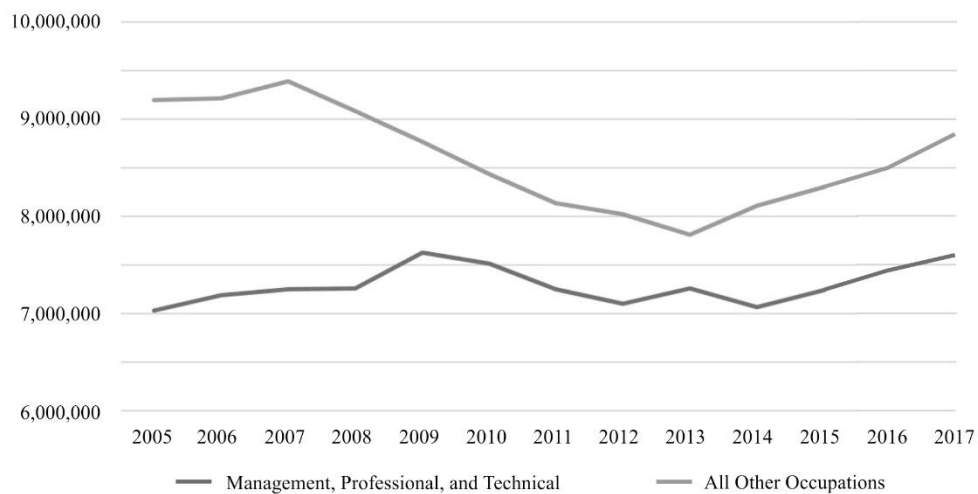


Figure 4. Self-employed workforce by professional and non-professional occupations

Source: U.S. Census Bureau, Current Population Survey, and our estimations

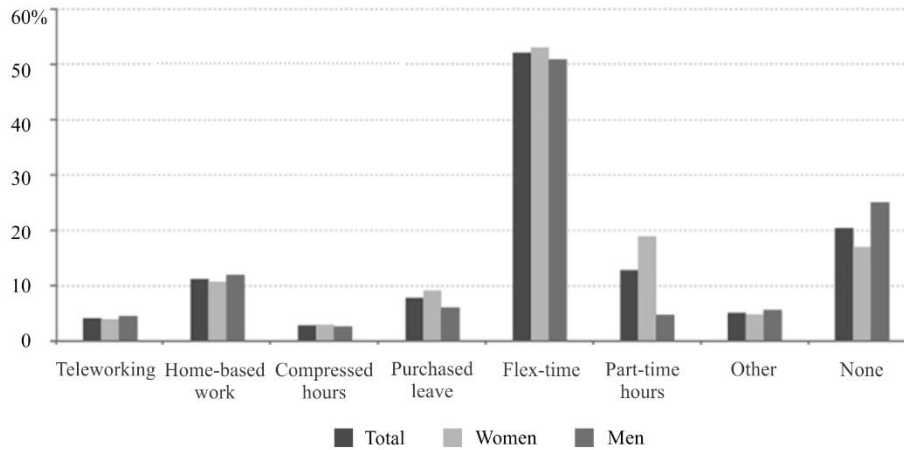


Figure 5. Types of alternative work arrangements by gender

Source: Australian Public Service Commission and our estimations

We contribute to the body of knowledge by delineating that employees are reluctant in choosing accommodating scheduling or in the facility to opt for the amount of hours they labor while nonetheless being interested in arrangements that are instrumental in work-life balance.

5. Discussion

Technological cutting edge has facilitated the expansion of online talent platforms (Pol, Reveley, 2017), which quickly connect laborers with employers throughout economies and time zones. When the adjustability is set up by the company to satisfy its own demands to be more active, the employee undergoes relevant challenges (Peters, 2017b), but when it is aimed to concentrate on the requirements of the employee, the latter's experience is more beneficial. For flexible labor to surmount such expenses and satisfy the demands of both employees and their labor entities, it should surpass separate bargaining that necessitate an open-minded manager to endorse a flexible schedule. The harmonization of the latter enhances its rightfulness (McBee, 2017) for all types of labor. Employees have a more beneficial experience when they take up alternative work arrangements deliberately to facilitate a more accommodating working activity regarding what, where, and when labor is achieved (Spreitzer, Cameron, Garrett, 2017).

6. Conclusion

Our results provide substantial evidence for the assertion that technological changes that have regulated labor and cut down checking and supervisory expenses, a demographic turn toward senior personnel with experienced employees more seemingly to be self-hired and a fragile labor market leaving employees with limited negotiating power and insufficient opportunities (Bousta, Marique, 2017) for traditional employment have impacted the increase of alternative work arrangements and affected work-life balance significantly. The proportion of the labor pool in alternative work arrangements, particularly self-employment and contract work, has boosted considerably lately. We have identified valuable support for the expectation that unsteady labor market conditions and a significant percentage of employees undergoing unemployment (Arvidson, 2017) are related to a rise in non-traditional work. As limitations in the present article, more hypotheses should be tested and subsequent directions for future multilevel investigations to see whether the scale of the effect of cyclical labor market conditions (Androniceanu, Drăgulănescu, 2016) is not hefty enough to clarify much of the move from established to alternative work arrangements. (Katz, Krueger, 2017) Our outcomes may have applications particularly in labor spheres tremendously impacted by the sharing economy, mobile knowledge work, technological unemployment, and robotization, as all of them essentially shape current work-life balance behaviors.

References

- Androniceanu, A., Drăgulănescu, I.V. (2016). Survey on the Buyers' Eco-responsibility and the Urban White Pollution. *Environmental Engineering and Management Journal*, vol. 15, iss. 2, pp. 481-487.
- Arvidson, M. (2017). Operationalizing Transparency: Perspectives from the Third Sector in a Mixed Economy of Welfare. *Journal of Self-Governance and Management Economics*, vol. 5, iss. 1, pp. 7-24.
- Berloff, G., Matteazzi, E., Villa, P. (2017). The Influence of Parental Employment Status on Children's Labor Outcomes. Does the Gender of Parents and Children Matter? *Journal of Research in Gender Studies*, vol. 7, iss. 2, pp. 136-164.
- Bousta, R., Marique, Y. (2017). The Status of Comparative Administrative Law: A Comparison between French and Belgian Legal Education. *Contemporary Readings in Law and Social Justice*, vol. 9, iss. 1, pp. 47-69.
- Chapman, B. (2017). Geopolitics of the 2016 Australian Defense White Paper and Its Predecessors. *Geopolitics, History, and International Relations*, vol. 9, iss. 1, pp. 17-67.
- De Gregorio Hurtado, S. (2017). A Critical Approach to EU Urban Policy from the Viewpoint of Gender. *Journal of Research in Gender Studies*, vol. 7, iss. 1, pp. 200-217.
- Enderstein, A. (2017). European Identity and Gender Equality Policies: Shaping the Practice of Gender Expertise. *Journal of Research in Gender Studies*, vol. 7, iss. 2, pp. 109-135.
- Havu, K. (2017). The EU Digital Single Market from a Consumer Standpoint: How Do Promises Meet Means? *Contemporary Readings in Law and Social Justice*, vol. 9, iss. 2, pp. 146-183.
- Holzer, H.J. (2017). Building a New Middle Class in the Knowledge Economy. *Psychosociological Issues in Human Resource Management*, vol. 5, iss. 2, pp. 96-126.
- Katz, L., Krueger, A. (2017). The Role of Unemployment in the Rise in Alternative Work Arrangements. *American Economic Review*, vol. 107, iss. 5, pp. 388-392.
- Machan, T.R. (2017). Stakeholder vs. Shareholder Debate: Some Skeptical Reflections. *Contemporary Readings in Law and Social Justice*, vol. 9, iss. 1, pp. 7-13.
- Majerova, J. (2015). Analysis of Slovak Consumer's Perception of the Green Marketing Activities. *Procedia - Economics and finance*, vol. 26, pp. 553-560.
- Mas, A., Pallais, A. (2017). Valuing Alternative Work Arrangements. *American Economic Review*, vol. 107, iss. 12, pp. 3722-3759.
- Mattingly, M.J., Wimer, C.T., Collyer, S.M. (2017). Child Care Costs and Poverty among Families with Young Children. *American Journal of Medical Research*, vol. 4, iss. 2, pp. 162-167.
- McBee, J.D. (2017). Distributive Justice in the Paris Climate Agreement: Response to Peters et al. *Contemporary Readings in Law and Social Justice*, vol. 9, iss. 1, pp. 120-131.
- Molina, N. (2017). Why Didn't More Ethnic Mexicans Sign Up for Obamacare?: Examining Public Health's Impact over One Hundred Fifty Years. *American Journal of Medical Research*, vol. 4, iss. 2, pp. 20-46.
- Musova, Z. (2016). Social Responsibility in Company Marketing Activities. *Ekonomicko-manazerske spektrum*, vol. 10, iss. 1, pp. 12-23.
- Nica, E., Comănescu, M., Manole, C. (2017). Digital Reputation and Economic Trust in the Knowledge Labor Market. *Journal of Self-Governance and Management Economics*, vol. 5, iss. 3, pp. 83-88.
- Nordberg, D. (2017). First and Second Drafts of History: The Case of Trump, Foucault and Pre-modern Governance. *Geopolitics, History, and International Relations*, vol. 9, iss. 2, pp. 107-117.
- Peters, M.A. (2017a). Ecopolitical Philosophy, Education and Grassroots Democracy: The 'Return' of Murray Bookchin (and John Dewey?). *Geopolitics, History, and International Relations*, vol. 9, iss. 2, pp. 7-14.
- Peters, M.A. (2017b). Technological Unemployment: Educating for the Fourth Industrial Revolution. *Journal of Self-Governance and Management Economics*, vol. 5, iss. 1, pp. 25-33.
- Peters, M.A. (2017c). Deep Learning, the Final Stage of Automation and the End of Work (Again)? *Psychosociological Issues in Human Resource Management*, vol. 5, iss. 2, pp. 154-168.
- Pol, E., Reveley, J. (2017). Robot Induced Technological Unemployment: Towards a Youth-Focused Coping Strategy. *Psychosociological Issues in Human Resource Management*, vol. 5, iss. 2, pp. 169-186.
- Popescu, G.H., Comănescu, M., Manole, C. (2017). Mobile Knowledge Work, Information Routines, and Digital Technologies. *Psychosociological Issues in Human Resource Management*, vol. 5, iss. 2, pp. 187-192.
- Popescu Ljungholm, D. (2017a). Global Policy Mechanisms, Intergovernmental Power Politics, and Democratic Decision-Making Modes of Transnational Public Administration. *Geopolitics, History, and International Relations*, vol. 9, iss. 2, pp. 199-205.

- Popescu Ljungholm, D. (2017b). Feminist Institutionalism Revisited: The Gendered Features of the Norms, Rules, and Routines Operating within Institutions. *Journal of Research in Gender Studies*, vol. 7, iss. 1, pp. 248-254.
- Prowle, M.J., Araali, N.A. (2017). Meeting the Escalating Demands for Health and Social Care Services of Elderly Populations in Developing Countries: A Strategic Perspective. *American Journal of Medical Research*, vol. 4, iss. 2, pp. 127-146.
- Regnerova, O., Regnerova, M. (2017). Sustainable Development in “The Light and Shadow” of Globalization. *Ekonomicko-manazerske spektrum*, vol. 11, iss. 1, pp. 2-12.
- Shaefer, H.L., Wu, P., Edin, K. (2017). Can Poverty in America Be Compared to Conditions in the World’s Poorest Countries? *American Journal of Medical Research*, vol. 4, iss. 1, pp. 84-92.
- Spreitzer, G.M., Cameron, L., Garrett, L. (2017). Alternative Work Arrangements: Two Images of the New World of Work. *The Annual Review of Organizational Psychology and Organizational Behavior*, vol. 4, pp. 473-499.
- Teubner, T., Hawlitschek, F., Dann, D. (2017). Price Determinants on Airbnb: How Reputation Pays Off in the Sharing Economy. *Journal of Self-Governance and Management Economics*, vol. 5, iss. 4, pp. 53-80.

Olena Kolomytseva^{1*}

Cherkasy State Technological University
Ukraine

Angelica Bokovnya²

Cherkasy State Technological University
Ukraine

Natalia Shevchenko³

Cherkasy State Technological University
Ukraine

35. DEVELOPMENT OF ORGANIC FOOD MARKET WITH THE USE OF ECOLOGICAL MARKETING TOOLS

Abstract: This research is aimed at solving the problems of formation and development of organic food market through the tools of ecological marketing. Food supply and security of the population are one of the main problems of socioeconomic development in the national and global dimensions. The policy of widespread use of genetically modified products by manufacturers to compensate for food shortages is not in line with the goals of sustainable development. Therefore, the issues related to the formation of the market of organic products become more and more relevant. The article examines and justifies the role of ecological marketing in formation and development of organic food market in the regions, considers causal-consequential relations among the processes of food production, sales and consumption in terms of demographic tendencies. Based on the results of marketing research, consumer behavior when making decisions of the purchase of organic products is analyzed, and the possibilities of using modern marketing technologies to increase their consumption are identified. The current trends of the world organic production are analyzed and contributing factors to the formation of domestic market of organic food products are systematized. It is identified that the production potential of the organic sector of the regions has an export orientation and reflects the unpreparedness of manufacturers to develop a local market without the state support. Strategic alternatives for the development of organic food market with the use of ecological marketing tools are offered.

Keywords: ecological marketing, market, organic products.

JEL Classification: M31, Q57

1. Introduction

The necessity of organic food market development is caused by the objective reasons, which dictate the priority of solving the problems of sustainable development of the countries and are the subject of discussion in the scientific circles of the world community (Bila, 2014).

On September 25, 2015, the leaders of states and governments – members of the United Nations approved the historical document, titled "Transforming our World: the 2030 Agenda for Sustainable Development" (Sustainable development goals, 2017). The document states that one of the factors contributing to food security of the population is the prevention of the production and consumption of food products that harm the health and increase of the culture of healthy consumption.

The research "The Global Food Security Index", conducted annually by the Economist Intelligence Unit, indicates a significant divergence among countries in terms of availability (quantitative and nutritional) of food that meets the needs of leading an active and healthy life (The Global Food Security Index, 2016).

The problem of food security is inextricably linked to the issue of ensuring safety of the food products on the market. Nowadays, organic food is considered the safest for human health. Its consumer value is not only a key factor in the formation of demand in the food market, but also an incentive for creation of special supply, aimed at satisfying the needs of a particular consumer through the pursuit of the interests of society as a whole (Bryla, 2016; King et al., 2017; Kolomytseva, Shevchenko, 2016; Slocum, 2007).

¹ Prof. Olena Kolomytseva; 30 Rokiv Peremogy 50, apt.73, Cherkasy, Ukraine, 18000, e.v.kolomysteva@gmail.com

² Doc. Angelica Bokovnya; Kazbetskaya str., 77, Cherkasy, Ukraine, 18031, 7angela7@rambler.ru

³ Senior Lecturer Natalia Shevchenko; Heroyiv Dnipra 43, apt. 23, Cherkasy, Ukraine, 18000, n.shevchenko@chdtu.edu.ua

* Corresponding author

The uniqueness of organic food product is its ability to form a comprehensive long-term socioeconomic effect both in terms of consumption and production. This is a positive factor in adoption of the effective strategic management decisions that determine the long-term development of organic food producers, and also contributes to the development of certain actions that ensure their rapid response to changing market conditions.

The main aim of the article is to solve the problems of formation and development of organic food market through the tools of ecological marketing.

2. Literature Review

Organic food and its role in ensuring the food security of the state has been an object of the studies of many authors from different countries (Bryla, 2016; King et al., 2017). The results of the studies testify to the need for the development of organic agriculture, which is a significant factor in ensuring the sustainable development of the states (Chernyakov, 1997; Feschenko, 2013; Elemesov, Mirzalieva, 2016). Various aspects of the development of the market for organic products, as well as problems associated with its saturation, are discussed (Sheng et al., 2009; Willer et al., 2016; Efremov, Cherdakova, 2015). Many researchers consider the study of consumer behavior as the most important aspect of the market research of organic products. Research in this area is of great value, since regional markets for organic products have different characteristics of consumer behavior (Lytvynov, 2017; Krystallis, Chryssohoidis, 2005; Lagast et al., 2017; Szelag-Sikora, Rorat, 2015; Grant, 2007; Watson, 2012). However, the reviewed studies show that insufficient attention is paid to the study of customers' awareness of the consumer value of organic products, which can be a significant factor when selecting strategic directions for the development of organic production and selling of organic food products.

At the same time scientists justify the expediency of implementing the principles of environmental marketing in production, as well as the need for strategic orientation of producers of organic food products (Baker, 2002; Kutarenko, 2014; Zamula, 2016). However, in terms of strategy, most authors hold to a single aspect of the development of organic production, excluding any alternatives, which is acceptable only in a stable economy. Also, the environmental and educational factor is not systematically considered as a necessary component of the environmental marketing complex, but only as an instrument for product promotion.

Therefore, the role of environmental marketing in the formation of the organic market and its complex impact on the demand for organic food products are not defined sufficiently and require further research.

3. Methodology of Research

The authors used the method of situational analysis to assess the current state of European organic food market in 2015, as well as the capabilities of Ukraine as an exporter of such products. The method of SWOT-analysis was used to evaluate the factors of the formation of the organic products market in Ukraine.

In March 2017, 734 buyers of the largest supermarkets in the central region of Ukraine were interviewed for the study of the characteristics of demand for organic products and identification of the possibilities of using environmental marketing tools. The adapted Fishben-Eisen model and «Means-end chain» technique were used to segment the market and identify the most homogeneous groups of customers that were conventionally categorized as "Regular Buyer", "Interested Buyer", "Curious Buyer" and "Weakly interested buyer". The results of segmentation of organic food buyers by age groups and awareness are presented in Table 1 and Table 2.

The results of the survey show that, on average, only 5% of respondents are regular buyers of organic products and view health care as their the main motivating factor; 30% - are interested in buying, but the main limiting factor for them is the price; 25% of buyers have a desire to make a purchase, but they are not sufficiently aware of its value for itself; 40% of all interviewed respondents do not have a clear idea of the benefits obtained from the purchase. Typical buyers of organic products are most often women of age 20 to 45, educated, married, with higher than average income, leading a healthy lifestyle.

Table 1. Respondents by the age group as a percentage of the total number of respondents in the group

Awareness level	Regular buyer	Interested buyer	Curious buyer	Weakly interested buyer
0-20	6%	3%	4%	33%
21-35	33%	34%	35%	27%
36-50	48%	46%	48%	29%
51-65	10%	13%	11%	9%
65+	3%	4%	2%	2%

Source: Authors' own research

Table 2. Respondents by the awareness level a percentage of the total number of respondents in the group

Awareness level	Regular buyer	Interested buyer	Curious buyer	Weakly interested buyer
High awareness level	51%	44%	24%	13%
Medium awareness level	37%	20%	30%	33%
Low awareness level	12%	36%	46%	54%

Source: Authors' own research

The presented methodology for study of the consumer behavior and decision making process for the purchase of organic products provides an opportunity to highlight the main strategic directions for the producers of organic food in Ukrainian market. Based on this, the authors propose a strategic approach to the formation of a marketing complex based on the ecological and ecological-educational component, which in the managerial aspect is related to the necessity to build a long-term perspective of the development of the organic products market.

4. Results

The properties of organic food products as supply objects as well as terms for placing them in the market determine the specifics of the formation of the organic market, which affects the process of consumer acceptance of the product. It should be noted that supply on the organic market can be both in the form of raw materials, which requires further processing, and in the form of finished goods.

Today, the natural origin of products is confirmed by the following world organic standards: USDA NOP certificate; the "Green leaf" marking that indicates certification in accordance with the EU requirements for organic farming; Japanese Agricultural Standard (JAS) (Giannakas, 2002; Organic Standard, 2017). In addition, there is a practice of private organic standards, which are developed, as a rule, by farmers' associations, whose labeling is trusted by consumers.

The above-mentioned shows that the production of organic products is inextricably linked to the organic way of production, and in relation to food, it originates in the field of agricultural production. Researchers note that the term "organic agriculture" refers not only to the production of certified organic products, but also to organic farming (Chernyakov, 1997; Feschenko, 2013; Elemesov, Mirzalieva, 2016).

In the main provisions of International Federation of Organic Agriculture Movements (IFOAM) and Codex Alimentarius, the term "organic agriculture" is defined as a holistic production management system that promotes and improves the health of agricultural ecosystems, including biological diversity, biological cycles and biological soil activity (Food and Agriculture Organization of the United Nations, 2017). Particular emphasis is placed on the use of management methods aimed at using off-farm resources, taking into account that regional conditions require locally adapted systems.

Thus, the main task of organic agricultural production is to provide consumers with safe and high-quality food products through responsible interaction with the bio-environment and internal resources.

The features of the organic products market development may be presented the following:

1. Organic products market in all countries is relatively young (15-20 years).
2. Primary production is based on a different resource base than conventional agricultural production, and heavily relies on farms in the transition period, the duration of which in most cases is 2 to 5 years.

3. Organic products for the end user are high-quality products, on the one hand, and on the other - have a higher price.
4. In the markets of organic food products, direct relations between producers and end-users are much more developed.
5. For the state, the functioning of the market of organic food products is of special importance both in the area of domestic and foreign economic activity (Sokolova, 2012).

When considering the problems of market of organic products, special attention should be paid to the study of the state and the dynamics of supply.

The global market for organic products is 75 billion euros. United States is the leading organic food market with 35.8 billion euros, followed by Germany (8.6 billion euros), France (5.5 billion euros) and China (4.7 billion euros). In Denmark, organic food has the highest share in total food market (8.4%). The highest annual per capita consumption level was in Switzerland (262 euros) and in Denmark (191 euros) (Sheng et al., 2009; Willer, Lernoud, 2017).

European organic market in 2015 amounted to 29.8 billion euros, which is 13% more than in 2014. According to some analysts, the world production of organic food may face a number of problems in the future: physical deficit of agricultural land and significant pesticide-herbicide load amounting to 300 kg per hectare. Researchers note that own production capacity of the main countries - consumers of organic food products is almost exhausted, and consumption of such products is steadily increasing year by year. In order to meet the growing food needs of the population in the future, European countries will have to establish economic ties in this area with the other countries (Figure 1) (Efremov, Cherdakova, 2015).

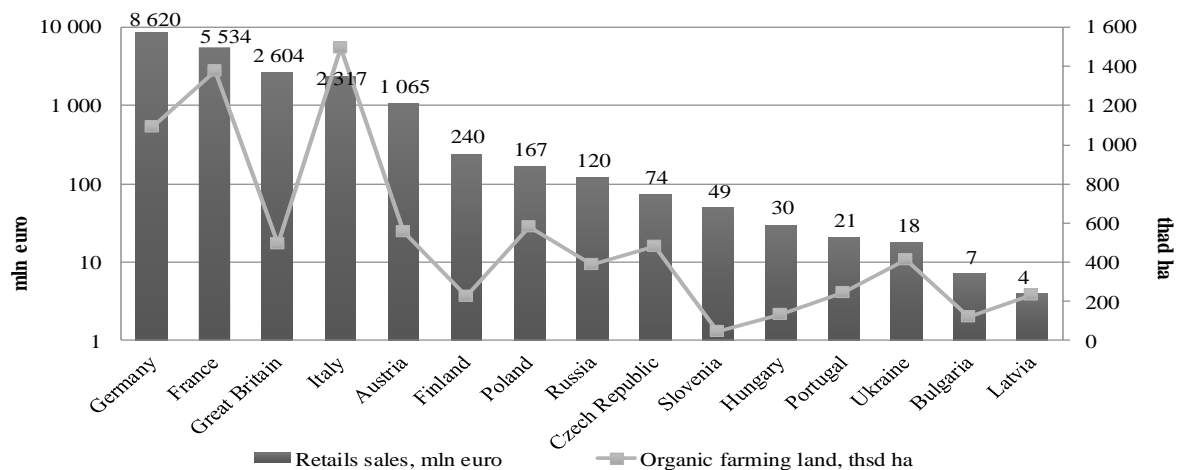


Figure 1. Amount of retail sales and area of organic farming lands in certain European countries in 2015

Source: Willer, Lernoud, 2017, own creating

The most common distribution channel for organic products in Europe is supermarkets. Its share in the total sales ranges from 40 to 90%. In France, Belgium, Italy, Germany and the Netherlands, organic supermarkets and specialized stores are also popular – their share reaches 31-37%, and in the other EU countries – 14 to 25%. Also in these countries, direct sales of organic products in farmers' shops, markets, etc. are widely practiced. In Italy and Germany, other sales channels have a relatively high share (15% and 13% respectively), among which online is the most popular (Willer et al., 2016).

One of the main suppliers for the countries with high demand for organic food products can be Ukraine – a country that has significant potential of the land fund, both quantitatively and qualitatively. According to IFOAM, the area of certified organic agricultural lands of Ukraine in 2016 amounted to 411200 hectares, which is 1.7 times more than in 2003. During the same period, the number of organic farms increased significantly from 69 in 2003 to 360 in 2016, that is, almost 5 times. The number of such farms grew despite the fact that the area of organic lands practically did not increase in the period of 2008-2012.

The volume of organic food retail sales in Ukraine in 2016 amounted to 18 million euros. In the meantime, export amounted to 50 million euros, which indicates the export orientation of the organic

farming. The largest importers are the Netherlands, Germany, Italy, Great Britain, Switzerland, Poland.

All of the above shows the interest of Ukrainian agricultural producer in the orientation on organic production. However, the issue of low level of domestic consumption of organic food products remains present, which should be the object of special attention in implementation of the food security policy of the country.

The formation of the market of organic food products is caused not only by the current state of agricultural production, but also by the influence of external factors of the market environment. In order to assess the factors shaping the organic market in Ukraine, we used SWOT analysis (Table 3).

Table 3. SWOT analysis of organic food market in Ukraine

Strengths	Weaknesses
significant areas of agricultural lands; high level of chernozem (9% of global resource and 30% of European resource) low level of agricultural chemicalization; availability of workforce; efficient work on breeding of new plant varieties and their successful introduction into production; positive demand trend for organic products in Ukraine and abroad	small number of certified lands; radionuclide soil contamination in some regions; longer technological cycle, which leads to the increase of variable costs; poor technology development and scarce practical experience in production and processing of organic food products; lack of national marking for organic products; high cost of production and price of organic goods, due to high labor intensity and short shelf life; small number of companies engaged in organic food processing; slow development of distribution in organic food market and underdeveloped infrastructure; absence of official statistics on organic products and their production; absence of national advertisements of organic food products and promotion of healthy nutrition;
Opportunities	Threats
low competition on domestic market for organic food products; high potential for creation of market niches; increasing interest for healthy nutrition among certain population groups; development of e-commerce and IT; elevated media interest; distribution of foreign experience among organic food producers.	increase of the area of eroded lands, decrease of their fertility; absence of mass demand; low purchasing power of population; insufficient government support; absence of efficient system of accreditation, certification and marking of organic products; small number of certification centers selling organic food products; tendency for decrease of labor resource in rural areas.

Source: Author's own work

Conducted SWOT analysis shows that the organic food market in Ukraine currently has many weaknesses and faces a lot of threats from external factors. However, it can be confidently stated that one of the strengths is the availability of vast areas of agricultural land, which can be used for organic farming. However, the difficulties of switching to organic farming in Ukraine are related to the certification procedure. Compliance with European standards requires considerable effort and investment, which is not available, for example, for a small producer with a small household plot.

Level of consumer interest in buying organic food products is a significant factor, contributing to the formation of the domestic market of organic food products. It should be noted that in developed countries food costs are a small fraction in the structure of consumer spending. In combination with growing preferences for traditional ecological products, even significantly higher prices for organic products (on average of 30% more than the prices of conventional products) do not lead to a decrease in consumer demand (Efremov, Cherdakova, 2015).

According to the research data from the branding agency Koloro (Ukraine), the main factor affecting the change in demand for organic food products in Ukraine is the population's purchasing power. For the majority of Ukrainian population, organic products are inaccessible. Nevertheless, demand for organic goods in Ukraine is growing by 2.4% annually. According to the data provided by TradeMaster portal, 54% of residents are willing to pay more for environmentally friendly products, provided that the premium is not higher than 20% (Lytvynov, 2017).

Generally, the behavior of potential consumers of organic products is not always rational and socially acceptable, which is confirmed by the results of empirical studies (Krystallis, Chryssohoidis, 2005; Lagast et al., 2017; Szelag-Sikora, Rorat, 2015). According to Grant (2007), the desire to consume ecologically friendly products often does not translate into actual purchases. This may be due to the fact that there is no evidence that organic food consumption provides a real advantage for improvement of nutrition, but such products are worth buying if the consumer wants to eliminate the use of pesticides (Watson, 2012).

Following the above-mentioned, stimulation of organic products' demand should be aimed at increasing the value due to the two main factors: creation of conditions for environmentally safer life and environmental education of consumers (Lytvynov, 2017). In this case, it is necessary to provide a comprehensive impact on consumers with the increasing role of marketing communications, which will help to reduce the threshold of consumer insecurity in deciding on the purchase of organic products.

Formation of the market of organic food products determines the features of used marketing tools and suggests an integrated management approach, which can be most fully achieved through the use of environmental marketing.

Environmental marketing can be interpreted as a process of satisfying consumer needs by promotion of goods and services that cause minimal damage to the environment at all stages of their life cycle and are produced with the minimal volume of natural (including energy) resources (Smirnova, 2010). Food and beverages is one of the most significant categories of consumption, which are causing the greatest environmental impact. In this regard, we should agree with the position of Maffert and Kirkgeorg who note that in accordance with the model of "sustainable development", ecological orientation of enterprises should be determined on the basis of the principles of flow circulation in the economy (Baker, 2002).

One of the main factors in the formation of domestic organic food market is the level of interest of a producer to enter this market. The priority of the environmental component at the heart of a particular business can allow a producer to take a leading position in the food market, which is largely determined by his business strategy. Maffert and Kirkgeorg note that when defining the strategic orientation of environmental marketing it is possible to draw a line between the reciprocal and proactive main strategies of organizations. The first type of strategy deals with the minimal environmental requirements, which, in the long term, may lead to the loss of the brand image of organic-oriented company. As for the second type, empirical studies confirm that in the long run aggressive and innovative environmental strategies provide more chances for market success (Baker, 2002).

Some researchers of Ukrainian organic products market believe that the producers of organic food products should use the competition strategy as the basic basis for establishing the leading positions in the market and gaining advantages over competitors in the long-term period (Kutarenko, 2014; Zamula, 2016).

Analysis of the use of various "green" marketing strategies by the companies in the market made it possible to define the two main strategic directions of the activity of organic food producers:

1. Expansion of "green" market segments, which provides for the "green" modification of the brand, a comprehensive "green" approach with provision of additional services, and integration of the environmental approach into different areas of activity.
2. Orientation on a highly specialized "green" segment, which requires a "green" modification of the attribute of the food brand, differentiation of product perception based on additional value, integration of social and environmental approaches into business.

The implementation of "green" marketing strategies involves the use of tools of environmental marketing, namely the marketing mix, which is considered at rather strategic than operational level of making management decisions (Table 4).

The presented characteristics of the marketing mix based on the environmental, ecological and educational components involve management of marketing elements at the strategic level. This is reflected in the following strategic decisions: inclusion of the ecological innovative component in product policy; use of direct and indirect channels of distribution not only during the formation of the organic products market, but also in provision of sustainable rural development; use of socially-oriented marketing communication tools, principles of social marketing; provision of state support for producers of organic products, which allows to reduce price premiums and increase market demand.

Table 4. Characteristics of marketing mix on the basis of environmental and ecological and educational components

Marketing mix	Basic components	Environmental components	Ecological and educational components
Product	Satisfies the need in organic product	Safe ingredients, environmentally friendly packaging	Ethical marking, educational information on the packaging, stricter requirements for raw materials, which leads to the change in technology of supplier
Price	Determined by the level of consumer value	Weighted price, reflecting the contribution to environmental protection and consumer safety	“Fair” prices, which include only economically justified costs, and profits that do not exceed the average in the market
Place	Provides availability of the product when and where it is needed	Environmentally friendly transportation, energy saving at the delivery and in sales locations	Organization of packaging collection for recycling, rejection of the use of plastic bags, special forms of sales (green supermarket)
Promotion	Provides the information about the product	Environmentally friendly advertising carriers, rejection of printed advertisement use	Thematic educational advertising, social marketing tools, relations with public organizations

Source: Author's own work

5. Conclusion

Therefore, the strategic approach to solving the problem of formation of Ukrainian organic food products market, which is a relevant direction of the state policy in ensuring the food security of the country, is proposed in the article. The conducted research showed that the problem of demand increase for organic products is related to the necessity to provide a comprehensive impact on the consumers. It is proposed to implement it with the use of the environmental marketing tools.

The peculiarity of the research is the strategic approach to the formation of marketing complex based on the ecological and ecological-educational component, which on the management level is associated with the need to build a long-term perspective of the development of organic products market. Long-term prospects are the prerequisite for managing sustainable agricultural enterprise as the main supplier of the raw materials for organic production, and introduction of the principles of social and ethical marketing into the production of organic products.

In the previously published works the attention was focused on the fact that long-term effectiveness is ensured by the use of aggressive as well as innovative environmental strategies. However, taking into account the peculiarities of consumer behavior in Ukrainian market of organic products, as well as the fact of insignificant level of competition in this market, it can be said that the main factor of demand increase is the ecological and educational aspect, which forms the basis of strategic decisions regarding the formation of a marketing complex. Such strategic approach is also caused by the need to reduce the risk of introduction of organic products into the market.

In order to achieve these goals, two alternative strategies are proposed for implementation by the organic producers: strategy of expanding the "green" market segments and strategy of concentration on the highly specialized "green" segment. In both cases, the use of a marketing mix containing ecological and environmental education components, which is the basis for tactical decision-making is envisaged.

References

- Baker, M. (2002). *Marketing*. Saint Petersburg: Piter.
- Bila, S. (2014). „Green” economics: strategic priority of reforms on regional level. *Economic University Bulletin*, vol. 22, iss. 1, pp. 127-133.
- Bryla, P. (2016). Organic food consumption in Poland: Motives and barriers. *Appetite*, vol. 105, pp. 737-746.

- Chernyakov, B. (1997). Alternative farming. In O. Ovchinnikov, S. Stokov, A. Korotkih (Eds.), *US Agricultural sector in the end of XX century* (p. 352-366). Moscow: Pilgrim.
- Efremov, N., Cherdakova, M. (2015). Organic industry: global experience and Russian perspectives. *Fundamental research*, vol. 5, iss. 2. pp. 405-409.
- Elemesov, R., Mirzalieva, S. (2016). Global production of organic food products: issues and opportunities. *Bulletin of Kazakh National University, International Relations and Law series*, vol. 1, iss.1, pp.160-166
- Feschenko, N. (2013). Issues of organic agricultural products market. *Innovative Economics*. vol. 7, pp. 141-150.
- Food and Agriculture Organization of the United Nations. (2017). *Organic agriculture*, [online]. Available: <http://www.fao.org/organicag/oa-faq/oa-faq1/en/>. [2017, October 25].
- Giannakas, K. (2002). Information Asymmetries and consumption decisions in organic food product markets. *Canadian Journal of Agricultural Economics-Revue Canadienne D Agroconomie*, vol. 50, iss.1, p. 35-50.
- Grant, J. (2007). *The Green Marketing Manifesto*. Chichester: John Wiley and Sons, Ltd.
- King, T., Cole, M., Farber Jeffrey, M., Eisenbrand, G., Zabarar, D., Fox, E.M., Hill, J.P. (2017). Food safety for food security: Relationship between global megatrends and developments in food safety. *Trends in Food Science & Technology*, vol. 68, pp. 160-175.
- Kolomytseva, O., Shevchenko, N. (2016). Marketing impact on food industry state regulation system. *Economics and region. Scientific bulletin of Poltava National Technical University named after Y. Kondratyuk*, vol. 4, iss. 59, pp. 41-45.
- Krystallis, A., Chrysosoidis, G. (2005). Consumers' willingness to pay for organic food - Factors that affect it and variation per organic product type. *British Food Journal*, vol. 107, iss. 4-5, pp. 320-343.
- Kutarenko, N. (2014). Distribution channels for organic goods. *Goods and markets*, vol. 1, pp. 26-36.
- Lagast, S., Gellynck, X., Schouteten, J., De Herdt, V., De Steur, H. (2017). Consumers' emotions elicited by food: A systematic review of explicit and implicit methods. *Trends in Food Science & Technology*, vol. 69, part A, pp. 172-189.
- Lytvynov, A., (2017). Organic goods: market issues and perspectives of producers. *Bulletin of KhNAU, Series: Economics*, vol. 1, pp. 78-89.
- Organic federation of Ukraine (2016). [online]. Available: <http://organic.com.ua/uk/homepage/2010-01-26-13-42-29> [2017, October 27].
- Organic Standard (2017). *Standards*, [online]. Available: <http://www.organicstandard.com.ua/ua/services/standards>. [2017, October 27].
- Sheng, J., Shen, L., Qiao, Y., Yu, M., Fan, B. (2009). Market trends and accreditation systems for organic food in China. *Trends in Food Science & Technology*, vol. 20, iss. 9, pp. 396-401.
- Slocum, R. (2007). Whiteness, space and alternative food practice. *Geoforum*, vol. 38, pp. 520-533.
- Smirnova, E. (2010). Environmental marketing. *Practical marketing*, vol. 4, iss. 158, pp. 9-15.
- Sokolova, Zh. (2012). *Theory and Practice of Global Organic Agricultural Products Market*. Moscow: Nasiriddinov Publishing House.
- Sustainable development goals. (2017). [online]. Available: <http://www.un.org/sustainabledevelopment/ru/sustainable-development-goals/>. [2017, October 17].
- Szelag-Sikora, A., Rorat, J. (2015). Role of marketing in increasing awareness about organic good. *Academic yearbooks*, vol. 17, iss. 6, pp. 277-281.
- The Global Food Security Index. (2016). *Research*, [online]. Available: <http://gtmarket.ru/ratings/global-food-security-index/info>. [2017, October 21].
- Willer, H., (2012). *Organic food no more nutritious than conventionally grown food*, [online]. Available: <https://www.health.harvard.edu/blog/organic-food-no-more-nutritious-than-conventionally-grown-food-201209055264>. [2012, September 05].
- Willer, H., Lernoud, J. (2017). Current Statistics on Organic Agriculture Worldwide: Area, Operators, and Market. In H. Willer, J. Lernoud, (Eds.), *The World of Organic Agriculture. Statistics and Emerging Trends 2017* (pp. 70-72). Bonn: Research Institute of Organic Agriculture (FiBL), Frick, IFOAM - Organics International.
- Willer, H., Schaack, D., Lernoud, J., Meredith, S. (2016). Growth trends in European organic food and farming. In *Organic in Europe. Prospects and developments 2016* (pp. 30-32). Brussels: FiBL, Projekte GmbH Marche Polytechnic University.
- Zamula, I. (2016). Environmental marketing as a tool for sustainable development. *Problems of Theory and Methodology of Accounting, Control and Analysis*, vol.1, pp. 82-93.

36. BARRIERS TO RISK APPETITE MANAGEMENT IN POLISH SMALL AND MEDIUM-SIZED ENTERPRISES

Abstract: The issues covered in this paper focus on the analysis of problems connected with an enterprise's risk appetite as an element of risk management. The main objective of the paper is recognition of factors that constitute barriers to risk appetite management in Polish small and medium-sized enterprises. A questionnaire survey conducted in Polish small and medium-sized enterprises, the results of which have been presented in the empirical part of this paper, showed that risk appetite management is a process rarely used among Polish small and medium-sized enterprises and there are barriers that hindered the process of risk appetite management in small and medium-sized enterprises for example: problems with development/selection of appropriate quantitative risk measurement indicators, lack of specialist literature on the subject in the mother language, difficulty in identifying advantages of risk appetite management, insufficient knowledge on this subject among the management, difficulty in measuring risk exposure for comparison against risk appetite and problems with development/selection of appropriate quantitative risk measurement indicators, insufficient knowledge and skills connected with risk management and risk appetite, insufficient risk awareness and difficulty with indicating advantages of risk appetite management in a measurable way. The study conducted has showed that enterprises should manage risk appetite, treating this process as an integral element of risk management, which can lead to improvement in the extent to which their objectives are achieved.

Keywords: barriers, risk appetite, risk management, small and medium-sized enterprises.

JEL Classification: D81, M21

1. Introduction

The concept of risk appetite is closely related to risk management. The importance of this term significantly increased during the financial crisis in 2008, when after the collapse of many companies (including Lehman Brothers, AIG, Enron) attempts were made to identify the reasons for these spectacular market disasters. The research carried out allowed to determine that "risk appetite has emerged as a critical management tool, and executives are working to define and institute organizational risk parameters. A well-defined and clearly communicated risk appetite provides the connection between the overall business strategy and the risk governance of the organization, and is the cornerstone of an effective risk framework" (Institute of International Finance, Ernst&Young, 2011). Further research has confirmed that risk appetite is the decisive, critical foundation of risk management as an integral part of this process (Griffin, 2011; Institute of International Finance, Ernst&Young, 2012; Rittenberg, Martens, 2012; Lemańska-Majdzik, Okręglicka, 2015). It has also been indicated that integrated risk management will be effective only when a statement of an organisation's risk appetite is clearly formulated (KPMG, 2008; KPMG, 2011). Based on numerous studies, experts identified the main causes of risk management problems occurring in organisations. They agreed that one of the most important reasons for failures is a lack of or improperly defined risk appetite in organisations that manage risk (Cremonino, 2011; Lawrence, 2011; Shimpi, 2009; Institute of International Finance, 2008). Summing up, it should be stressed that a significant part of risk management failures and market catastrophes resulted from organisations focusing on achieving profit without a defined risk appetite (AIRMIC, Marsh, Nottingham University Business School, 2009; Yener, 2010). Taking into account the above considerations, the main goal of this paper is recognition of factors that constitute barriers to risk appetite management in Polish small and medium-sized enterprises.

¹ Asoc. Prof. Anna Korombel Ph.D.; Armii Krajowej 36b, 42-201 Częstochowa, Poland, anna.korombel@wz.pcz.pl

* Corresponding author

2. Theoretical Background

Small and medium enterprises are a stimulator of economic development (Meyer, Meyer, 2017). There are 1.91 million non-financial enterprises in Poland, referred to as active enterprises. The SMEs sector (micro, small and medium enterprises) covers 99.8% of all enterprises in Poland. The share of companies in the structure of Polish enterprises is as follows: 96% are micro enterprises (1.84 million), 3.0% are small enterprises (56.7 thousand), 0.8% are medium enterprises (15.6 thousand and 0.2% are large enterprises (3.4 thousand) (PARP, 2017). The advantage of micro and small enterprises is their greater adaptability changes of market demand and flexibility, but on the other hand, they are more financially exposed to economic downturn and international competition. The risk is most often managed by large enterprises, as opposed to micro, small and medium enterprises in which this process occurs less frequently (Brustbauer, 2016; Taraba, Hart, Pitrová, 2016). Risk management will allow enterprises to achieve tangible benefits (Falkner, Hiebl, 2015; Białas, 2016).

The concept of risk appetite has not been clearly defined. According to Hopkin (2010, p. 344) risk appetite is “the level of risk that it is acceptable to the organization, encompassing the hazard risks that it is willing to tolerate, the control risks that it is willing to accept and the opportunity risks in which it is willing to invest.” Rittenberg and Martens (2012) from COSO define risk appetite as “the amount of risk, on a broad level, an organization is willing to accept in pursuit of value. Each organization pursues various objectives to add value and should broadly understand the risk it is willing to undertake in doing so”. According to Deloitte Touche Tohmatsu risk appetite is “the risk a firm is willing to take in the pursuit of its strategy” (Deloitte Touche Tohmatsu, 2014; Lemańska-Majdzik, Okręglicka, Gorzeń-Mitka, 2016; Ključnikov, Belás, Smrčka, 2016). The Institute of Risk Management defines risk appetite as “the amount of risk that an organisation is willing to seek or accept in the pursuit of its long term objectives” (IRM, 2011; Chartered Institute of Internal Auditors, 2017). Attempting to define risk appetite, it is important to highlight that this appetite should be established for individual areas of a company’s operation. This article assumes that the risk appetite means the amounts of risk in a given period that an enterprise is prepared and wishes to take in the individual areas of its operation in pursuit of its objectives, taking into account the resources it possesses and market conditions (Korombel, 2017). In this definition, due to the usefulness of this term for practitioners, risk appetite has been expressed as an amount rather than propensity to take risk. The use of the word *amount* suggests that risk appetite should be expressed in quantitative or qualitative terms. Whereas expressing appetite in the context of an organisation’s propensity to take risk causes a dilemma connected with its interpretation. The concept of risk appetite is closely connected with the concept of its management. Risk appetite management includes 1. Defining risk appetite, 2. Establishing risk appetite tolerances, limits and thresholds, 3. Implementation, 4. Compliance and 5. Review (Korombel, 2013). The process should be continuous. Further, risk appetite should always be established in relation to the adopted strategy and included in the business model of every company (Deloitte Touche Tohmatsu, 2014; Ławińska, 2016) if it is to accomplish its objective, which is, among other things, to support decision-making (Hillson, Murray-Webster, 2012).

3. Methods and Research Description

Due to the lack of studies and statistical information conducted and gathered in Poland on risk management and risk appetite and its management, the author has decided to carry out exploratory research. The research tool applied in the research was a survey questionnaire. Research questions, which were addressed in surveys carried out in 2012² and 2016, have been formulated and presented in table 1.

² Findings of the 2012 survey constitute part of the research carried out by the author and presented in Korombel (2013). They have been used in this paper for the purpose of comparison with the findings of the survey carried out by the author in 2016.

Table 1. Detailed research questions addressed in the surveys conducted in 2012 and 2016

1. Do Polish small and medium-sized enterprises (SMEs) manage risk appetite?			
Yes		No	
2. How do Polish SMEs manage risk appetite?	3. Did Polish SMEs achieve benefits of risk appetite management?	4. Did Polish SMEs encounter any barriers that made it more difficult to manage risk appetite?	5. Did Polish SMEs encounter any barriers that made it impossible to manage risk appetite?
	3a. What benefits did SMEs achieve as a result of risk appetite management?	4a. What barriers occurred in SMEs making risk appetite management more difficult?	5a. What barriers occurred in SMEs making risk appetite management impossible?
	3b. How significant were the benefits from the perspective of SMEs?	4b. How significant were the barriers from the perspective of SMEs?	5b. How significant were the barriers from the perspective of SMEs?

Source: Own study

The aim of the paper is to present research findings that give the basis for answering the research questions no 1, 4, 4a, 4b, and to compare findings from the 2012 survey and the 2016 survey. The survey conducted in 2012 covered private small and medium-sized enterprises representing various industries which carry out business activity across southern Poland. In selection of the study population, the following conditions were also taken into account: 1. entities comprising the study population have carried out business activity for at least 1 year; 2. there is no share of foreign capital in the entities; 3. in enterprises that manage risk and risk appetite, this process has continued for at least 1 year. The research used stratified sampling. Questionnaires in the first survey, in 2012, were sent to 1500 enterprises in southern Poland through the Regional Industry and Trade Chamber in Czestochowa. The first study covered 100 questionnaires completed by small (50%) and medium-sized enterprises (50%). Only 4 small enterprises and 10 medium-sized enterprises declared that they managed risk and risk appetite, and did so only in selected areas of their activity. The remaining enterprises – 46 small and 40 medium-sized enterprises indicated no risk appetite management. During the second survey, in 2016, questionnaires were sent only to the enterprises participating in the 2012 survey. The questionnaires were completed by 10 medium-sized enterprises and 4 small enterprises.

4. Results of Research

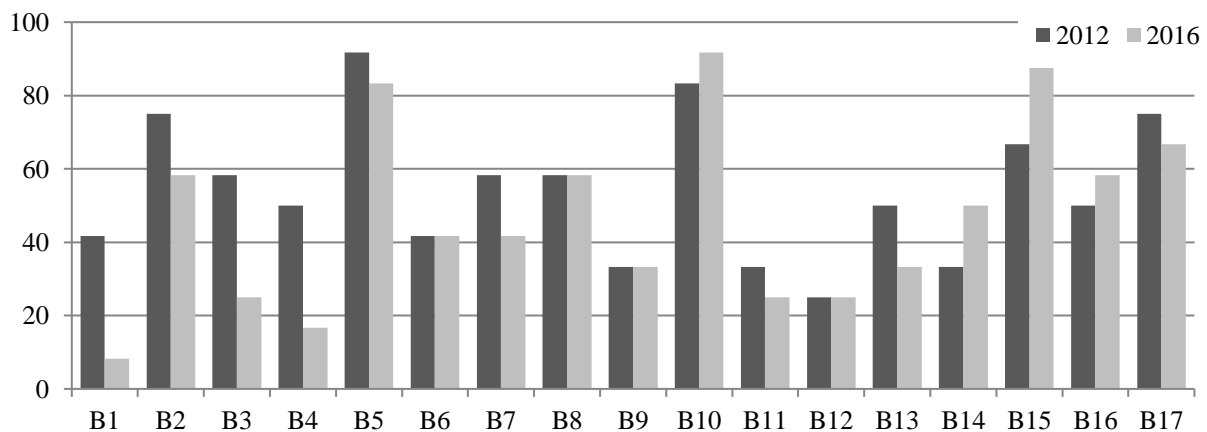
The barriers presented to respondents for assessment had been identified based on the relevant literature (AIRMIC, Marsh, Nottingham University Business School, 2009; Griffin, 2011; Ashby, Diacon, 2010). In both the surveys, the respondents assessed the severity of the different barriers on a scale of 0 to 3, where 0 meant that a given barrier did not occur, 1 point – the barrier occurred and had low severity, 2 points – the barrier had medium severity, and 3 points – the barrier had high severity. One barrier could receive - in the case of small enterprises - 12 points maximum (4 enterprises x 3 points). With medium-sized enterprises, the maximum number of points was 30 (10 enterprises x 3 points). Aggregated points given by the respondents to the different barriers were assessed against their maximums in the two groups of enterprises. On this basis, severity of the barriers was calculated. In the survey questionnaire, risk was presented to the respondents as divided into the following categories: financial risk, operational risk, strategic risk and external risk.

Table 2. Severity of the barriers making risk appetite management more difficult for small and medium-sized enterprises – findings of the 2012 survey

ID.	Barriers	Ranking			
		Small sized enterprises		Medium sized enterprises	
		2012	2016	2012	2016
B1.	This term is too new, we have not heard about it	12.5	17	15	17
B2.	At present, not all people holding managing positions have sufficient knowledge in this area	3.5	6	4	1
B3.	Gaining management interest in defining risk appetite	7	14	11.5	11.5
B4.	Achieving management understanding of the concept of risk appetite	10	16	13.5	16
B5.	Problems related to developing/choosing suitable quantitative risk measurements	1	3	1.5	3
B6.	Problems related to developing/choosing suitable qualitative risk measurements	12.5	9.5	10	9.5
B7.	Insufficient ability to integrate risk appetite with operational activities	7	9.5	6	7
B8.	Lack or poor information resources (risk data bases, external and internal reports)	7	6	8.5	8
B9.	Lack of financial resources	15	11.5	16.5	14
B10.	Lack of specialist literature in our language	2	1.5	4	4
B11.	We don't see any need for that	15	14	11.5	14
B12.	Lack of motivation system	17	14	7	11.5
B13.	Lack of board/top management approval	10	11.5	16.5	14
B14.	Lack of scientific research confirming effectiveness of risk appetite and its positive impact on risk management process and decision making process	15	8	8.5	9.5
B15.	Instability of the law	5	1.5	13.5	5.5
B16.	Difficulty in measuring risk exposure to compare with risk appetite	10	6	1,5	2
B17.	Difficulty with demonstrating the value of having a risk appetite statement	3.5	4	4	5.5

Source: Own research

The barriers making risk appetite management more difficult for small enterprises in 2012 and 2016 have been presented in Figure 1.

**Figure 1. Barriers hindering risk appetite management in Polish small enterprises**

Source: Own research

The research shows that in the group of small enterprises, in 2012 the respondents assigned the highest significance to barrier no 5 – Problems related to developing/choosing suitable quantitative risk measurements, and slightly lower significance to barrier no 10 – Lack of specialist literature in our language, barrier no 2 – At present, not all people holding managing positions have sufficient

knowledge in this area, and barrier no 17 – Difficulty with demonstrating the value of having a risk appetite statement. The least significant barriers were, according to the respondents, barrier no 12 – Lack of motivation system. Findings of the 2016 survey show that significance of some barriers in the group of small enterprises considerably changed. The barriers whose significance decreased the most in 2016 compared to 2012 include: B1 - This term is too new, we have not heard about it (decrease by 33.4%), B3 - Gaining management interest in defining risk appetite (decrease by 33.3%) and B4 - Achieving management understanding of the concept of risk appetite (decrease by 33.3%). The barrier which recorded the highest increase in significance is barrier B15 –Instability of the law (increase by 25.0%). The instability of the law in Poland contributes to an unstable environment in which entities operate, which to a large extent makes risk appetite establishment more difficult. Figure 2 shows the barriers that made risk appetite management more difficult for medium-sized enterprises in 2012 and 2016.

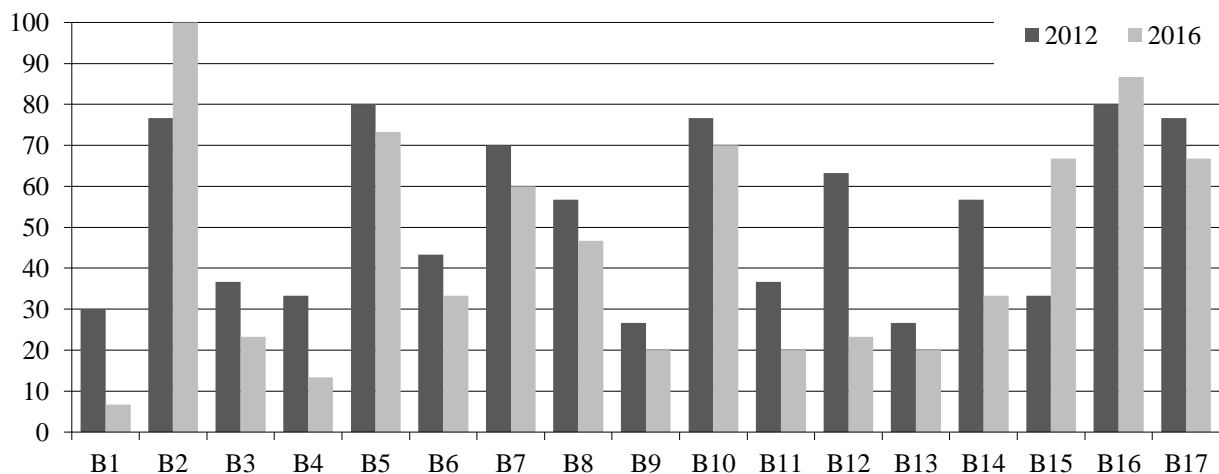


Figure 2. Barriers hindering risk appetite management in Polish medium-sized enterprises

Source: Own research

In 2012, the respondents from the medium-sized enterprises assessed the barriers B5, B16, B2, B10 and B17 as the most significant barriers to risk appetite management. The least significant in this group were barriers B1, B9 and B13. In 2016, most barriers were assigned lower significance by the respondents compared to 2012 (B1, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12, B13, B14, B17). The barriers that made risk appetite management most difficult in the group of medium-sized enterprises in 2016 were barriers: B2 (100%), B16 (86.7%), B5 (73.3%) and B10 (70%). The significance of barriers B2, B15 and B16 was assessed in 2016 as higher than in 2012. The highest increase in significance was recorded by barrier B15 (increase by 33.4%).

The surveys show that both in small enterprises and medium-sized enterprises, the largest barrier, both in 2012 and 2016, was insufficient knowledge on risk and risk appetite, especially in the area of the use of quantitative indicators of risk measurement, risk exposure measurement, and identifying benefits of risk appetite management. It appears necessary to improve knowledge on the use of basic tools in risk management and to improve the ability to use them in practice among those managing risk in the enterprises surveyed. The reason for the inability to use specific quantitative indicators of risk management was not only insufficient knowledge in this area, but also the fact that most enterprises do not archive information on the past of the organisation, or they store only part of the data. Respondents of both small and medium-sized enterprises indicated lack of literature in the Polish language on comprehensive risk management in the economic practice. This is important information and a guide for the directions of future research in this area.

The findings have not confirmed the common opinion that one of the basic reasons why enterprises do not manage risk is too high costs associated with that. In both groups of enterprises, the respondents assigned little significance to the lack of sufficient financial resources compared to the assessments of other barriers.

The lack of studies of risk management contributes to the barrier *Difficulty with demonstrating the value of having a risk appetite statement remaining* at quite a high level. Presenting measurable benefits to the management or owners of enterprises would be a motivation and argument for implementing risk management in enterprises, including, naturally, its key element, which is risk appetite.

5. Conclusion

Risk appetite is a very important element of risk management. Lack of the defined risk appetite or unclearly defined appetite is regarded as one of the basic causes of ineffective risk management in enterprises. Ineffective risk management, in turn, is the cause of failure of many companies. Recognising that risk appetite is an important element of risk management, the aim of this paper has been to identify barriers that make it more difficult for Polish small and medium-sized enterprises to manage risk appetite. The aim was achieved through exploratory research. This research, undertaken in 2012 and continued in 2016, is pioneer research in Poland on the issues of risk appetite. Its findings may contribute to improvement in risk management effectiveness in enterprises, which may also lead to increased quality of their functioning in the economic practice.

The research enabled identification of the most important barriers to risk appetite management. This provided the basis for indicating those areas of risk management and risk appetite management which require development and improvement. These areas include: knowledge on risk management and risk appetite management, risk awareness and risk culture. However, it should be stressed that the small number of entities covered by the research makes it impossible to formulate conclusions for all enterprises. The findings presented in the paper can be treated only as a guide for conducting further extended research in this area.

Research into risk management in Poland should be conducted cyclically and on a wide scale, and the findings should be made available to entrepreneurs in the form of reports and publications that holistically describe dealing with risk in the economic practice.

References

- AIRMIC, Marsh, Nottingham University Business School (2009). *Research into the Definition and Application of the concept of risk appetite*, [online]. Available: [http://www.financialmutuals.org/files/files/definition% 20and%20application %20of%20the%20concept%20of%20risk%20apetite.pdf](http://www.financialmutuals.org/files/files/definition%20and%20application%20of%20the%20concept%20of%20risk%20appetite.pdf). [2017, December 27].
- Ashby, S., Diacon, S. (2010). *Risk Appetite in Theory and Practice*. University of Plymouth, Nottingham University Business School.
- Białas, A. (2016). Cost-Benefits Aspects in Risk Management, *Polish Journal of Management Studies*, vol. 14, no. 1, pp. 28-39.
- Brustbauer, J. (2016). Enterprise risk management in SMEs: Towards a structural model, *International Small Business Journal*, vol. 34, no. 1, pp. 70-85.
- Chartered Institute of Internal Auditors (2017). *Risk appetite and internal audit*, [online]. Available: <https://www.iaa.org.uk/resources/risk-management/risk-appetite/>. [2017, December 27].
- Cremonino, A. (2011). Risk Appetite as a Core Element of ERM: Definition and Process. Enterprise Risk Management Symposium, Chicago: Society of Actuaries, [online]. Available: <http://www.soa.org/library/monographs/other-monographs/2011/november/2011-erm-toc.aspx>. [2017, December 27].
- Deloitte Touche Tohmatsu (2014). *Risk appetite Framework. How to spot the genuine article*. Deloitte Australia, [online]. Available: <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/risk/deloitte-au-risk-appetite-frameworks-financial-services-0614.pdf>. [2017, December 27].
- Falkner, E.M., Hiebl, M.R.W. (2015). Risk management in SMEs: a systematic review of available evidence, *The Journal of Risk Finance*, vol. 16, iss. 2, pp. 122-144.
- Griffin, K. (2011). *Risk appetite. Framework and challenge of practical implementation, Biennial Convention 2011 Beyond the Mandate*. Institute of Actuaries of Australia, Sidney, [online]. Available: [https://www.actuaries .asn.au/library/events/conventions/2011/riskappetite-presentation.pdf](https://www.actuaries.asn.au/library/events/conventions/2011/riskappetite-presentation.pdf). [2017, December 27].
- Hillson, D., Murray-Webster, R. (2012). *A short Guide to Risk Appetite*. England: Gower Publishing Limited.
- Hopkin, P. (2010). *Fundamentals of risk management. Understanding, evaluating and implementing effective risk management*. Kogan Page: London, Philadelphia, New Delhi.

- Institute of International Finance (2008). *Final Report of the IIF Committee on Market Best Practices: Principles of Conduct and Best Practice Recommendations*. [online]. Available: https://www.iif.com/system/files/iif_final_report_of_the_committee_on_market_best_practices.pdf. [2017, December 27].
- Institute of International Finance, Ernst & Young (2011). *Making strides in financial services risk management*, [online]. Available: https://www.iif.com/system/files/11april_ey_makingstrides.pdf [2018, January 30].
- Institute of International Finance, Ernst & Young. (2012). *Progress in financial services risk management. A survey of major financial institutions*, [online]. Available: [http://www.ey.com/Publication/vwLUAssets/Banking_and_financial_services_risk_management_survey_2012/\\$FILE/Progress_in_financial_services_risk_management.pdf](http://www.ey.com/Publication/vwLUAssets/Banking_and_financial_services_risk_management_survey_2012/$FILE/Progress_in_financial_services_risk_management.pdf) [2018, January 30].
- Ključnikov, A., Belás, J., Smrčka, L. (2016). The Role of Risk-Taking and Competitive Aggressiveness in Management of SMEs, *Polish Journal of Management Studies*, vol. 14 (1), pp. 129-139.
- Korombel, A. (2013). *Apetyt na ryzyko w zarządzaniu przedsiębiorstwami*. Częstochowa: Wydawnictwo Politechniki Częstochowskiej.
- Korombel, A. (2017). Apetyt na ryzyko – próba uporządkowania terminologii, *Przegląd Organizacji*, vol. 4 (927), pp. 47-53.
- KPMG (2008). *Understanding and articulating risk appetite*. [online]. Available: <https://erm.ncsu.edu/library/article/articulating-risk-appetite>. [2018, January 30].
- KPMG (2011). *Using risk appetite to drive value. Risk consulting*. [online]. Available: <http://www.kpmg.com.au/aci/docs/using-risk-appetite-to-drive-value.pdf>. [2012, August 10].
- Ławińska, O. (2016). Planning and Implementation of Infrastructure Investments Financed from EU Funds in Czestochowa in 2010-2015. In *3rd International Conference on European Integration 2016 (ICEI 2016)*, Ostrava, pp. 546-554.
- Lawrence, M. (2011). *Risk appetite – the key to the new risk paradigm*, Melbourne: The Australian APEC Study Centre at RMIT, [online]. Available: http://www.apec.org.au/docs/11_CON_GFC/HTRAB_040-043_Lawrence.pdf. [2017, December 27].
- Lemańska-Majdzik, A., Okręglika, M. (2015). Identification of Business Processes in an Enterprise Management, *Procedia Economics and Finance*, vol.27, pp. 394-403.
- Lemańska-Majdzik, A., Okręglika, M., Gorzeń-Mitka, I. (2016). Selected Development Factors of Small and Medium Enterprises. In *28th International Business Information Management Association Conference (28th IBIMA), Vision 2020: Innovation Management, Development Sustainability and Competitive Economic Growth*, Sevilla, Spain, 9-10 November 2016, vol. I-VII, pp. 1090-1099.
- Meyer, D.F., Meyer, N. (2017). Management of Small and Medium Enterprise (SME) Development: An Analysis of Stumbling Blocks in a Developing Region, *Polish Journal of Management Studies*, vol. 16 (1), pp. 127-141.
- PARP (2017). *Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce*. [online]. Available: https://www.parp.gov.pl/images/PARP_publications/pdf/parp_4_raport%20o%20stanie%20sektora%20march%20i%20srednich%20przedsi%20w%20polsce_internet.pdf [2018, February 8].
- Rittenberg, L., Martens, F. (2012). *Enterprise Risk Management. Understanding and Communicating Risk Appetite*. Committee of Sponsoring Organizations of the Treadway Commission (COSO), [online]. Available: <https://www.coso.org/Documents/ERM-Understanding-and-Communicating-Risk-Appetite.pdf> [2018, January 30].
- Shimpi, P. (2009). Financial Crisis: Time to Improve ERM, *Emphasis*, vol. 1, pp. 10-13.
- Taraba, P., Hart, M., Pitrová, K. (2016). Risk Management of Projects in the Czech Republic, *Polish Journal of Management Studies*, vol. 13, no. 1, pp. 181-191.
- The Institute of Risk Management (2011). *Risk appetite & Tolerance. Guidance Paper*. [online]. Available: <https://www.theirm.org>. [2017, December 27].
- Yener, D. (2010). *Establishing ERM Systems in Emerging Countries*, In J. Fraser, B.J. Simkins (Eds.), *Enterprise Risk Management. Today's Leading Research and Best Practices for Tomorrow's Executives*, John Wiley & Sons, Inc, Hoboken, New Jersey, pp. 505-529.

37. MANAGEMENT ACCOUNTING AT CROATIAN PUBLIC HIGHER EDUCATION INSTITUTIONS

Abstract: Efficient management is nowadays one of the most important challenges of higher education institutions. That is especially highlighted in the conditions of increased demands in teaching and researching on the one side and decreased financial sources on the other side. Quality accounting information system is extremely important preconditions of the efficient management. However, accounting systems at higher education institutions are still dominantly focus on external reporting that is prescribed by the normative framework. Therefore, the main objective of this paper was to explore the importance of the management accounting for higher education institutions in the context of efficient decision-making process by analysing experiences of HEIs that have already developed management accounting as well as investigating the development at Croatian HEIs. Management accounting of higher education institutions in Croatia was analysed through surveys that were conducted in the year 2014 and 2016. Based on conducted research it was concluded that HEIs in Croatia have made a positive progress regarding usage of management tool especially regarding cost allocation of indirect cost on cost objects, price determination based on cost information and preparation of internal reports. However, this conclusion was based on opinions of Heads of Accounting at public HEIs and therefore it is unavoidable that in this paper, certain degree of subjectivity can be found. In the further research, more focus will be put on the managers knowledge about managerial and cost tools usage in terms of efficient decision-making.

Keywords: cost, Croatia, higher education institutions, management accounting.

JEL Classification: I23, M41

1. Introduction

Higher education institutions (hereinafter HEIs) are extremely important part of the society and can be viewed as a community of people carrying out teaching and research activities. According to Sordo, Orelli and Padovani (2012) HEIs are playing crucial role in the economic and social development of every country and therefore they have to be accountable to different stakeholders. More precisely, they are primary accountable to students, teachers, and the management of the institution. Other stakeholders include government, professional bodies, employers, parents, non-teaching staff, and auditors. In order to satisfy growing expectations from aforementioned stakeholders, HEIs have entered a wide range of reforms that differ from country to country. These reforms are primarily connected with the following processes: internationalization, marketization, increase in autonomy, increase in student enrolment, reduction of public sources of funding, introduction of new financing schemes and the increase of competitiveness in the higher education system (Kyvik, 2004, OECD, 2008a, OECD, 2008b, OECD, 2008c, Sursock, Smidt, 2010, Molesworth, 2010). All of the above-mentioned processes have posted a challenge to HEIs for more efficient, effective and accountable management. Due to that, high quality and efficient financial management is extremely important in this rapidly changing environment (Sanyal, Martin, 2009).

Accounting systems of HEIs were for a very long period dominantly focus only on satisfying legal requirements regarding external financial reporting. However, in order to be able to respond to all challenges, HEIs started with introducing cost and managerial methods and instruments that are already well developed in the private sector. HEIs in the UK, Finland and Sweden among first initiated the implementation of full costing as essential tool of modern university management (Estermann, Claeys-Kulik, 2013). Main benefits of using cost and managerial tool can be summarized on better

¹ Martina Dragija Kostić Ph.D.; Trg J.F. Kennedyja 6, 10000 Zagreb, Croatia, mdragija@efzg.hr

* Corresponding author

decision-making, more efficient allocation of limited resources, a more systematic approach to program and project evaluation and more accountable pricing. Generally, by using instruments of management accounting HEIs are nowadays able to achieve their most important challenge and that is financial sustainability.

Therefore, in conditions where HEIs are subject to multiple and different reform processes it is extremely important to introduce management accounting as a reliable information base for efficient management. It is not surprising therefore to have witnessed a flurry of new management accounting activities across European countries.

Due to aforementioned, the main objective of this paper was to explore the importance of the management accounting for higher education institutions in the context of efficient decision-making process by analysing experiences of HEIs that have already developed management accounting as well as investigating the development of management accounting at Croatian HEIs. The focus was particularly put on following management activities: cost tracking, pricing and usage of internal reports.

After the introduction section of the paper, the author emphasize about the importance of management accounting at HEIs. In third section, author provides empirical research methodology and research results. Last section consist of concluding remarks.

2. The Importance of Management Accounting Information at HEIs

In the rapidly changeable environment that is characteristic for HEIs due to reform processes, management tool is becoming very important. At public HEIs accounting functions has been traditionally focused on external reporting to the government, while management activity has been disconnected from the core activities (Pettersen, Solstad, 2007). That means that information from financial accounting were source of management information for a very long period. However, as Johnson and Kaplan (1987, p.1) highlighted in their paper, today's management accounting information, driven by procedures and cycles of the organization's financial reporting, is too late, too aggregated and too distorted to be relevant for managers' planning and decision-making.

The development of management accounting, in the public sector and in tertiary sector as well, should be seen in close correlation with public sector management reform known as *New Public Management*. The concept of New Public Management is differently interpreted and dealt with different content depending on the authors (Borins, 1995; Barzelay, 2001; Hughes, O'Neill, 2006). But this global concept reflects the trend of changes in public sector entities that started at the end of 1990s and can be summarized on the adoption of management practices from the business sector to the public sector. Leaning on the "new public management" concept, public HEIs as a part of public sector also started with accepting and developing management accounting and cost accounting instruments as a prerequisite for efficient and accountable management. This modernization of accounting at HEIs is mainly oriented to obtain an efficient and effective organization using private sector instruments (Olson, Humphrey, Guthrie, 2001). Moreover, higher education institutions are not only consider as social institutions, but also as "firms" to which certain logic and rules typical for management accounting in private sector can apply (Sordo, Orelli, Padovani, 2012). Therefore, several authors (Pettersen, 2001; Olson, Humphrey, Guthrie, 2001) have highlighted that accounting reform is very often first phase for successful NPM reform in the public sector and that also includes public HEIs given the fact that they are under increasing pressure to be more efficient and accountable.

The general characteristic of management accounting compared to financial accounting can be summarized as follows (Drury, 2012, p.19):

- management accounting is concerned with the provision of information for internal users to help them to make better decisions and improve the efficiency and effectiveness of operations,
- management accounting provides segmented information and it is more future oriented,
- in management accounting reports are mostly prepared on daily basis.

Moreover, it is difficult to make the distinction between cost accounting and management accounting and very often, the two terms are used synonymously. According to Shah, Malik and Malik (2011) management accounting was introduced as an advanced version of cost accounting in order to make accounting more useful in assisting managers in their decision making function. Mamontova and Novak (2015) emphasize that management accounting at HEIs should be focus on detailed accounting of cost. It is known that management accounting is using information from cost accounting

information and that information from cost accounting have significant supporting role in meeting the management accounting task. Therefore, the matrix of cost accounting as well as the management accounting should be seen as a unique accounting and reporting framework for internal users.

To date, most of surveys regarding accounting reforms at HEIs is focused on developing the cost methodology that will help HEIs to be more cost efficient and effective in the conditions of rising cost of education on one side, and budget cuts on the other side. The numerous authors argue that the HEIs need to find the cost methodology that can link accounting data to university strategy and performance measurement. The most of them propose some form of the Activity Based Costing (Granof, Platt, Vaysman, 2001; Reich, Abraham, 2006; Krishnan, 2006; Valderrama, Del Rio Sanchez, 2006; Ismail, 2010; Ferreira Lima, 2011; Dražić Lutitsky, Dragija, 2012). Due to this, it is inevitable to mentioned European university association that has highlighted the importance for universities to know the full costs of all their activities (EUA, 2008).

There are different approaches to the development of full costing at HEIs that depend on institutional profiles and missions of HEIs. The common feature of all approaches is the focus on identifying and calculating of all direct and indirect cost per different cost objects: activities, services, programs and projects. The main impact on the cost methodology development has a normative framework and organization system of HEI, as well as the applied funding models. In accordance with the aforementioned, HEIs choose a cost model such as ABC methodology or some of its modification.

The United Kingdom, Ireland, Finland and Sweden are examples of European countries that among first initiated the process of calculating full cost at higher education institutions and are ultimately the examples of countries that have successfully implemented this methodology in the accounting information systems of HEIs and have developed a quality system of management reports. However, it is important to point out that there are significant differences in the ways of development and implementation, and thus in the application of the full costing method. On the one hand, Ireland, Sweden and the United Kingdom have developed a comprehensive system of full costing through a coordinated approach based on co-operation between universities. By contrast, in Finland, individual universities developed full costing methodologies on their own in response to requirements by the ministry and the national research funding councils (Estermann, Claeys-Kulik, 2013, p. 19). Many HEIs in Netherlands, Austria, France, Germany and Belgium are also quite advance in the usage of full costing due to the need for reliable information for strategic management and decision-making process.

Management accounting can be viewed as a source of segmented information about different parts of HEIs where cost information plays a crucial role. That information is presented in internal, management reports that are aimed to make management more efficient. Of course, one of most important precondition is that managers at HEIs know how to use information that is presented in those reports for decision-making process.

Generally, based on the conducted literature review it can be concluded that the topic of the management accounting at HEIs is insufficiently researched. Therefore, further in the paper author has investigated this area for Croatian public HEIs.

3. Management Accounting at Croatian Public HEIs – Empirical Research

HEIs in Croatia are still dominantly public institutions organized as budgetary users and therefore in the empirical part of the paper focus is put only on public HEIs. Financial reporting of public HEIs in Croatia is prescribed by *Regulation on financial reporting in budgetary accounting* (Official Gazette No. 3/15, 93/15, 135/15, 2/17 and 28/17). Aforementioned normative framework regulates just financial accounting whose outputs are external financial reports. It is necessary to highlight that public HEIs are recording all events under modified accrual basis. This fact is very important in terms of information coverage, which is narrowed, especially the cost information. Moreover, management accounting is not regulated through normative framework and because of that, this paper investigates the area of management accounting development at public HEIs in Croatia.

3.1. Research Methodology and Data

This paper employs research methodology based on the conducted survey. In order to investigate development of management accounting, two surveys were conducted in the year 2014 and year 2016. The target population for both surveys were public HEIs in the Croatia. Due to the fact, that target

population is small, questionnaires were sent to all public HEIs. Considering the complete number of public higher education institutions, the sample of respondents in the year 2014 included 102 public HEIs and in the year 2016 104 public HEIs in Croatia. The questionnaires were sent by e-mail in online form and by post. The survey research subjects were the Heads of Accounting in public HEIs. The questionnaires were mostly structured from closed type of questions and for the purpose of this paper author will analyse only questions connected with the usage of management accounting at HEIs by using descriptive statistics.

Due to the primary objective of the paper, author investigates the progress in usage of cost and management accounting at Croatian public HEIs. Initially stated hypothesis was that Croatian public HEIs have made a positive progress regarding usage of cost and management instruments. Therefore, author has put focus on following key management and cost issues:

- cost tracking per different levels,
- allocation of cost (especially indirect cost),
- price determination,
- preparing of internal reports,
- calculation of financial indicators.

3.2. Research Results and Discussion

The response rate for the survey that was conducted in the year 2014 was 31.37% (32 out of total 102 public HEIs) and in the year 2016 was 33.65% (35 out of total 104 public HEIs).

The first question was addressed in order to evaluate cost tracking (on the institutional level, by nature types, by places of cost and by cost objects). From the figure 1 it is evident that more or less 2/3 of respondents in the sample are tracking cost per all defined levels in both years. However, almost no significant change has occurred in the year 2016. More precisely, the small positive trend (2%) was only for tracking by cost objects. For the purpose of management, the most significant is tracking by cost objects. Cost objects can be programs, students or something else. From these results, we can only conclude that costs are tracked by objects, but we are not familiar what is cost object.

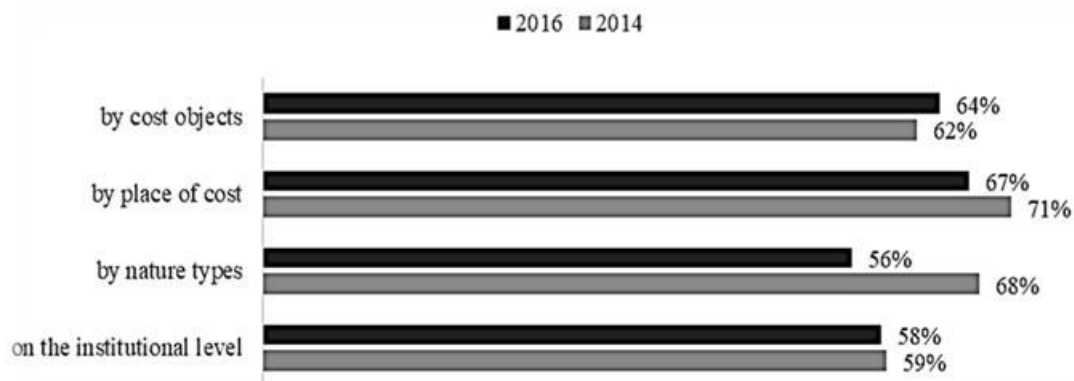


Figure 1. Cost tracking at Croatian HEIs

Source: Authors' calculations

One very important question is allocation of indirect cost because full costing assumes that all costs, direct and indirect are allocated on the cost object. From the figure 2 it is obvious that there has been significant change in the allocation of indirect cost. While in the year 2014 only 27% of respondents answered that they are allocating indirect cost, in the year 2016 this percentage is 63%. Therefore, some positive progress is noticeable.

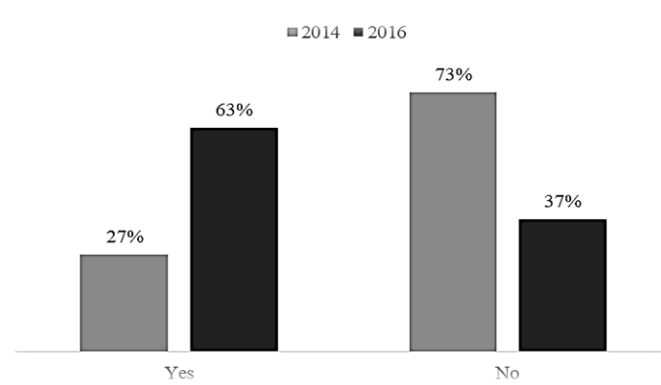


Figure 2. Allocation of indirect cost on the cost objects

Source: Authors' calculations

If HEIs do not know the full costs (direct and indirect) of their activities, it is very difficult to adequately price teaching and research activities of HEIs. Thus, decision about prices are crucial for financial sustainability of HEI. From the figure 3 it can be seen that most of respondents in both years is determining prices based on the information about cost. Moreover, there is a growing trend from 44% in the 2014 to 63% in the year 2016. However, due to the fact that public HEIs in the Croatia are applying modified accrual basis where there is no information about depreciation cost, the reliability of information about cost is questionable.

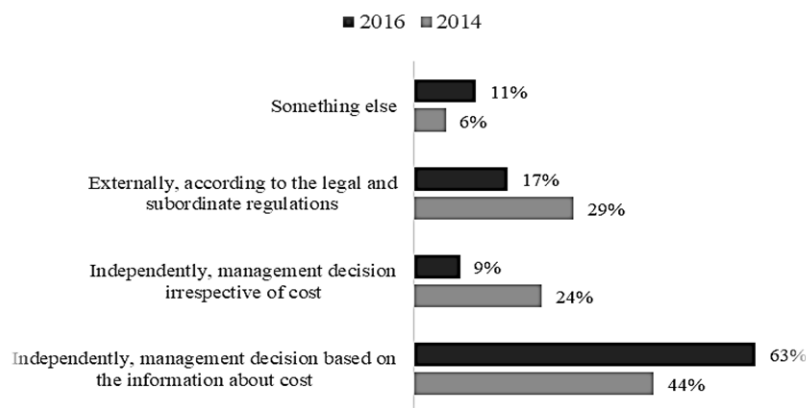


Figure 3. Price determination at Croatian HEIs

Source: Authors' calculations

Output of financial reporting are yearly external financial reports that are prescribed by the normative framework, while output of management accounting are internal reports that are in most cases prepared on daily or weekly basis according to management request.

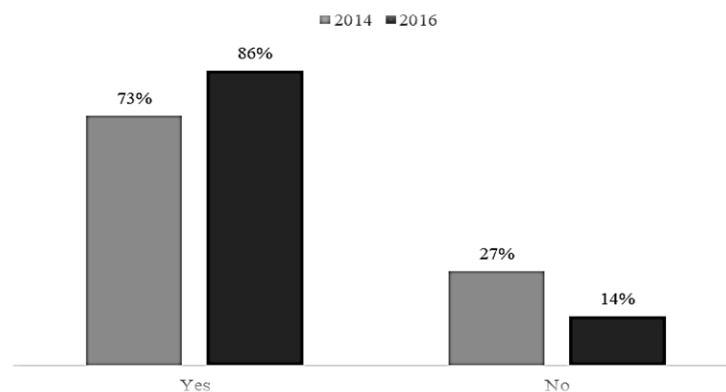


Figure 4. Preparation of internal reports at Croatian HEIs

Source: Authors' calculations

The next two questions were therefore targeted to internal reports and timeline basis of its preparation. From the figure 4 it can be concluded that respondents in the sample are mostly preparing internal reports and the percentage in the year 2016 is very high (86%).

Time basis for preparation of internal reports in the observed sample is dominantly monthly and quarterly bases (see figure 5). There is also a negative trend in the year 2016 regarding the preparation of internal reports on different time basis.

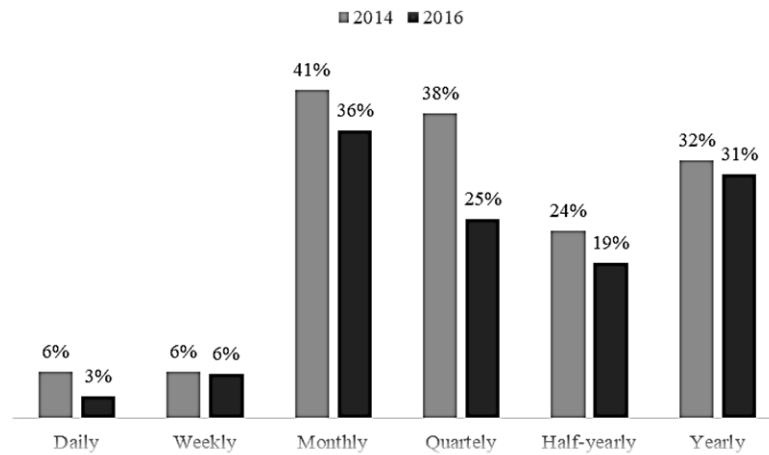


Figure 5. Time basis for internal reports preparation

Source: Authors' calculations

The last question was oriented on financial indicator because in the conditions of limited resources performance measurement is even more outlined as an important management tool at HEIs. According to the figure 6 it is evident that there are significant differences in results in the year 2014 and in the year 2016. While in the year 2014 most of respondents (52%) answered that financial indicators are periodically and annually calculated for management, this percentage is much lower in the year 2016 (26%).

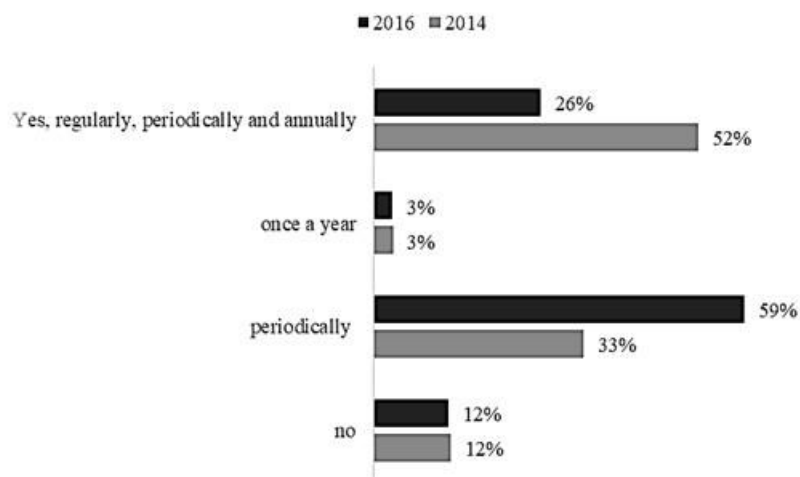


Figure 6. Calculation of financial indicators for management

Source: Authors' calculations

4. Conclusion

In today's dynamic environment of HEIs, it is inevitable to change existing management practice by adopting instruments and methods of management and cost accounting that are already well developed in the private sector. Management accounting plays an important role in the reform processes of HEIs because it is a generator of new forms of financial information.

The literature review has shown that developed European HEIs have already implemented cost and managerial instruments. Those HEIs are more or less at the same level of implementation, but differ regarding the strategic use of full costing. The United Kingdom, Ireland, Finland and Sweden, who were first to initiate the process, are the most advanced systems in terms of development and implementation of full costing methodologies for the purpose of decision making and more efficient internal resource allocation as well for achieving financial sustainability.

Before highlighting the most important findings of the empirical part of the paper, it is necessary to point out some limitation of the surveys research. First limitation is relatively small sample size due to the fact that the population was also small and included all public HEIs in Croatia. In addition, all observed data represent opinions of the respondents and therefore it is unavoidable that in this paper, certain degree of subjectivity can be found.

From the presented research results, it can be concluded that public HEIs in Croatia have made some positive progress regarding the usage of instruments of cost and management accounting. First of all, percentage of respondents that answered positively regarding allocation of indirect cost on cost objects increased from 27% in the year 2014 to 63% in the year 2016. Moreover, there is also improvement regarding price determination based on cost because in the year 2014 44% respondents answered that management decision about prices is based on cost information while in the year 2016 this percentage is higher (63%). Almost all respondents in both samples are preparing internal reports. This percentage is especially very high in the year 2016 (86%). However, there is a decrease in time basis for preparation of internal reports because almost all percentages are lower in the year 2016 compare to 2014. Also, there is a decrease in the calculation of financial indicators for management. In the year 2014 52% of respondents answered that the financial indicators are calculated regularly, periodically and annually while in the year 2016 only 26% of respondents gave the same answer. Overall conclusion is that Croatian HEIs have made positive progress regarding the usage of instruments of cost and management accounting. In the future research, more focus will be put on the manager's knowledge about managerial and cost instruments usage in terms of efficient decision-making.

Acknowledgements

This paper is a result of Croatian Science Foundation's funding of the project 8509 Accounting and financial reporting reform as a means for strengthening the development of efficient public sector financial management in Croatia. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of Croatian Science Foundation.

References

- Barzelay, M. (2001). *The New Public Management. Improving Research and Policy Dialogue*. Berkeley and Los Angeles: University of California Press.
- Borins, S. (1995). The new public management is here to stay. *Canadian Public Administration*, vol. 38, pp. 122-132.
- Dražić Lutitsky, I., Dragija, M. (2012). Activity based costing as a means to full costing- Possibilities and constraints for European universities. *Management: Journal of contemporary management issues*, vol. 17, iss. 1, pp. 33-57.
- Drury, C. (2012). *Management and Cost Accounting* (8th ed.), United Kingdom: Thomson Learning.
- Estermann, T., Claeys-Kulik, A. (2013). *Financial Sustainable Universities, Full costing: Progress and Practice*, European University Association, Brussels, [online]. Available: www.eua.be/publications/ [2017, November 12].
- EUA (2008). *Study "Financially sustainable Universities – Towards full costing in European Universities"*, Brussels, [online]. Available: www.eua.org [2017, November 12].
- Ferreira Lima, C.M. (2011). The applicability of the principles of Activity-Based Costing System in a higher education institution. *Economics and Management Research Projects: An International Journal*, vol. 1, iss. 1, pp. 57-65.
- Granof, M., Platt, D., Vaysman, I. (2000). Using Activity-Based Costing to Manage more Effectively, *The PricewaterhouseCoopers Endowment for the Business of Government*, Grant Report, [online]. Available: <http://costkiller.net/tribune/Tribu-PDF/Using-Activity-Based-Costing-to-Manage-More-Effectively.pdf> [2017, November 12].
- Hughes, O., O'Neill, D. (2006). *The limits of new public management: Reflection on the Kennett «revolution» in Victoria*, [online]. Available: <http://www.inpuma.research/papers/sydney/hughesoneill.html> [2017, November 01].

- Ismail, N.A. (2010). Activity-based management system implementation in higher education institution. *Campus-Wide Information Systems*, vol. 27, no. 1, pp. 40-52.
- Johnson, H.T., Kaplan, R.S. (1987). *Relevance Lost: The Rise and Fall of Management Accounting*. Boston: Harvard Business School Press.
- Kyvik, S. (2004). Structural changes in higher education systems in Western Europe. *Higher Education in Europe*, vol. 29, iss. 3, pp. 393-409.
- Mamontova, N.A., Novak, A.F. (2015). Management accounting of higher education institutions: implementation stages and realization features. *Economics, entrepreneurship, management*, vol. 2, iss. 2, pp. 39-44.
- Molesworth, M., Scullion, R., Nixon, E. (2010). *The marketization of higher education*. London: Routledge.
- OECD (2008a). *Thematic Review of Tertiary Education, Synthesis Report, Overview*, OECD Publishing, [online]. Available: <http://www.oecd.org/education/skills-beyond-school/40345176.pdf>. [2017, November 01].
- OECD (2008b). *Tertiary Education for the Knowledge society*, Volume 1, Special features: Governance, Funding, Quality, Thematic Review of Tertiary Education: Synthesis Report, OECD Publishing.
- OECD (2008c). *Tertiary Education for the Knowledge society*, Volume 2, Special features: Equity, Innovation, Labor Market, Internationalisation, Thematic Review of Tertiary Education: Synthesis Report, OECD Publishing.
- Olson, O., Humphrey, C., Guthrie, J. (2001). Caught in an Evaluatory Trap: A Dilemma for Public Services Under NPFM. *European Accounting Review*, vol. 10, no. 3, pp. 505-522, [online]. Available: <https://ssrn.com/abstract=285325> [2017, November 01].
- Pettersen, I.J. (2001). Implementing management accounting reforms in the public sector: the difficult journey from intentions to effects. *The European Accounting Review*, vol. 10, iss. 3, pp 561-581.
- Pettersen, I.J., Solstad, E. (2007). The role of accounting information in a reforming area. A study of higher education institutions. *Financial Accountability & Management*, vol. 23, iss. 2, pp. 133-154.
- Reich, F., Abraham, A. (2006). Activity Based Costing and Activity Data Collection: A Case Study in the Higher Education Sector, *Proceedings of the 18th Asian-Pacific Conference on International Accountig Issues*, Maui, Hawaii, 15-18 October 2006.
- Sanyal, B., Martin, M. (2009). Financing higher education: International perspectives. *World 68*, vol. 110, iss. 731, pp. 23-24.
- Shah, H., Malik, A., Malik, M.S. (2011). Strategic management accounting – a messiah for management accounting? *Australian Journal of Business and Management Research*, vol. 1, iss. 4, pp. 1-7.
- Sordo, C., Orelli, R.L., Padovani, E. (2012). Accounting practices in Italian higher education system. *Economic Research*, vol 25, iss. 3, pp. 825-845.
- Sursock, A., Smidt, H. (2010). *Trends 2010: A decade of change in European Higher Education*. European University Association. Brussels, [online]. Available: www.eua.be/publications/ [2017, November 12].
- Valderrama, T.G., Sanchez, R. (2006). Development and Implementation of a University Costing Model. *Public money & Management*, vol. 26, iss. 4, pp. 251-255.

38. NUMERICAL MODEL OF LAYOUT PLOT AS SUPPORT TOOL IN HEURISTIC METHOD OF WAREHOUSES DESIGN

Abstract: The author's heuristic method of warehouses design, formulated formerly, was enriched by software that provides support for a number of design variants. This method takes into account the numerical model used to generate sketches of functional and spatial arrangements. In warehouse design the development of sketches of the functional and spatial arrangements is an essential aspect, which enables further elaboration on storage technology, supports decision-making process on: transport routes in a facility, location of storage racks and other kind of infrastructure, and is the basis for architectural labor. The methods and procedures employed in the paper are: rational method which is heuristic type of method, *IDEFO* modeling language to build the conceptual model of layout plotting and *Object Pascal* programming language to build numerical model based on conceptual ones (changes in the code are susceptible thanks to programming language). The conclusion of the paper is a case study connected to layout plotting of a warehouse. The implications for further research and employing are also predefined. The numerical model may support entrepreneurs who plan to reorganize their warehouse layout or plan to design a new storage facility.

Keywords: facility layout, heuristic method, high-bay warehouse, storage facility, warehouse design.

JEL Classification: C02, C63, C65, C88

1. Introduction

It is evident that a spatial-functional layout of a logistics facility has a direct impact on the operational performance of it (a logistics facility is understood here as a building where some logistics processes occur, such as a warehouse). Therefore, it is not surprising, it was ascertained that from 10 to 30% of material handling cost may be reduced by launch an effective logistics facility layout (Tompkins, 2003; Tompkins et al., 1996). Also the total travel distance is affected in more than 60% by the layout design (Caron, Marchet, Perego, 2010; del Rio Tomé, 2014). A layout is then an important aspect of full warehouse design. Design of spatial and functional areas (as a sketch layout of logistics facility) is a significant part of the method of logistics facilities design. The method of logistics facilities design is presented in the literature (Kostrzewski, 2016) and it is the mentioned in paper's title heuristic method of warehouses design. The main aim of this paper is to describe and present the possibility of a warehouse layout plotting tool that is a part of the mentioned method.

The paper is organized as follows. In section 2., the literature review connected to warehouse layout and design is given. In section 3., the methodology is briefly described. In section 4., the implementation of the method and layout plotting procedure into software, that provides support for a number of design variants, are given. This section consists of two parts. In the first one the conceptual model of plotting procedure is presented and in the second one the procedure of facility layout plotting is briefly discussed. That is the result of the paper. The paper is finished by section 5., where summary and selected implications for further research, connected to the matter given in the paper, are presented.

2. Literature Review

Shayan and Chittilappilly (2004) define the logistics facility layout problem as an optimization problem that tries to make layouts more efficient by taking into account various interactions between facilities and material handling systems while layouts designing.

¹ Ing. Mariusz Kostrzewski Ph.D.; Koszykowa 75, 00-662 Warszawa, Poland, markos@wt.pw.edu.pl

* Corresponding author

Drira, Pierreval and Hajri-Gabouj (2007) presented a tree representation of layout problems. In this paper, authors considered some of tree branches, such as: fixed dimensions of rectangular regular shape of facility, its static layout, crisp data for layout formulation, the objectives that are minimum space costs and minimal shape irregularities, layout configuration that is multi-rows etc. Some authors took into account location of departments (or areas) within a group of facilities, and locations of departments inside each facility itself (Azevedo, Crispim, de Sousa, 2017). Other authors opted for multi-floors logistics facilities design – they manifest that these are more efficient than single floor facilities (Ahmadi, Pishvae, Jokar, 2017), differently from those who discussed simplified layout of a retail store (Mou, Robb, DeHoratius, 2018) or other logistics facilities of single floor (Fichtinger et al., 2015). Interesting approach that combines warehouse layout with the capacitated lot-sizing problem is given in (Zhang et al., 2017). Authors aim is to find available space for products and to manage items in a warehouse in order to minimize the total cost of production and warehouse operations. Not trivial in-warehouse and in-plant areas elaborating is given by (Xiao et al., 2017). This is quite important problem within a facility that need to be timely adjusted so that the manufacturing system can be transferred to fit for different production scenarios or areas combinations in a warehouse in a fast yet low-cost way (flexible areas problem). It is a dynamic facility layout problem similar to knapsack problem optimization. In literature, it is research e.g. with use of linear programming (Xiao et al., 2017) or genetic algorithms (Palomo-Romero, Salas-Morera, García-Hernández, 2017). Raman, Nagalingam and Lin (2009) stated that early stages in a design phase of facility life cycle have a great consequence in other phases such as production planning, control and when modification would be incorporated due to the changes in market demand, which happens very often in nowadays global market. There are much more papers connected to mentioned subject matters and these are treated as a confirmation of that one should deal with the subject matter of the facility layout design (it is quite interesting that while searching *Science Direct* database for “warehouse design software” phrase, only one source was found: (Baker, Canessa, 2009)). It was important then to program software that would assure a layout flexibility and proper utilization of facilities areas, which have a significant contribution towards layout effectiveness. Especially that “layout is a critical requirement in warehouse design” (Abdoli, Kara, 2016). For a comprehensive review of research on warehouse operations, which is highly connected to this kind of facility areas, readers are referred to (Zhang et al., 2017; Gu, Goetschalckx, McGinnis, 2007; Gu, Goetschalckx, McGinnis, 2010; Francis, McGinnis, White, 1992).

Without any doubts, there is variety of computer programs that support warehouse design and arrangement process. To mention only some of them: (1) *SmartDraw* supports warehouse layout with a simple building outline or a ready-to-made template, (2) plant layout can be realized with use of *ConceptDraw PRO* software, (3) *Simple Warehouse Mapper* supports creating of a visual representation of warehouse or factory and add processes information directly to the picture, not to mention *Microsoft Visio*, *CAD* software etc. Meera (2013) used software *Staad.Pro* for structural analysis and design both in case of the concepts and analyzing the designed frames of warehouse. Interesting fact is mentioned in (Vieira et al., 2015). It was explained in the paper that user can create a warehouse layout, by inserting its data on an *Excel* spreadsheet. Notwithstanding, these programs are not part of any warehouse design method. It was of immense importance to prepare such. The heuristic method mentioned in the paper is fully realized with of *OLO9* software that supports warehouse design from logistics task definition up to fully elaborated variant of a warehouse design (including its layout, technology, cost estimation and evaluation measures). Therefore, contrary to statement from 2002, the scientific and proof supported method of warehouse design occurs (Goetschalckx et al., 2002).

3. Methodology

Methodology is understood here as a structured set of scientific elaborations of different kind consisting of a qualitative and quantitative arguments. In order to collect appropriately extensive research material, the richness of foreign literature and few national titles, altogether more than 30 literature references, were studied. In this paper, a qualitative method was used. This method aimed in gathering the most complete information available in national and foreign literature, scientific and popular ones. A library query was developed, the problem was solved using "hard" literature and numerous web resources, properly verified. Another method, author's own one, is given due to present the subject matter of this paper: numerical model of layout plot. It is briefly described in next section, as well as IT tools, used in this research, are described there.

4. Results: Implementation of the Method and Layout Plotting Procedure into Software

The method itself ensure possibility of full warehouse design, its technology, its geometry (sketches of functional and spatial arrangements), the assortment of means of transport and devices, numbers of employees according to types of the job-categorization, specification and computing of operating cost and all the expenditure on raising and equipping the warehouse, as well as other aspects of design. Herein in the paper, one of method's possibilities is described: numerical model that can be used to generate sketches of functional and spatial arrangements in a logistics facility. Due to realization of such a numerical model, firstly the conceptual model of such sketches generating had to be prepared (known here also as conceptual model layout plotting) and secondly the conceptual model had to be implemented into a software of the heuristic method as layout plotting procedure. The software was called as *OL09*.

4.1. Conceptual Model of Layout Plotting

One of the practical aspects of mentioned heuristic method is logistics facilities designing issue formalization and analysis. It was prepared with usage of graphic notation *Integration Definition for Function Modeling 0 (IDEF0)*. *IDEF0* allowed to prepare graphic description of a set of interrelated activities occurring in facilities design. It is partly given in Figure 1. Due to the complexity of the conceptual model, its details are omitted here but they are specially exposed in the procedure in the next subsection.

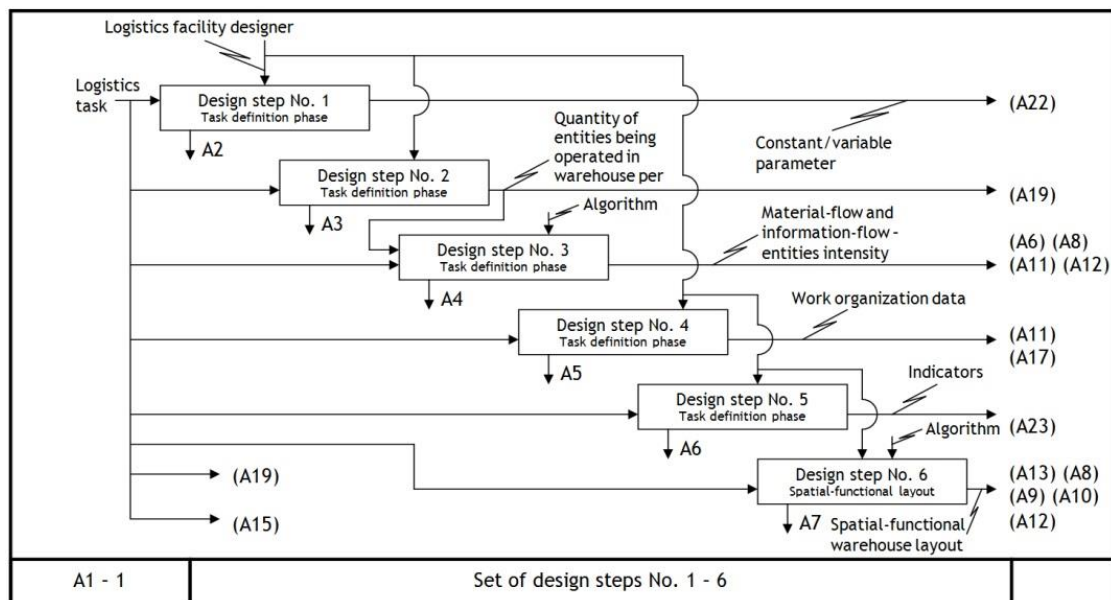


Figure 1. Part of the conceptual model of logistics facilities design method: set of designing steps No. 1-6

Source: Own elaboration

4.2. Significant Parts of Plotting Procedure

The plotting procedure is actually the numerical model that generates sketches of functional and spatial arrangements. It is prepared based on the conceptual model of layout plotting. Algorithm of that type is also given by Köhler, Lukić and Nenadić (2014). The plotting procedure is prepared with *Object Pascal* programming language. Variables used in the procedure are: *plu_rack* (quantity of pallet entities that can be situated on one rack shelf), *lev_rack* (quantity of levels in a pallet rack storage), *aisl_* (quantity of down aisles in a warehouse), *col_rack_area* (quantity of rack columns in an area of a warehouse), *col_rack_aisl* (quantity of rack columns perdown aisle), *col_rack_aisl_A* (quantity of rack columns per down aisle between left side of a warehouse and cross aisle signed as A), *col_rack_aisl_B* (quantity of rack columns per down aisle between cross aisles signed as A and B), *col_rack_aisl_C* (quantity of rack columns perdown aisle between cross aisles signed as B and C), *col_rack_aisl_D* (quantity of rack columns perdown aisle between cross aisles signed as C and D),

$col_rack_aisl_E$ (quantity of rack columns per down aisle between cross aisles signed as D and E), $down_aisl$ (quantity of cross aisles), x (quantity of pixels on a sketch of facility layout in direction x), y (quantity of pixels on a sketch of facility layout in direction y), z (quantity of pixels on a sketch of facility layout in direction z). These are variables of integer type. The following are variables of real type: l_rack (length of a rack), w_aisl (width of a down aisle), w_rack (width of a rack). Since the software plots one pixel after another the function *round* had to be used in case of distances given in real numbers, so that parameters connected to dimensions could be round up/down to nearest value of integer type.

At first, in the procedure, potential building outlines of designed warehouse (or in other words boundaries of a facility) had to be defined. It is plotted as the part of the following code in the procedure:

```
Rectangle(0,0,round((Trackbar1.Position)*(6*(down_aisl+2)+l_rack*col_rack_aisl)),(Trackbar1.Position)*(round(1+w_rack*(aisl_+1)+w_aisl*aisl_)));
```

There may exist warehouses without any cross aisle along the entire length of a rack, but only on its ends. This kind of layout case is plotted with use of the following code in the procedure:

```
ifdown_aisl=0 then
begin
for y:=1 to aisl_ do
for x:=1 to col_rack_aisl do
begin
MoveTo((Trackbar1.Position)*(6+round(l_rack*(x-1))),(Trackbar1.Position)*(round(1+w_rack*(y-1)+w_aisl*y)));
LineTo((Trackbar1.Position)*(round((6+(l_rack*x))),(Trackbar1.Position)*(round(1+w_rack*(y-1)+w_aisl*y)));
MoveTo((Trackbar1.Position)*(round(6+(l_rack*x))),(Trackbar1.Position)*(round(1+w_rack*(y-1)+w_aisl*y)));
LineTo((Trackbar1.Position)*(round(6+(l_rack*x))),(Trackbar1.Position)*(round(1+w_rack*y+w_aisl*y)));
MoveTo((Trackbar1.Position)*(round(6+(l_rack*x))),(Trackbar1.Position)*(round(1+w_rack*y+w_aisl*y)));
LineTo((Trackbar1.Position)*(6+round(l_rack*(x-1))),(Trackbar1.Position)*(round(1+w_rack*y+w_aisl*y)));
MoveTo((Trackbar1.Position)*(6+round(l_rack*(x-1))),(Trackbar1.Position)*(round(1+w_rack*y+w_aisl*y)));
LineTo((Trackbar1.Position)*(6+round(l_rack*(x-1))),(Trackbar1.Position)*(round(1+w_rack*(y-1)+w_aisl*y)));
end;
end;
```

The maximum quantity of cross aisles in the software is predefined as 5 (these is assumption that may be changed for future research). Therefore, in the procedure, five possible parameters of quantity of rack columns per down aisle between cross aisles signed as $A...E$ are given. Herein, the procedure in case of five down aisles is given:

```
ifdown_aisl=5 then
begin
col_rack_aisl_A:= round(col_rack_aisl/5);
col_rack_aisl_B:= 2*col_rack_aisl_A;
col_rack_aisl_C:= 3*col_rack_aisl_A;
col_rack_aisl_D:= 4*col_rack_aisl_A;
col_rack_aisl_E:= 5*col_rack_aisl_A;
```

Sposob skladowania w strefie skladowania

skladowanie blokowe bezregalowe
 skladowanie rzedowe bezregalowe
 skladowanie rzedowe regalowe przy uzyciu wozkow podnosnikowych widlowych czolowych
 skladowanie rzedowe regalowe przy uzyciu wozkow podnosnikowych widlowych czolowo-bocznych i bocznych
 skladowanie rzedowe regalowe przy uzyciu ukladnic regalowych o malej i sredniej wysokosci podnoszenia
 skladowanie rzedowe regalowe przy uzyciu ukladnic regalowych o duzej wys. podn. pomiedzy regalami stanowiacyymi konstrukcje wsporcza dachu i scian

Jlp w glab bloku/rzedu

2 jednostki / krotszym bokiem
 3 jednostki / dluzszym bokiem

Liczba poziomow skladowania:
 Liczba korytarzy w strefie skladowania:
 Liczba korytarzy poprzecznych:

Wyniki obliczen dla strefy skladowania

Laczna liczba gniazd regalowych w jednym poziomie =573
 Laczna liczba gn. reg. wzdluz korytarza w jednym poziomie =33
 Laczna dlugosc strefy skladowania =111 [m]
 Laczna szerokosc strefy skladowania =40,6 [m]
 Laczna dlugosc strefy skladowania (uwzglednia modul) =114 [m]
 Laczna szerokosc strefy skladowania (uwzglednia modul) =42 [m]

Przelicz strefe skladowania Rysuj szkic dla strefy skladowania

Sposob skladowania w strefie komisjonowania

skladowanie blokowe bezregalowe
 skladowanie rzedowe bezregalowe
 skladowanie rzedowe regalowe przy uzyciu wozkow podnosnikowych widlowych czolowych
 skladowanie rzedowe regalowe przy uzyciu wozkow podnosnikowych widlowych czolowo-bocznych i bocznych
 skladowanie rzedowe regalowe przy uzyciu ukladnic regalowych o malej i sredniej wysokosci podnoszenia
 skladowanie rzedowe regalowe przy uzyciu ukladnic regalowych o duzej wys. podn. pomiedzy regalami stanowiacyymi konstrukcje wsporcza dachu i scian

Jlp w glab regalu /stosu

2 jednostki / krotszym bokiem
 3 jednostki / dluzszym bokiem

Liczba jlp jedna na drugiej:
 Liczba korytarzy w strefie komisjonowania:
 Liczba korytarzy poprzecznych:

Wyniki obliczen dla strefy komisjonowania

Laczna liczba miejsc paletowych =234
 Laczna liczba m.p. wzdluz korytarza w jednym poziomie =39
 Laczna dlugosc strefy komisjonowania =58,8 m
 Laczna szerokosc strefy komisjonowania =22,75 m
 Laczna dlugosc strefy komisjonowania (uwzglednia modul) =60m
 Laczna szerokosc strefy komisjonowania (uwzglednia modul) =24m

Przelicz strefe komisjonowania Rysuj szkic dla strefy komisjonowania

Figure 2. Spatial-functional Layout Calculations module; geometrical inputs involved in the sketch of warehouse layout in solution with use of OL09 software²

Source: Own elaboration, OL09 software

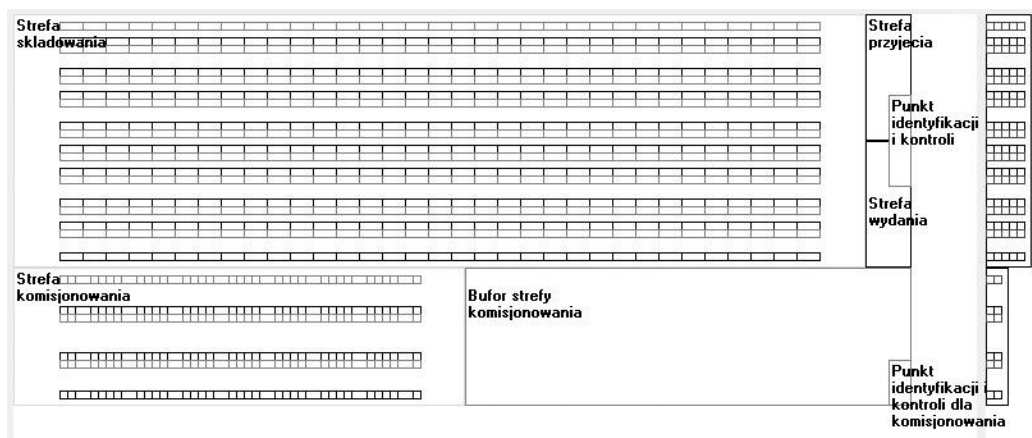


Figure 3. The sketch of warehouse layout in solution with using OL09 software; top view on the left side of the figure and cross section view on the right side of the figure³

Source: Own elaboration, OL09 software

² Some translation notes of Polish into English are: sposob skladowania w strefie skladowania means selection a type of storage in storage area (the marked type is: storage in rows in a warehouse rack with using front-side fork lift truck), sposob skladowania w strefie komisjonowania means a type of storage in order-picking (the marked type is: storage in rows on warehouse's floor), liczba poziomow skladowania w strefie skladowania means a number of levels in pallet rack storage in storage area (input value: 6), liczba korytarzy roboczych w strefie skladowania means a number of down aisles in storage area (input value: 9), liczba korytarzy poprzecznych means a number of perpendicular corridors in storage area (input value: 1), liczba poziomow skladowania w strefie komisjonowania means a number of levels in pallet rack storage in order-picking area (input value: 1), liczba korytarzy roboczych w strefie komisjonowania means a number of down aisles in order-picking area (input value: 3), liczba korytarzy poprzecznych means a number of perpendicular corridors in order-picking area (input value: 1).

³ Translation notes of Polish into English are: strefa skladowania means storage area, strefa komisjonowania means order-picking area, strefa przyjecia means entry area, strefa wydania means exit area, bufor strefy komisjonowania means after order-picking buffer area, punkt identyfikacji kontroli means check-in and identification point.


```

for y:=1 to aisle_do
for x:=1 to col_rack_aisl_Ado
begin
MoveTo((Trackbar1.Position)*(6+round(l_rack*(x-1))),(Trackbar1.Position)*
(round(1+w_rack*(y-1)+w_aisl*y)));
LineTo((Trackbar1.Position)*(round((6+(l_rack*x)))),(Trackbar1.Position)*
(round(1+w_rack*(y-1)+w_aisl*y)));
MoveTo((Trackbar1.Position)*(round(6+(l_rack*x))),(Trackbar1.Position)*
(round(1+w_rack*(y-1)+w_aisl*y)));
LineTo((Trackbar1.Position)*(round(6+(l_rack*x))),(Trackbar1.Position)*
(round(1+w_rack*y+w_aisl*y)));
MoveTo((Trackbar1.Position)*(round(6+(l_rack*x))),(Trackbar1.Position)*
(round(1+w_rack*y+w_aisl*y)));
LineTo((Trackbar1.Position)*(6+round(l_rack*
(x-1))),(Trackbar1.Position)*(round(1+w_rack*y+w_aisl*y)));
MoveTo((Trackbar1.Position)*(6+round(l_rack*
(x-1))),(Trackbar1.Position)*(round(1+w_rack*y+w_aisl*y)));
LineTo((Trackbar1.Position)*(6+round(l_rack*(x-1))),(Trackbar1.Position)*
(round(1+w_rack*(y-1)+w_aisl*y)));
end;
end;
(...).

```

Since logistics modulus in warehouse design is 6 meters (Fijałkowski, 2002; Fijałkowski, 1995; Fijałkowski, 1983), therefore slightly changes are given in this procedure and these fragments of procedure are omitted here up to 36 meters that is given in the last part of the plotting procedure:

(...)

```

for y:=1 to aisle_do
for x:=col_rack_aisl_E+1 to col_rack_aisl do
begin
MoveTo((Trackbar1.Position)*(36+round(l_rack*(x-1))),(Trackbar1.Position)*
(round(1+w_rack*(y-1)+w_aisl*y)));
LineTo((Trackbar1.Position)*(round((36+(l_rack*x)))),(Trackbar1.Position)*
(round(1+w_rack*(y-1)+w_aisl*y)));
MoveTo((Trackbar1.Position)*(round(36+(l_rack*x))),(Trackbar1.Position)*
(round(1+w_rack*(y-1)+w_aisl*y)));
LineTo((Trackbar1.Position)*(round(36+(l_rack*x))),(Trackbar1.Position)*
(round(1+w_rack*y+w_aisl*y)));
MoveTo((Trackbar1.Position)*(round(36+(l_rack*x))),(Trackbar1.Position)*
(round(1+w_rack*y+w_aisl*y)));
LineTo((Trackbar1.Position)*(36+round(l_rack*
(x-1))),(Trackbar1.Position)*(round(1+w_rack*y+w_aisl*y)));
MoveTo((Trackbar1.Position)*(36+round(l_rack*
(x-1))),(Trackbar1.Position)*(round(1+w_rack*y+w_aisl*y)));
LineTo((Trackbar1.Position)*(36+round(l_rack*(x-1))),(Trackbar1.Position)*
(round(1+w_rack*(y-1)+w_aisl*y)));
end;
end;

```

All the data that are needed to compute results and to draw a sketch of a warehouse layout are given in Figure 2. The sample of layout itself is given in Figure 3. Data that are presented in Figure 2. are compatible with a warehouse layout given in Figure 3.

5. Conclusion

The presented method and its integral part, which is the layout computing and plotting procedure, can be used not only for research purposes. It also can be treated as an operational tool for logistics systems designers, logistics equipment providers, logistics managers and investors looking for market

competitiveness and looking for tools to improve efficiency of logistics facilities in case of projects that they undertake (with established resources). The numerical model may also support entrepreneurs who plan to reorganize their warehouse layout or plan to design a new storage facility. Therefore, it is important in management, in collaboration with technology as well, due to make reconfigurations and test allocation of load units and functional areas in logistics facilities. All of these affects work quality, estate and financial aspects of entrepreneurship, human, balance layout density with cost, operability, safety considerations etc.

Among the practical aspects of the presented procedure and the *OLO9* software, there are such as:

- graphical module in the software (2D module),
- instruction for using the computer software,
- obtaining of variant solutions with use of the software (it releases logistics system designer from painstaking work, repetitive tasks such as: calculations, drawing sketches of logistics facilities layout etc.),
- with layout generated in *OLO9* software, it is possible to visualize and simulate layouts digitally in 2D and 3D before making costly physical changes to warehouse operations (Kostrzewski, 2011) – therefore, it is easier to evaluate functional aspects, explore designs in context, and efficiently communicate layout options to key stakeholders,
- the software is packed with analysis tools to quickly measure and design warehouse capacity, while computing estimated operating costs.

Six broad approaches to logistics facility layout are identified (Moran, 2017). First, layout may proceed informally using intuition of designers (technologists, architects etc.) based upon experience. Five formal methods are identified: economic optimization, critical examination, rating, mathematical modeling and software-based approaches. The approach described in the paper combine mathematical modeling and software-based ones.

There is still a requirement for software development and further research. As example, it demands to increase the flexibility of software by implementation of other types of spatial systems and types of storage, and implementation of a building infrastructure such as gates, steel pylons supporting warehouse roof and others. It is planned to expand the procedure such that it will be able to combine different sizes of load units (e.g. pallets) as well as different sectors of the goods (different heights of racks are input to the procedure). It is necessary to introduce scalability because warehouses are not homogenous groups of the same products or the same load unit sizes.

Acknowledgements

This paper was supported by the statutory work of Educational and Scientific Team of Modeling and Diagnostics of Technical Means of Transport (Faculty of Transport, Warsaw University of Technology), year: 2018.

Readers are allowed to use the code of procedure given in the paper by the license CC BY-NC 4.0.

References

- Abdoli, S., Kara, S. (2016). Designing warehouse logical architecture by applying object oriented model based system engineering. *Procedia CIRP*, vol. 50, pp. 713-718.
- Ahmadi, A., Pishvaei, M.S., Jokar, M.R.A. (2017). A survey on multi-floor facility layout problems. *Computers & Industrial Engineering*, vol. 107, pp. 158-170.
- Azevedo, M.M., Crispim, J.A., de Sousa, J.P. (2017). A dynamic multi-objective approach for the reconfigurable multi-facility layout problem. *Journal of Manufacturing Systems*, vol. 42, pp. 140-152.
- Baker, P., Canessa, M. (2009). Warehouse design: A structured approach. *European Journal of Operational Research*, vol. 193, iss. 2, pp. 425-436.
- Caron, F., Marchet, G., Perego, A. (2010). Optimal layout in low-level picker-to part systems. *International Journal of Production Research*, vol. 38, iss. 1, pp. 101-117.
- ConceptDraw PRO (2017). [online]. Available: <http://www.conceptdraw.com/examples/warehouse-layout-software-free>. [2017, November 02].
- del Rio Tomé, B. (2014). *Material flow design in a warehouse – the case of S:tEriks*, [online]. Available: <http://lup.lub.lu.se/luur/download?func=downloadFile&recordId=4611647&fileId=4611654>. [2017, November 18].

- Drira, A., Pierreval, H., Hajri-Gabouj, S. (2007). Facility layout problems: A survey. *Annual Reviews in Control*, vol. 31, pp. 255-267.
- Fichtinger, J., Ries, J.M., Grosse, E.H., Baker P. (2015). Assessing the environmental impact of integrated inventory and warehouse management. *International Journal of Production Economics*, vol. 170, iss. C, pp. 717-729.
- Fijałkowski, J. (2002). *Transport wewnętrzny w systemach logistycznych*, Warszawa: Oficyna Wydawnicza Politechniki Warszawskiej.
- Fijałkowski, J. (1995). *Technologia magazynowania, wybrane zagadnienia*, Warszawa: Oficyna Wydawnicza Politechniki Warszawskiej.
- Fijałkowski, J. (1983). *Projektowanie magazynów wysokoregalowych*, Warszawa: Arkady.
- Francis, R.L., McGinnis, L.F., White, J.A. (1992). *Facility layout and location: an analytical approach*. Englewood Cliffs, NJ: Prentice-Hall Inc.
- Goetschalckx, M., McGinnis, L., Bodner, D., Govindaraj, T., Sharp, G., Huang, K. (2002). A systematic design procedure for small parts warehousing systems using modular drawer systems. *Proceedings of the Material Handling Research Colloquium 2002*, pp. 1-12. Portland.
- Gu, J., Goetschalckx, M., McGinnis, L.F. (2007). Research on warehouse operation: a comprehensive review. *European Journal of Operational Research*, vol. 177, pp. 1-21.
- Gu, J., Goetschalckx, M., McGinnis, L.F. (2010). Research on warehouse design and performance evaluation: a comprehensive review. *European Journal of Operational Research*, vol. 203, iss. 3, pp. 539-49.
- Kostrzewski, M. (2016). Rational Searching Procedure in Warehouse Design. *Logistics and Transport*, vol. 3, iss. 31, pp. 83-103.
- Kostrzewski, M. (2011). Symulacyjne badanie geometrii magazynu przy wykorzystaniu pakietu komputerowego OL09. *Prace Naukowe Politechniki Warszawskiej. Transport*, vol. 77, pp. 59-73.
- Köhler, M., Lukić, I., Nenadić, K. (2014). Creation of warehouse models for different layout designs. *International Journal of Electrical and Computer Engineering Systems*, vol. 5, iss.1, pp. 5-13.
- Meera, C.M. (2013). Pre-engineered building design of an industrial warehouse. *International Journal of Engineering Sciences & Emerging Technologies*, vol. 5, iss. 2, pp. 75-82.
- Moran, S. (2017). Methods for layout, conception, and development, In S. Moran (Ed.), *Process Plant Layout* (pp. 75-83). Oxford: Butterworth-Heinemann.
- Mou, S., Robb, D.J., DeHoratius, N. (2018). Retail store operations: Literature review and research directions, *European Journal of Operational Research*, vol. 265, iss. 2, pp. 399-422.
- Palomo-Romero, J.M., Salas-Morera, L., García-Hernández, L. (2017). An island model genetic algorithm for unequal area facility layout problems. *Expert Systems with Applications*, vol. 68, pp. 151-162.
- Raman, D., Nagalingam, S.V., Lin, G.C.I. (2009). Towards measuring the effectiveness of a facilities layout. *Robotics and Computer-Integrated Manufacturing*, vol. 25, iss. 1, pp. 191-203.
- Shayan, E., Chittilappilly, A. (2004). Genetic algorithm for facilities layout problems based on slicing tree structure. *International Journal of Production Research*, vol. 42, iss. 19, pp. 4055-4067.
- Simple Warehouse Mapper (2017). [online] Available: http://download.cnet.com/Simple-Warehouse-Mapper/3000-2067_4-10732712.html. [2017, November 02].
- SmartDraw (2017). [online] Available: <https://www.smartdraw.com/floor-plan/warehouse-layout-design-software.htm>. [2017, November 02].
- Tompkins, J.A. (2003). *Facilities planning*. New Jersey: Wiley.
- Tompkins, J.A., White, J.A., Bozer, Y.A., Frazelle, E.H., Tanchoco, J.M.A., Trevino, J. (1996). *Facilities Planning*, New York: John Wiley & Sons.
- Vieira, A., Dias, L.S., Pereira, G.A.B., Oliveira, J.A., Carvalho, M.S., Martins, P. (2015). Using Simio to automatically create 3Dwarehouses and compare different storage strategies. *Faculty of Mechanical Engineering Transactions*, vol. 43, pp. 335-343.
- Xiao, Y., Xie, Y., Kulturel-Konak, S., Konak, A. (2017). A problem evolution algorithm with linear programming for the dynamic facility layout problem – A general layout formulation. *Computers & Operations Research*, vol. 88, pp. 187-207.
- Zhang, G., Nishi, T., Turner, S.D.O., Oga, K., Li, X. (2017). An integrated strategy for a production planning and warehouse layout problem: Modeling and solution approaches. *Omega*, vol. 68, pp. 85-94.

Sebastian Kot¹ *
Czestochowa University of Technology
Poland
North-West University
South Africa
Natanya Meyer²
North-West University
South Africa

39. USING SOCIAL MEDIA AS A TOOL IN THE LEARNING PROCESS

Abstract: Social media has become almost synonym with the youth generation of today. However, the use of it for productive reasons such as applying it in the learning process needs further investigation. Hence, the main aim of this study was to analyse the use of social media during the learning process among students. The study compared two universities in two countries namely Poland and South Africa. The study followed a quantitative research approach using a cross sectional research design through the use of a questionnaire that was distributed amongst students from both countries. The research analysis focused on components relating to perceived ease of use (PEOU), perceived usefulness (PU), subjective norm (SN), perceived enjoyment (PE), intention to use (IU) and perceived knowledge accessibility (PKA) of social media and its use in the learning process. Five of six constructed hypotheses rejected the null hypothesis, which confirms that examined groups were not similar to each other. Polish and South African students were similar to each other only with regard to the way of perceiving the easiness of using social media in the educational process (PEOU). Moreover, the components PU, SN, PE, IU and PKA also differ between the two countries. Implications from the study may suggest that access to social media and using it in the study process may improve overall education levels. Thus, managing this process more effectively and introducing these alternative learning and sharing methods in the classroom can prove to be advantageous and effective.

Keywords: learning, management, Poland, social media, South Africa.

JEL Classification: N30, P52

1. Introduction

Social media has become almost synonym with the youth generation of today. Schiffman et al. (2008) suggest that students, also sometimes referred to as the Generation Y cohort, are heavy users of social media. Chu and Kim (2011) agree with this statement and add that higher education students are predominantly the biggest group of the Generation Y cohort using social media. Markert (2004) defines the Generation Y cohort as individuals born between 1986 and 2005 thus grouping them between the ages of 13 and 32 years in 2018. Academics and marketers alike have found it very interesting conducting research on the use of social media in the marketing and buying process of young students as they hold potential higher earnings and thus bigger buying power. However, the use of it for other productive reasons such as applying it in the learning process needs further investigation. Hence, the main aim of this study was to analyse the use of social media during the learning process among students in Poland and South Africa. This use can be referred to as the mobile learning process (Dacko-Pikiewicz, Walancik, 2016). Mottiwalla (2007) defined mobile learning as a combination of personalised learning with anywhere-anytime learning.

2. Literature Review

Since the manifestation of social media, many new and radical ways of interaction, investigation, commenting and communication have emerged. Much use for these newly established interaction platforms has been found including advertising, purchasing and socialising (Kabadayi, Price, 2014; Safiullah et al., 2016; Walanci, Dacko-Pikiewicz, 2016; Skulme, Praude, 2016; Belas et al., 2017). As mentioned, the presence of social media is growing at a fast rate. However, social media is still considered to be a deteriorating cause in low academic grades by some academia (Gupta, 2015).

¹ Assoc. Prof. Eng. Sebastian Kot Ph.D.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, sebacat@zim.pcz.czyst.pl

² Natanya Meyer Master in Development and Management; Hendrick van Eck Blv, Vanderbijlpark, South Africa, natanya.meyer@nwu.ac.za

* Corresponding author

Nevertheless, this issues could be turned around and be used in a positive manner to improve learning methods and educational interaction between students. Platforms such as Facebook, LinkedIn and Twitter are used by most students (Gupta, 2015). Social media includes collaborating, networking, sharing and generating knowledge and content, and all of these aspects could be considered useful in the higher education arena. In essence, social networks or media can be considered a collective term for online communication channels that uses content from individuals and companies that enables content-sharing and collaboration (Rouse, 2017). Popular uses of social media includes blogs, Wiki, video sharing, podcasts and social networks to name but a few. A blog can be defined as as a personal web log where a person can report on certain activities on a regular basis. Blogs are mainly used for reporting on daily experiences by an individual but has also become a form of advertising. This form of ‘journaling’ could easily be converted into a way of writing about learning experiences, challenges and solutions. Blogging can be a very successful tool as there are several reasons people prefer blogs over, for example, websites. These include that blogging is a good search engine optimization (SEO) tool, it is an easy way to keep readers up to date and it allows the writer to communicate and build trust with their readers (Duermyer, 2017). The word Wiki is one of the most common catchphrases currently on the Internet. The term wiki refers to the word ‘quick’ in Hawaiian. The formal definition of a wiki is a website that permits co-operative editing of its content and structure by the users. What makes a wiki different from other forms of websites is the ‘collaborative editing by users’ aspect. Wikipedia and WikiLeaks are some examples of this use (LeBar, 2017). One criticism of wiki’s are that the content is not always verified and may be incorrect (Wolchover, 2011). Video sharing is another social media tool that has escalated to one of the fastest growing online activities. It can be described as a method in creating, uploading publishing and sharing of video clips (Roos, 2017). Most popular video sharing sites include Youtube, My Space and Vimeo (Matthews, 2017). Another social media sharing tool that uses audio to transmit is referred to as a podcast. This type of media is an audio program, similar to a radio show that is recorded and uploaded on the Internet for listeners to download. Anyone with some basic audio recording equipment can make a podcast and upload it to several podcasts sites (Costello, 2017).

The Generation Y cohort, who make up the majority of students enrolled in higher education institutions, are the most frequent users of social media for the main reason that they matured during the age of digitization (Bevan-Dye, 2016; Profiroiu, Păceșilă, 2017). Social media which includes social networking sites, is a universal phenomenon and the number of users are growing with an expected 2.5 billion active users by 2018 (Pick, 2016). Pick (2016) further states that the Generation Y cohort make much use of social media and have a wide virtual network. They also prefer using social media as a communication tool. Considering this, the advantages of using social media in the learning process could be endless. The Educause Center for Applied Research [ECAR] (2012) found in a study on Mobile Information Technology in higher education that students are leading the implementation of computing devices especially mobile devices, such as, tablet computers and smartphones, as a learning mechanism. Results from the study showed that 67 percent of respondents believe mobile devices were imperative to their academic success. This positive response and increased use of mobile devices in higher education institutions has the potential to create improved and new methods in learning for students and exploring the uses of social media as an instruction approach could be very beneficial.

2.1. Social Media Usage and Education in South Africa

South Africa is situated at the most Southern point of Africa and is 1 219 090 km² in extent. South Africa’s population was calculated at approximately 56 521 900 of which nearly 15 141 600 are aged between 15 and 29 roughly making up the Generation Y cohort (29.8%) as per mid 2017 figures (StatsSA, 2017). South Africa is considered a developing country and forms part of sub-Saharan Africa. In a study conducted on the South African social media landscape during 2016 it was found that Instagram has seen enormous growth over the last few years, and Facebook is used by approximately a quarter of the population (13 million users). It was also found that approximately 7.4 million people use Twitter, 8.28 million YouTube and 2.68 million Instagram (Snyman, 2016). With the largest portion of these users forming part of the Generation Y cohort the use amongst youth is considerable. South Africa has approximately 1 million enrolled students in higher education and it is anticipated to rise with another 500 000 by 2030 (Business Tech, 2015).

According to the Economist (2017), South Africa is ranked the second worst country considering education (75th out of 76 countries). Children, especially those in rural schools, are finding it difficult to read as 27 percent of students who have attended school for at least six years cannot read, only 37 percent of students starting school actually finish Grade 12 and only 4 percent obtain a degree. This

could be partly due to poverty and inequality amongst a large portion of the population (Meyer, 2014). Nxumalo (2017) opines that introducing more and better technology into the classrooms could possibly assist with this growing problem as students can be stimulated with different learning styles. Various studies conducted suggest that technology and the use of social media in the learning process can increase academic performance (Nxumalo, 2017). However, implementing this may not be that easy due to high costs of executing these technology techniques, providing marginalised students with electronic devices and high cost of data. According to Kot, Tan and Dragolea (2017), social networks support learning in any part of the globe, on a smaller or greater scale, but it is very important for teachers to know how to moderate the consumption of internet resources and direct their use with maximum efficiency.

2.2. Social Media Usage and Education in Poland

Poland, which is a developed country and an economic leader in Eastern Europe is 312 679 km² in size with a population estimated at 38.63 million. From this approximately 4 278 221 people are between the age of 15 and 24 years (World Population Review, 2017). The 2016/2017 academic year recorded 1 348 800 students in higher education institutions (Central Statistical Office of Poland, 2017; Ślusarczyk, Herbuś, 2014). Statista (2017) reported that 64 percent of Polish people use Youtube, 62 percent Facebook and 33 percent use Google+. From the entire Polish population, 40 to 50 percent had some form of social media account that was active and in the age group of 18 and 24 years, 82 percent use social media (Statista, 2017). Poland is performing well in Europe concerning education and has reported significant improvement according to the Program for International Student Assessment (PISA), which assesses the mathematics reading, and science competencies of 15-year-olds in more than 60 countries (Wes, Bodewig, 2016).

3. Methodology

3.1. Research Purpose and Design

Given the aforesaid, the primary objective of this study was to determine the use of social media in the learning process among students in two selected countries. The study focuses on the analysis of the use of social networking in the process of training and self-training in youth education. The study made use of a quantitative research approach. A cross sectional research design was adopted through the use of a questionnaire that was distributed amongst students. As the study made use of predominantly statistical analyses and its role in empirically understanding the results the study ascribed to a positivist research philosophy as belief was aimed at observing real life events.

3.2. Study Area and Sample

The study made use of a cross-country comparison between Polish and South African students from two universities (one in Poland and one in South Africa). The two countries were chosen as Poland is a developed country with a quality education systems and South Africa has been criticized in the past due to its poor educational systems especially in rural areas. The sample were selected using two non-probability sampling techniques. Firstly, purposive sampling were utilised which saw the selection of participants based on the criteria of being a full-time or part-time student enrolled at one of the two selected universities. Secondly, for selection purposes, convenience sampling was applied where sampling procedures took place in classes with available students. Altogether 300 questionnaires were collected, from which 119 came from Poland (40%), and 181 from the South Africa (60%).

3.3. Survey design, Procedure Method and Ethical Considerations

Data were collected through the use of a self-administered questionnaire provided to the participating students. The questionnaire was constructed based on comprehensive literature reviews identifying the main social media platforms available to students. The questionnaire consisted of two sections. The first section included basic demographic information. Demographic information included questions pertaining age, gender, learning status and field of specialization. The second section included information concerning the application of social media in the educational process in the two countries. This scale (consisting of 20 items) was measured using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was approved by all relevant ethical committees to ensure no sensitive information was required from the students. All questionnaires were completed on a voluntary basis and participants were ensured that any details would be kept strictly confidential.

4. Results and Discussion

The following section discusses the results and findings of the study. Table 1 depicts the demographic information of the sample for the two countries as well as their preference to certain social media tools during the learning process in a descriptive manner.

Table 1. Descriptive statistics of the sample

Variables	Parameters	Poland		RSA		Total	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Age	Younger than 18 years	0	0	5	2.8	5	1.7
	Between 18 and 20 years	1	0.8	108	59.7	109	36.3
	Older than 21 years	118	99.2	68	37.6	186	62
Gender	Male	28	23.5	88	48.6	116	38.7
	Female	91	76.5	93	51.4	184	61.3
Learning Status	Undergraduate	83	69.7	180	99.4	263	87.7
	Post-graduate	34	28.6	1	0.6	35	11.7
	Non-student	2	1.7	0	0	2	0.7
Learning mode	Part time	18	15	12	7	30	10
	Full time	101	85	169	93	270	90
Social media	Blogs	47	15	36	11	83	13
	Wiki	100	32	71	22	171	27
	Video sharing	72	23	116	35	188	29
	Podcast	5	2	21	6	26	4
	Social networks	87	28	86	26	173	27

Source: Own research

From Table 1 it is clear that the sample comprised an older student group in Poland compared to South Africa as most students were older than 21 years (99.2%) in Poland. South African students between 18 and 21 years (59.7%) constituted the greatest part of the respondents from this country. In both countries women more willingly participated in examinations (altogether 61.3%). Students who have not completed a degree from the total sample comprised 87.7 percent. Almost the whole South African sample (99.4%) had not completed their undergraduate studies whereas the Polish sample comprised only 69.7 percent in this category. The total sample comprised mostly full-time students (90%).

Statistics also indicate that the composition of the application of social media varies between countries. Polish students more often use Wiki (32%) and social networks (28%). South African students preferred video sharing (35%) and social networks (26%). The preference across both countries were to use video sharing (29%), Wiki and social networks (27%). Both countries almost equally disliked using blogs and podcasts.

The items contained in the research instrument equated to 20 questions. These 20 questions were groups and reduced to 6 sub-scales (components) namely Perceived Ease of Use (PEOU) (4 items), Perceived Usefulness (PU) (5 items), Subjective Norm (SN) (2 items), Perceived Enjoyment (PE) (3 items), Intention to Use (IU) (2 items) and Perceived Knowledge Accessibility (PKA) (4 items). The first step during the data analysis stage is to check for credibility of the cohesion and stability of the scale of questions used in the research instrument. As such, the reliability of the sub-scales used in this study made use of the internal consistency measure through the use of Cronbach's alpha coefficient. The degree of reliability determined by Cronbach's alpha affords insight into the magnitude on which items within the scale are interrelated, henceforth measuring the same construct. All sub-scales with the exception of the Subjective Norm (SN) (2 items) and Intention to Use (IU) (2 items) scale yielded a Cronbach alpha of above 0.7. Pallant (2010) indicates that a Cronbach alpha value greater than 0.7 indicates an acceptable level of internal consistency therefore, it can be concluded that the scales can be considered reliable. The Subjective Norm and Intention to Use scales both consisting of only two items yielded reliability of below 0.7. However, Eisinga, te Grotenhuis and Pelsers (2013) claim that coefficient alpha is inappropriate and meaningless for two-item scales and should rather be tested using Pearson correlation coefficient as a measure of reliability. Considering this and using Pearson's correlation coefficient the Subjective Norm scale and the Intention to Use scale, which both consisted of two items each were correlated at a significance level of 0.01 indicating reliability of the two scales.

Table 2 depicts the sub-scales used in the study including means, standard deviation, skewness, Kurtosis and Cronbach alpha.

Table 2. Reliability of the scale testing

Sub-scale	Mean	Standard deviation	Skewness	Kurtosis	Cronbach alpha
Perceived Ease of Use (PEOU) (4 items)	3.8767	.71285	-.659	.760	.784
Perceived Usefulness (PU) (5 items)	3.5200	.81409	-.554	.125	.848
Subjective Norm (SN) (2 items)	2.9983	.94718	-.230	-.385	.624*
Perceived Enjoyment (PE) (3 items)	3.4633	.81362	-.530	.570	.744
Intention to Use (IU) (2 items)	3.7400	1.20786	5.224	64.277	.333*
Perceived Knowledge Accessibility (PKA) (4 items)	3.8633	.68341	-.655	.652	.713

* Reliability of scale tested by Pearson's correlation coefficient and correlated at a significance level of 0.01 indicating reliability.

Source: Own research

In an attempt to determine if any significant differences in applying social media exists amongst South African and Polish students, independent sample t-tests were performed. It consists of comparing two communities at the same time, differing in the level of an independent variables. The standard version of the test assumes that the variance is the same in both populations (null hypothesis). On this base several main hypotheses were made, which assumes that the application of social media during the educational process is different in South Africa and Poland. The following null hypotheses were assumed:

- H1: Perceived Ease of Use (PEOU) of social media in the educational process is not different amongst South African and Polish students.
H2: Perceived Usefulness (PU) of social media in the educational process is not different amongst South African and Polish students.
H3: Subjective Norm (SN) is not different amongst South African and Polish students.
H4: Perceived Enjoyment (PE) of social media as a tool in making learning pleasant is not different amongst South African and Polish students.
H5: Intention to Use (IU) social media is not different amongst South African and Polish students.
H6: Perceived Knowledge Accessibility (PKA) as a result of the use of social media is not different amongst South African and Polish students.

To identify differences between the two groups one should validate constructed hypotheses individually for the Polish and the South African sample. To examine individual relations, the six sub-scales computed in Table 1 and 2 were used. To test correlation between individual questions belonging to components a determinant of the matrix was computed, of which the value for both groups is significant (<0.01), implying that the scales are strongly correlated with each other. The creation of the six sub-scales were statistically justified, as its reliably using Cronbach's Alpha and Pearson Correlation Coefficient resulted in acceptable values. Analysis of independent samples were done to verify the set hypotheses. T-tests, which are used to compare the values of several continues variables to that of two groups, in this case Poland and South Africa, was utilized in the next section. Table 3 presents test results for the individual sub-scales.

Table 3. Test for independent samples for all components

Sub-scale	Country	N	Mean	Std. Deviation	p-value	Effect size
Perceived Ease of Use (PEOU)	Poland	119	3.9034	0.64777	0.588	0.06
	South Africa	181	3.8591	0.75381		
Perceived Usefulness (PU)	Poland	119	3.7697	0.67880	0.000*	0.48
	South Africa	181	3.3558	0.85468		
Subjective Norm (SN)	Poland	119	3.3193	0.81493	0.000*	0.55
	South Africa	181	2.7873	0.97057		
Perceived Enjoyment (PE)	Poland	119	3.6190	0.67549	0.004*	0.29
	South Africa	181	3.3610	0.87973		
Intention to Use (IU)	Poland	119	3.9958	0.76051	0.001*	0.30
	South Africa	181	3.5718	1.40449		
Knowledge Accessibility (PKA)	Poland	119	3.9748	0.66813	0.021*	0.27
	South Africa	181	3.7901	0.68525		

*P-value significant at the 0.05 level (2-tailed)

Source: Own research

As can be seen from Table 3, the means of the six components were compared to that of Poland and South Africa to determine if any significant difference exists as well as the effect sizes. The hypotheses are subsequently tested in the next section.

H1: Perceived Ease of Use (PEOU) of social media in the educational process is not different amongst South African and Polish students.

As the p-value of 0.588 is larger than the significance level of 0.05, the null hypothesis is accepted, which assumes that both examined groups did not differ in terms of the way in perceiving the easiness of using social media in the educational process (PEOU). This is in-line with findings from Bevan-Dye (2016) and Statista (2017) who found that most users of social media are found in the younger populations as they grew up in the digital age.

H2: Perceived Usefulness (PU) of social media in the educational process are not different amongst South African and Polish students.

As the p-value (0.000) is smaller than 0.05, the null hypothesis is rejected and the alternative hypothesis is accepted, which assumes that both examined groups indeed differ statistically. The effect size of 0.48 is considered a medium effect or practical visible difference.

H3: Subjective Norm (SN) is not different amongst South African and Polish students.

Once again the p-value < 0.05 and therefore the null hypothesis is rejected and the alternative hypothesis stating that subjective norm for using social media as a learning method differs between students from Poland and South Africa can be accepted. Once again the significance equated to a medium effect or practical visible difference.

H4: Perceived Enjoyment (PE) of social media as the tool making the learning pleasant are not different amongst South African and Polish students.

Perceived Enjoyment of using social medium reported a p-value of 0.004 ($P < 0.05$) resulting in the acceptance of the alternative hypothesis and it can be concluded that a differences between the group do exists but at a small effects (effect size – 0.29).

H5: Intention to Use (IU) of social media are not different amongst South African and Polish students.

Regarding the p-value pertaining the Intention to Use component, it is once again smaller than 0.05, so the alternative hypothesis is accepted, which means that both examined groups indeed statistically differ in terms of the manner of using of social media (IU) but with a small effect size.

H6: Perceived Knowledge Accessibility (PKA) as a result of the use of social media are not different amongst South African and Polish students.

The Perceived Knowledge Accessibility (AKA) component reported a p-value of 0.21 which is $p < 0.05$, so the alternative hypothesis is accepted, assuming that both examined groups indeed statistically differ in terms of perceiving the availability of the knowledge as a result of the use of social media (PKA). However the effect size is small with no practical significance.

Five of six constructed hypotheses were validated negatively, which denies that examined groups are similar to each other. Examined groups are similar to each other only with regard to the way of perceiving the easiness of using social media in the educational process (PEOU). Moreover, perceiving the usefulness of social media (PU), Subjective Norm (SN), perception of social media as the tool making the learning pleasant (PE), manner of using social media (IU) as well as perceiving the availability of the knowledge as a result of the use of social media (PKA) also differ from each other. These variances may be due to the difference in culture and accessibility of internet and computer devices in the two countries. Poland, as a developed country has better access to technology and internet compared to South Africa where many rural schools and communities have limited or no access to this technology (Nxumalo, 2017).

In an attempt to assess differences in mean evaluations of individual sun-scales for both countries Table 4 was compiled. From Table 4 it is evident that difference in the means reported by the students from the two countries exists. This was also observed in Table 3 were statistically difference between the groups were reported on five of the six sub-scales. Polish students reported higher means for all the components and scored equally at 3.9 for the PEOU component. This may suggest that Polish students use social media in the learning process on a more regular basis. A possible reason for the lower mean reported by South African students may be due to lack of internet connection, high data costs and

poorer students not all having access to computers of smart phones on a regular basis (Nxumalo, 2017).

Table 4. Evaluation of components in Poland and RSA

Component	Mean		Frequency of highest responses (4-5)		Percent of highest responses (4-5)	
	Poland	South Africa	Poland	South Africa	Poland (%)	South Africa (%)
PEOU	3.9	3.9	337	536	71	74
PU	3.8	3.4	372	448	63	50
SN	3.3	2.8	105	106	44	29
PE	3.6	3.4	202	276	57	51
IU	4.0	3.6	176	204	74	56
PKA	3.9	3.8	500	717	70	66

Source: Own research

5. Conclusion

The primary objective of this study was to determine the use of social media in the learning process among students in two selected countries. Social media plays a significant role in every young student's life as it is easier and in some cases more convenient to access and provide information, and communicate via social networks. In the event where lecturers and students are connected to each other by means of some kind of a social network, good use can be made of these platforms for improving and expanding the learning process in higher education. Several advantages of using these social media platforms exist and includes: hosting live lectures outside of normal class times; facilitate students engagement with one another through debates and similar interactions; ideas and critique can be shared more easily; students can access advice and information from peers and even discuss solutions and study methods using social media platforms.

The findings concluded that significant differences between the two country's students exist regarding perceiving the usefulness of social media (PU), subjective norm (SN), perception of social media as the tool making the learning pleasant (PE), manner of using social media (IU) as well as perceiving the availability of the knowledge as a result of the use of social media (PKA) also differ from each other. Further findings indicated that Polish students agreed more with the various questions and computed sub-scales regarding the use of social media more compared to South African students. This may suggest, as Poland is performing better on a higher education level compared to South Africa, that the use and perception of social media in the learning process may increase academic performance. It should however, be noted that several external factors may also influence academic performance and that the use of social media in the learning process is not the only factor that may lead to improved performance. Nonetheless, the use of social media in the classroom and learning process, if implemented and managed appropriately, may prove to have significant success rates and improved academic performance rates amongst the youth cohort.

References

- Belás, J., Dvorský, J., Tyll, L., Zvaríková, K. (2017). Entrepreneurship of University Students: Important Factors and the Propensity for Entrepreneurship. *Administrative and Management Public*, vol. 28, pp. 6-25
- Bevan-Dye, A.L. (2016). *Link between life satisfaction and emotional attachment to Facebook amongst South African Generation Y students*. (In *Exceeding the vision: Innovate, integrate and motivate: GBATA 18th annual international conference* organised by the Global Business and Technology Association, Dubai, UAE).
- Business Tech. (2015). *Here are South Africa's 26 universities*, [online]. Available <https://businesstech.co.za/news/general/101412/here-are-south-africas-26-universities/>. [2017, November 07].
- Central Statistical Office of Poland. (2017). *Higher education institutions and their finances in 2016*. Warsaw.
- Chu, S., Kim, Y. (2011). Determinants of consumer engagement in electronic word-of-mouth (eWOM) in social networking sites. *International Journal of Advertising*, vol. 30, iss. 1, pp. 47-75.
- Costello, S. (2017). *All About Podcasts on the iPhone and iTunes*. Lifewire, [online]. Available <https://www.lifewire.com/intro-to-podcasts-1999803>. [2017, November 01].
- Dacko-Pikiewicz, Z, Walancik, M. (2016). The economic or social dimension of lifelong learning? *Forum Scientiae Oeconomia*, vol. 4, iss. 2, pp. 13-25.

- Duermyer, R. (2017). *Bloggng – What is it and why is it popular?* The Balance, [online]. Available: <https://www.thebalance.com/bloggng-what-is-it-1794405>. [2017, November 15].
- Economist. (2017). *South Africa has one of the world's worst education systems*, [online]. Available <https://www.economist.com/news/middle-east-and-africa/21713858-why-it-bottom-class-south-africa-has-one-worlds-worst-education>. [2017, November 04].
- Educause Center for Applied Research [ECAR] (2012). *ECAR study of undergraduate students and information technology*. Louisville: CO: Educause Center for Applied Research.
- Eisinga, R., te Grotenhuis, M., Pelser, B., (2013). The reliability of a two-item scale: Pearson, Cronbach or Spearman Brown? *International Journal of Public Health*, vol. 58, iss.4, p. 1-13 (<http://dx.doi.org/10.1007/s00038-012-0416-3>).
- Gupta, P. (2015). *Importance of social media in higher education*. EdTechReview, [online]. Available: <http://edtechreview.in/trends-insights/insights/2041-social-media-in-higher-education>. [2017, November 12].
- Kabadayi, S., Price, K. (2014). Consumer – brand engagement on Facebook: liking and commenting behaviours. *Journal of Research in Interactive Marketing*, vol. 8, iss. 3, pp. 203-223.
- Kot, S., Tan, M., Dragolea, L. (2017). The Use of Social Media Supporting Studying. *Economics & Sociology*, vol. 10, iss. 1, pp. 169-180.
- LeBar, Z. (2017). *What are wiki's and why should you use them?* Envatotuts, [online]. Available: <https://business.tutsplus.com/tutorials/what-are-wikis-and-why-should-you-use-them--cms-19540>. [2017, November 18].
- Markert, J. (2004). Demographics of age: generational and cohort confusion. *Journal of Current Issues and Research in Advertising*, vol. 26, iss. 2, pp. 11-25.
- Matthews, K. (2017). *10 video sharing sites that are better than Youtube*. MOU, [online]. Available <https://www.makeuseof.com/tag/top-12-sites-watch-videos-youtube/>. [2017, November 22].
- Meyer, D.F. (2014). Job creation, a mission impossible? The South African case. *Mediterranean Journal of Social Sciences*, vol. 5, iss. 15, pp. 65-77.
- Mottiwalla, L.F. (2007). Mobile learning: A framework and evaluation. *Computers in Education*, vol. 49, iss. 3, pp. 581–596.
- Nxumalo, L. (2017). *South African schools need to introduce technology in the classrooms*, [online]. Available http://www.huffingtonpost.co.za/lethabo-nxumalo/south-african-schools-need-to-introduce-technology-in-the-classr_a_23002195/. [2017, November 04].
- Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS*. 4th ed. Berkshire: McGraw-Hill.
- Profiroiu, A.G., Păceșilă, M. (2017). Volunteering: a route to the students professional development. *Administratie si Management Public*, vol. 29, pp. 91-107.
- Pick, T. (2016). *47 Superb social media stats and facts*. *Business 2 Community*, [online]. Available <https://www.business2community.com/social-media/47-superb-social-media-marketing-stats-facts-01431126>. [2017, November 01].
- Roos, D. (2017). *How video sharing works*. HowStuffWorks, [online]. Available <https://computer.howstuffworks.com/internet/basics/video-sharing1.htm>. [2017, November 04].
- Rouse, M. (2017). *Social networking*. WharLS.com, [online]. Available <http://whatis.techtarget.com/definition/social-networking>. [2017, November 23].
- Safiullah, M., Pathak, P., Singh, S., Anshul, A. (2016). Social media in managing political advertising: A study of India. *Polish Journal of Management Studies*, vol. 13, iss. 2, pp. 121-130
- Schiffman, L., Bednall, D., O'Cass, A., Paladino, A., Ward, S., Kanuk, L. (2008). *Consumer behaviour*. 4th ed. Australia: Pearson Prentice Hall.
- Skulme, R., Praude, V. (2016). Social media evaluation metrics. *Oeconomia Copernicana*, vol. 7, iss. 1, pp. 131-142.
- Snyman, A. (2016). *Social media – The latest South African Stats*, [online]. Available <https://www.webafrica.co.za/blog/social-media-2/social-media-latest-south-african-stats/>. [2017, November 13].
- Statista. (2017). *Penetration of leading social networks in Poland as of 3rd and 4th quarter 2016*. [online] Available: <https://www.statista.com/statistics/284441/poland-social-network-penetration/>. [2017, November 17].
- StatsSA. 2017. *Midyear population estimates 2017. Statistical Release P0302*, [online]. Available: <http://www.statssa.gov.za/publications/P0302/P03022017.pdf>. [2017, November 20].
- Ślusarczyk, B., Herbuś, A. (2014) Higher education as a crucial factor of staff development. *Polish Journal of Management Studies*, vol. 10, iss. 2, pp. 216-224.
- Walancik, M, Dacko-Pikiewicz, Z., (2016). Social media and crowdsourcing in countering contemporary risks, *Forum Scientiae Oeconomia*, vol. 4, iss. 1, pp. 103-112

Wes, M., Bodewig, C. (2016). *Poland's Education System: Leading in Europe*. World Bank, [online]. Available: <http://www.worldbank.org/en/news/opinion/2016/01/22/polands-education-system-leading-in-europe>. [2017, November 17].

Wolchover, N. (2011). *How accurate is Wikipedia?* LiveScience. [online] Available: <https://www.livescience.com/32950-how-accurate-is-wikipedia.html>. [2017, November 04].

World Population Review. (2017). *Poland population 2017*, [online]. Available: <http://worldpopulationreview.com/countries/poland-population/>. [2017, November 20].

Izabela Krawczyk-Sokołowska^{1*}
Czestochowa University of Technology
Poland
Justyna Łukomska-Szarek²
Czestochowa University of Technology
Poland
Wiesława Caputa³
Poznań, WSB University
Poland

40. IDENTIFICATION THE ACTIVITY OF ENTERPRISES IN POLAND FROM THE PERSPECTIVE OF TYPES OF INNOVATIONS

Abstract: The aim of this study was to identify and assess the types of innovative activities of enterprises in Poland. Based on theoretical explorations, which included the overview of basic definitions of the concept of innovations and characteristics of their major types, the assessment of innovations concerned industrial and service-providing enterprises in Poland. Both product and service innovations were analysed. Organizational and marketing innovations were studied in detail. An ex-post analysis was performed in this field based on the historical data from the Central Statistical Office of Poland, with the research period of the years 2008-2015. The results of the study demonstrated that innovative activity in Poland is characterized by a relatively low level while industrial innovations are dominant compared to service innovations. These entities decided more often to implement product innovations and to implement new or significantly improved methods of product manufacturing. The contribution of both organizational and marketing innovations was low. Industrial enterprises took more and more often innovations concerning introduction of new methods in the principles of operation, whereas service innovations were connected with implementation of new methods of division of tasks and decision authorization and new methods concerning the relations with the environment. Marketing innovations of industrial enterprises concerned most often the changes in the project/design or packaging of products, whereas service innovations concerned new media or techniques of product promotion and new methods in terms of product distribution or sales channels. Enterprises should use innovations from various sources, both internal and external. Constant innovativeness that is expressed by incessant taking innovative initiatives in various areas of activity and building a strong competitive advantage based on innovations requires consistent and long-term actions.

Keywords: innovation, innovation activity, organizational and marketing innovation, product and process innovation.

JEL Classification: O3

1. Introduction

Innovations and comprehensive innovation activity of enterprises is in the focus of interest of both science and economic practice. Innovations represent one of the fundamental determinants of the development of economies in individual countries, regions and enterprises. They set the pace and directions of business development and forms of international collaboration. Poland has been undergoing significant socio-economic changes which are oriented at reducing the developmental gap between its economy and those highly-developed, with the most important area being innovative policy. Therefore, it is essential to identify the level and types of innovative activities taken by enterprises in Poland, which represents the major goal of this paper. All the parts of the study are organized to achieve this goal. The first part contains theoretical explorations concerning determinants of innovative activities of enterprises and defines basic concepts in this field. Next, the level of innovative activity taken by the enterprises in Poland was presented. With this respect, the degree of

¹ Assoc. Prof. Izabela Krawczyk-Sokołowska Ph.D.; Armii Krajowej 19B, 42-201 Częstochowa, Poland; izabela.krawczyk-sokolowska@wz.pcz.pl

² Justyna Łukomska-Szarek Ph.D.; Armii Krajowej 19B, 42-201 Częstochowa, Poland, justyna.lukomska-szarek@wz.pcz.pl

³ Assoc. Prof. Wiesława Caputa Ph.D.; Powstańców Wielkopolskich 5, 61-895 Poznań, Poland; wieslawa.caputa @chorzow.Wsb.pl

* Corresponding author

innovative activities started by industrial and service-providing enterprises was determined. The paper is based on the analysis of the literature and secondary data from the Central Statistical Office of Poland.

2. Selected Problems of Innovation Activities of the Enterprises in Poland

2.1. Methodology and Research Description

It is necessary to underline the fact that innovativeness constitutes the principal creative power of the contemporary organization, which, if it becomes a regular element in the strategic management leads to the acquisition of competitive advantage. The problematic issues of innovativeness in conditions of the global economy and the growing competitiveness are subject to multi-dimensional identification and quantification due to the complexity of the conditioning of the implementation of the new solutions in enterprises.

The main goal of this study was to identify the degree of innovativeness of Polish enterprises. The analysis of innovativeness concerned in particular the level and types of innovativeness. The diagnosis of the level and structure of innovativeness of Polish enterprises can represent the basis for capturing of specific regularities which can contribute to the improvement in innovativeness in enterprises. A research methodology used in the study was the analysis of the acceptable theoretical concepts.

The goal of this study is also to bring theoretical fundamentals of innovativeness in enterprises closer to the reader, and, based on the secondary data from the Central Statistical Office, to attempt to evaluate the level of innovative activities started in Poland by enterprises. Research period covers the years 2008-2015.

2.2. Theoretical Background

How should the concept of innovations be defined, what are the characteristics of innovative activities, what are the types and kinds of innovations started by enterprises? In order to answer to these questions, one should indicate that the precursor who introduced the concept of innovations to the economic sciences was Joseph A. Schumpeter, who viewed innovations comprehensively and emphasized fundamentality and radicalness as characteristics of innovations. This researcher argued that an innovation represents an inimitable, one-off and discontinuous change (see also Schumpeter, 1928; 1947). In his view, innovations are responsible for this phenomenon. Schumpeter identified five types of innovation (Schumpeter, 1912; Reinert, 2002):

1. introduction of a new good;
2. introduction of a new method of production;
3. opening of a new market;
4. conquest of a new source of supply of raw materials or half-manufactured goods;
5. implementation of a new form of organization.

In the literature on the subject, many different definitions of the concept of innovation can be cited. Among other things, the West and Ricards (1999) indicate that: thinking about new effects (products, materials, new form of organization etc.) is creativity, but doing about recent (unfamiliar and new) things is innovation application. In turn, West (2002, p. 357) emphasizes that innovation: can then be defined (determined or characterized) as encompassing both steps: 1) creativity (the development of ideas), 2) followed by their application (start of new and improved services, products, ways of doing effects at work. Innovation is consequently a two component, however fundamentally non-linear process, including both: innovation and creativity implementation. Creativity dominates at the start of the process. Innovation implementation processes replace it later. Rogers (2003, p. 5) points out, however, that innovation: is an idea (brainchild, concept, and contrivance), praxis or object (thing, matter) that is perceived as recent (unfamiliar and new) or to acceptance by individual. The perceived novelty of the concept for the unit establishes his or her response to it. If the concept seems new to the particular, it is an innovation.

Innovativeness may be defined in a broad sense as the willingness (tendency) to be innovative and as the ability to launch new products, processes, services, or ideas, while subsequently their implementation, which in turn leads to the attainment of better results in business (Dobni, 2010). In a narrow sense, in accordance with the definition stipulated in the Oslo Manual (OECD, 2005a), an innovative enterprise signifies an entity that implements innovations in the time period under analysis.

The commonly used definition of innovations proposed by the OECD highlights four types of innovations implemented by the enterprise: product, process, marketing and organizational innovations. A detailed characterization of the types of innovation was presented in Figure 1.

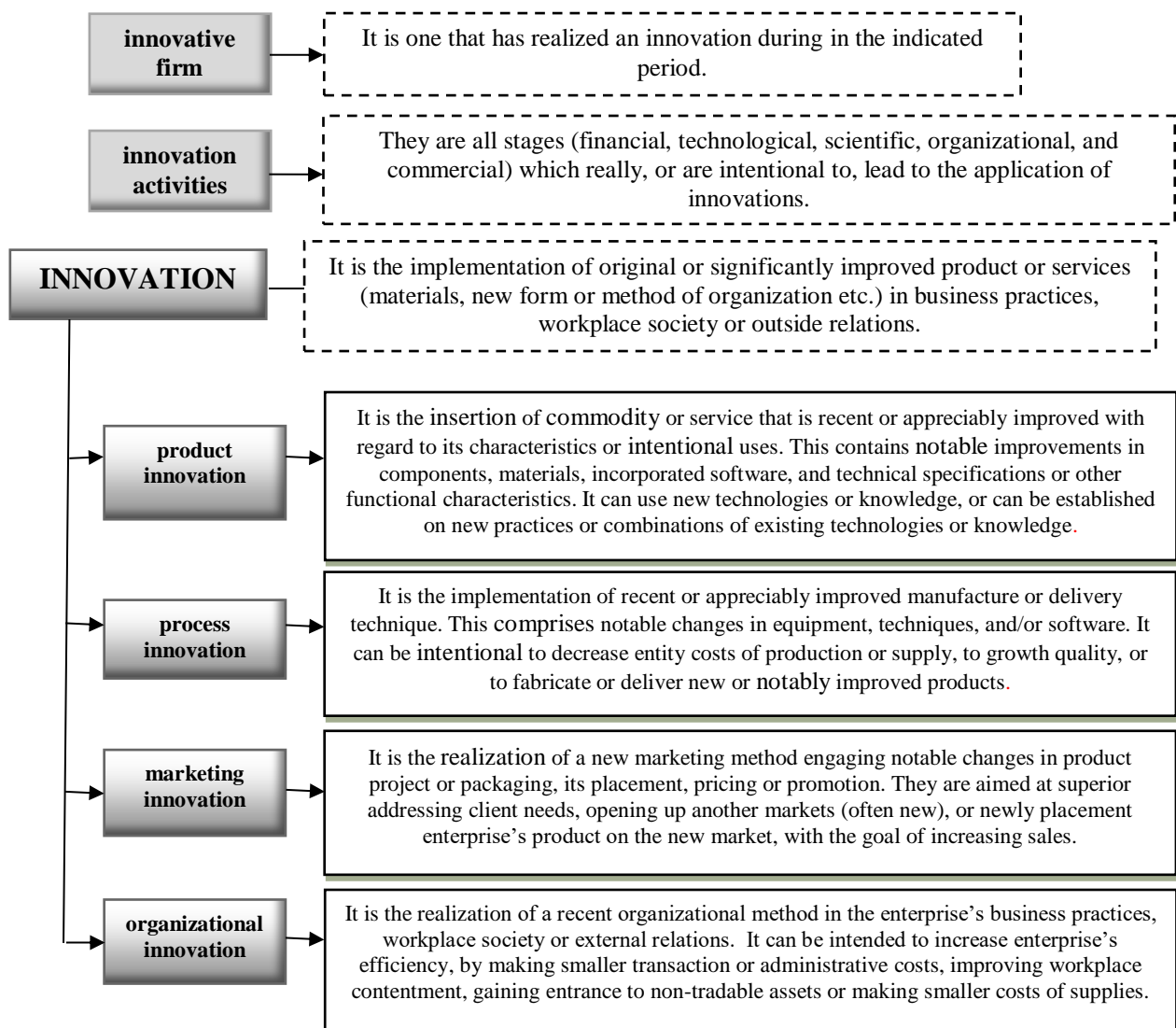


Figure 1. The definition of innovation in the 2005 Oslo Manual

Source: Own study based of OECD, 2005a

Product innovations are understood as introducing new products or services which are substantially improved in terms of their properties or applications; process innovations, i.e. innovations concerning the process, consist in implementation of the substantially improved method of production or delivery; marketing innovations focus on the implementation of a new marketing method i.e. changes in product design, packaging design, distribution, promotion or pricing strategy; organizational innovations are understood to mean implementation of a new method of organization into the principles adopted by the enterprise into organization of operation and relations with the environment (Mothe, 2010).

Finding a new solution as innovative involves its commercialization, whereas the process of innovation creation is composed of the two components: creation of a new idea and its implementation through commercialization (Carion, Kerr, 2014). Innovativeness of the enterprise is closely related with its creativity and ability to develop new projects, innovation absorption, its application and popularization (more about innovations by Skowron-Grabowska, Sukiennik, 2015).

Accumulation of entrepreneurship culture of essential resources and hidden knowledge: can make wealth across commercialization of studies, can lead to technological innovations, and enterprises with new technologies (Kargwell, Inguva, 2012).

At the level of the enterprise, innovativeness reflects a specific collective activity connected with the learning process and intensive interactions between various actors (Sipa, Skibiński, 2015), Human capital refers to the ability of unit to create innovations (new knowledge) (Vojtovič, 2009, p. 320).

It is commonly accepted that accumulation of knowledge and the effects of learning, creation and diffusion of innovations depend of various social and economic factors with local and network character (Suorsa, 2007). There is a natural dependency in the economic system between the development of the market of products and services and innovations which are created and adapted in enterprises. Innovation represents the outcome of activities and various interactions between many entities connected with each other with formal and non-formal relations. These activities mean social and economic activity, whose goal is a change and replacing current status with a different one. This change often concerns a niche market, which grows at the expense of previous technology (Greenacre, Gross, Speirs, 2012).

A source of activation of innovative activities of the enterprise is mainly the pressure of competitors, technological environment and users of market innovations (OECD, 2015, p. 34). It is also critical to understand the necessity of taking innovative actions by the enterprises based on the right innovative strategy (Sipa, Skibiński, 2015a; Jelonek, 2013; Jelonek, 2015). The above relationships are reflected by the evaluation of the innovative activity, in goals and strategy of enterprise development. An important aspect of evaluation of the status of innovativeness of enterprises is identification of factors which determine the level of their innovativeness i.e. ability to create and implement innovations. It should be emphasized that activity and level of innovativeness of enterprises are determined by external (exogenous) and internal (endogenous) factors (Swaim, 2010).

It is worth quoting the words Kadlubcová (2016): due to intensive global effects, most of originalities are exposed to global competition caused mostly by advanced technological progress and information technologies. Due to these worldwide tendencies they have to elastically launch innovations which can run enterprise activities to success, too considerably contribute to economic progress and socio-economic growth of districts and countries. But effective innovation process from creation to employment is depended on successful financial, technical, organizational, research, enterprise activities that must be properly managed.

The enterprise capabilities to finance innovations and to acquire foreign capital are critical to starting innovative activities. More details on financial determinants of the development of enterprises are contained in studies of many authors (Okręglicka, 2016; Lemańska-Majdzik, Okręglicka, 2015; Sipa, Skibiński, 2015b).

2.3. Research Results – Innovativeness of Polish Enterprises in 2008-2015

In Table 1, data relating to innovative activities of enterprises in Poland has been presented. It is necessary to draw attention to the fact that an active enterprise from the viewpoint of innovativeness is perceived to be one which implemented at least one product innovation, process innovation, or realized at least one innovative project (more about innovative project by Skowron-Grabowska, Nowakowska-Grunt, 2016) in the period under analysis, which was suspended or abandoned in the aforesaid period (unsuccessful), or perhaps uncompleted up to that point (namely, still ongoing).

In turn, an innovative enterprise in the field of product and process innovations may be defined as an entity which launched at least one product innovation or process innovation in the period under analysis (either new or significantly improved product, or new or significantly improved process). In the period of 2008-2015 there was a prevalence of industrial enterprises in terms of the percentage of enterprises that were active from an innovative viewpoint in Poland. They constituted 22% of the total number of enterprises in 2008, although their share dropped to 16.9% in 2011, while subsequently growing from 17.7% in 2012 to 18.9% in 2015. Enterprises from the sector of services that were active in innovations oscillated within a range from 10.6% to 16.6% of the total number of enterprises, in which it is necessary to draw attention to the fact that the greatest share was noted in 2015 (16.6%), whereas in the successive years this dropped to 10.6% in 2015.

Table 1. Innovation active enterprises and product and process innovative enterprises in Poland in 2008-2015

		2008	2009	2010	2011	2012	2013	2014	2015
Innovation active enterprises as a percentage of the total number of companies	industrial	22.0	18.9	18.1	16.9	17.7	18.4	18.6	18.9
	services	16.6	14.4	13.5	12.3	13.9	12.8	12.3	10.6
Process innovative enterprises as a percentage of the total number of companies	industrial	21.4	18.1	17.1	16.1	16.5	17.1	17.5	17.6
	services	16.1	14.0	12.8	11.6	12.4	11.4	11.4	9.8

Source: Own elaboration based on the data of the Central Statistical Office of Poland, 2017

A significantly lower share was enjoyed by enterprises that are typically innovative, namely, in the case of industrial entities which oscillated within a range from 16.1% to 21.4% with a clear downward trend in the years 2008-2011, however their recovery took place in the years 2012-2015 in which they noted 1.1% growth from 16.5% to 17.6%. Innovative service firms in the first time period (downward trend) constituted between 10.6% and 16.1%, whereas in the latter (also downward trend) from 12.4% to 9.8%.

Table 2. Enterprises which introduced organizational and marketing innovations in Poland in the years 2008-2015

IE/SE		Type of innovation in %						
		Organizational innovations			Marketing innovations			
		new business practices for organizing	new methods of organizing work responsibilities and decision making	new methods of organizing external relations	significant changes to the aesthetic design or packaging of a good or service	new media or techniques for product promotion	new methods for product placement or sales channels	new methods of pricing goods or services
2008-2010	IE	5.4	4.0	8.0	5.4	6.6	4.0	8.0
	SE	3.8	6.3	8.5	3.8	9.3	6.3	8.5
2009-2011	IE	5.6	5.6	3.9	3.5	4.3	2.3	4.6
	SE	3.3	6.6	4.2	2.1	5.6	3.0	3.6
2010-2012	IE	7.3	6.7	3.8	5.2	5.2	3.4	5.2
	SE	4.7	6.8	5.8	3.8	6.3	5.3	5.3
2011-2013	IE	5.9	5.1	3.4	3.9	3.8	2.4	3.8
	SE	3.1	5.3	2.8	2.0	4.7	2.4	2.9
2012-2014	IE	6.2	5.7	3.5	4.4	3.9	2.5	3.6
	SE	4.8	7.3	4.0	3.0	5.4	3.3	3.7
2013-2015	IE	6.1	5.0	3.1	4.2	3.8	2.1	2.7
	SE	4.0	5.5	3.5	2.2	4.2	2.6	3.2

IE - industrial enterprises; SE- service enterprises

Source: Own elaboration based on the data of the Central Statistical Office of Poland, 2017

In Table 2, data has been presented relating to organizational and marketing innovations. In the case of organizational innovations, three types have been distinguished, namely new methods in the principles of activities, new methods in the division of tasks and decision-making authorization, as well as new methods in the field of relations with the market environment. It is necessary to draw attention to the fact that in the time period of three years analysed, in the case of industrial entities there was a prevalence of innovations relating to the implementation of new methods in the principles of activities (their share was registered within a range of between 6.4% and 7.3%), whereas service firms indicated a higher share in terms of innovations associated with the implementation of new methods in the division of tasks and decision-making authorization (5.5% - 7.3%), while new methods in the field of relations with the market environment (2.8% - 8.5%). In turn, industrial enterprises were distinguishable in the years of 2008-2015 by a higher percentage share of marketing innovations referring to significant change in the project/construction or packing of goods or services (their share

ranged from 3.5% to 5.4% with varying dynamics of change). During the analysed period, service firms were characterized by a greater percentage share of marketing innovations in the sphere of media outlets or techniques of promoting products (constituting between 4.2% and 9.3%), while also new methods in the field of the distribution of products or sales channels (between 2.4% and 6.3%).

Table 3. Product and process innovations of enterprises in Poland in the years 2008-2015

IE / SE		Type of innovation in %				
		Product innovations		Process innovations		
		Wares	Services	New or significantly improved methods of producing products	New or significantly improved methods of logistics and distribution	New or significantly improved methods to support processes in the enterprise
2008-2010	IE	12.1		10.0	3.3	6.4
	SE	7.9		3.7	4.0	7.6
2009-2011	IE	10.4	2.6	9.7	3.0	5.8
	SE	2.5	5.0	2.8	3.6	7.0
2010-2012	IE	10.5	2.6	9.7	3.0	5.4
	SE	3.3	4.8	3.0	3.5	6.6
2011-2013	IE	10.2	2.4	9.6	3.3	6.2
	SE	2.7	3.9	2.7	2.4	6.2
2012-2014	IE	10.7	2.9	10.0	3.0	5.6
	SE	3.1	4.7	3.0	3.4	6.1
2013-2015	IE	11.0	2.7	9.9	3.2	5.9
	SE	1.8	3.7	2.3	2.7	5.4

IE - industrial enterprises; SE- service enterprises

Source: Own elaboration based on the data of the Central Statistical Office of Poland, 2017

By conducting an evaluation of the changes in the structure of the percentage share of product innovations and process innovations that is illustrated in Table 3, it is possible to conclude that industrial enterprises were characterized by higher indicators in the case of the innovation of goods, while their percentage share oscillated within a range of between 10.4% and 11%, whereas service firms constituted between 1.8% and 3.3%. In turn, enterprises of this type realized greater innovation of services, while their percentage share ranged between 3.7% and 5%, although a downward trend is evident in the period under analysis. Process innovations for industrial enterprises mainly related to new or significantly improved methods of manufacturing products and in the period of 2008-2015 there was a slight change in the percentage share of this type of innovation, as it ranged between 9.6% and 10%. The amplitude of fluctuations of the indicator did not exceed 0.4%. New or significantly improved methods in the field of logistics and distribution were placed within similar ranges both for the industrial enterprises (3.0% - 3.3%), as well as service firms (2.7% - 4.0%), while in the first years of the period under analysis there was a prevalence to a small degree by service firms, however they were replaced by the industrial enterprises from 2011 to 2014. Innovations relating to new or significantly improved methods supporting the processes of industrial enterprises reached levels of between 5.4% and 6.4%, whereas between 5.4% and 7.6% for service firms.

3. Conclusion

One of the key sources enabling enterprises to ensure the appropriate competitive advantage is that of innovations. Their potential, scope of impact, types, while particularly the economic effects gained as a result of implementing innovations creates innovativeness as a particular category that should be subject to analysis from a multi-faceted perspective. The afore-mentioned aspect ensures the perception of innovations not only with reference to their substantive content, but first and foremost in the context of the possibilities of dynamic development.

Over the course of the analysed period, it is possible to observe a downward trend in terms of the innovative activity of service firms, as well as innovative maturity with a slight advantage in terms of the former. Approximately 1/5 of innovative enterprises are industrial enterprises which are characterized by a greater degree of innovation and progress in comparison with 1/10 of service firms whose number over the analysed period dropped. Both organizational and marketing innovations are at a low level in terms of participation. In the case of industrial enterprises, innovations relating to the implementation of new methods in terms of the principles of business operations were dominant, whereas service firms

displayed greater participation in innovations associated with the implementation of new methods in the division of tasks and decision-making authorization, as well as new methods in the sphere of ties with the market environment.

In turn, industrial enterprises were distinguishable in the years of 2008-2015 in terms of their participation in marketing innovations referring to significant change in the project/construction or packing of goods or services, whereas service firms were distinguishable by their participation in marketing innovations referring to the sphere of new media outlets, or techniques of promoting products, while also new methods in the field of distributing products or sales channels. Nevertheless, with regard to the classification of innovations into product and process innovations, it is possible to draw the conclusion that product innovations dominated, while in the case of process innovations new or significantly improved methods of manufacturing products prevailed. The research results presented in this area confirm the thesis referring to the relatively low level of innovativeness of enterprises in Poland.

The presented examinations represent the basis for continuation of the examinations in terms of the levels and determinants of innovativeness of enterprises, with particular focus on the effect of external and internal factors. The effectiveness of innovations is determined by a simultaneous systematic effect of both internal and external factors which ensure a high level of innovativeness of enterprises and the country. A key role in the improvement in the level of innovativeness in Polish enterprises is played by internal factors, which demonstrates the significant importance of their effect on the attitudes and innovative activity of enterprises. The most important group of factors is people and their abilities and relations. Examinations in this field were performed by Romanowska (2016). The evaluation of the effect of external factors indicates that they have an effect mainly on financial, competency and relational resources of enterprises but, due to the instability of the principles and the immediate effect of the support, they stimulate innovative activity only periodically (detailed examinations in this field were performed by Sopińska and Wachowiak (2016).

Theoretical investigations and empirical examinations in the field of innovativeness of enterprises reveal the lack of mechanisms of effective support for enterprises which have the capacity to create and implement innovations. Small effectiveness of innovation diffusion also concerns the imperfectness of commercialization of innovations, which results from the lack of cohesion between scientific capabilities and business practice.

References

- Carino, G., Kerr, W.R. (2014). *Agglomeration and innovation*, NBER Working Paper No 20367.
- Central Statistical Office of Poland (2017) [online]. Available: <http://www.stat.gov.pl> [2017, October 27].
- Dobni, C.B. (2010). The relationship between an innovation and competitive strategy. *International Journal of Innovation Management*, vol. 14, no. 2, p. 334.
- Greenacre, P., Gross, R., Speirs, J. (2012). Innovation theory: a review of the literature. ICEPT Working Paper, pp.16-17.
- Jelonek, D. (2013). The Innovative Potential of Prosumption and the Results of Enterprises. *7th Conference on Performance Measurement and Management Control. September 18-20, 2013*, p. 20, Barcelona, Spain.
- Jelonek, D. (2015). The Role of Open Innovations in the Development of e-Entrepreneurship. *Procedia Computer Science*, vol. 65, pp. 1013-1022.
- Kadlubcová, J. (2016). Infrastructure development for industrial innovations in selected region of the Czech Republic. In M., Okręglika, I., Gorzeń-Mitka, A., Lemańska-Majdzik, M., Sipa, A. Skibiński, (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management, CITPM 2016*, pp. 157-162. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Kargwell, S., Inguva, S. (2012). Factors influencing the first generation entrepreneurs: An Analytical Study on the graduates of UAE Universities. *International Journal of Business and Social Science*, vol. 3, no. 7, pp. 143-149.
- Lemanska-Majdzik, A., Okręglika, M. (2015). Business Process Management in an Enterprise - Determinants of the Implementation and Expected Advantages. In *Proceedings of 12th International Conference Liberec Economic Forum 2015*, pp. 305-314. Liberec: Technical University of Liberec.
- Mothe, C. (2010). The link between non-technological innovations and technological innovation. *European Journal of Innovation Management*, vol. 13, iss. 3, pp. 313-332.
- OECD (2005 a). *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*. Third Edition, Paris: OECD.

- OECD (2005 b). *The measurement of scientific and technological activities: manual on the measurement of human resources devoted to S T „Canberra Manual”*. Paris: OECD Publishing, pp. 49-55.
- OECD (2015). *The innovation imperative: contributing to productivity, growth and well-being*, Paris: OECD Publishing.
- Okreglicka, M. (2016). Internal innovativeness and management of current finances of enterprises in Poland, In M.H. Bilgin, H. Danis, E. Demir, U. Can (Eds.), *Business Challenges in the Changing Economic Landscape*, vol. 1, Springer, pp. 225-237.
- Reinert, E.S. (2002). Schumpeter in the Context of Two Canons of Economic Thought. *Industry and Innovation*, vol. 9, no. 1-2, pp. 23-39.
- Rogers, E.M. (2003). *Diffusion of innovation (fifth edition)*. New York: Free Press.
- Romanowska, M. (2016). Determinanty innowacyjności polskich przedsiębiorstw. *Przegląd Organizacji*, no. 2, pp. 29-34
- Schumpeter, J.A. (1912). *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. Cambridge: Harvard University Press.
- Schumpeter, J.A. (1928). The Instability of Capitalism. *The Economic Journal*, September, no 63, pp. 361-386.
- Schumpeter, J.A. (1947). The Creative Response in Economic History, *Journal of Economic History*, November, pp. 149-159.
- Sipa, M., Skibiński, A. (2015a). Innovative Strategies of Small Enterprises in Poland. In *Proceedings of 12th International Conference Liberec Economic Forum 2015*, pp. 342-352. Liberec: Technical University of Liberec.
- Sipa, M., Skibiński, A. (2015b). Sources of Innovation of Small Business: Polish Perspective. *Procedia Economics and Finance*, vol. 27, pp. 429-437.
- Skowron-Grabowska, B., Nowakowska-Grunt, J. (2017). Innovative Projects in Enterprises. *Zeszyty Naukowe Politechniki Śląskiej. Organizacja i Zarządzanie*, no. 1984, z. 109, pp. 97-111.
- Skowron-Grabowska, B., Sukiennik, K. (2015). Innovations in E-enterprises on the Polish Market. *Procedia Computer Science*, vol. 65, pp. 1046-1051.
- Sopińska, A., Wachowiak, P. (2016). Innowacyjność przedsiębiorstw działających w Polsce. *Przegląd organizacji*, Nr 5, pp. 17-22.
- Suorsa, K. (2007). Regionality, innovation polity and peripherals regions in Finland, Sweden and Norway. *EBSCO Academic Search Premier, Fennia*, vol.185, iss.1, pp. 15-29.
- Swaim, R.W. (2010). *The Strategic Drucker: Growth Strategies and Marketing Insights from the Works of Peter Drucker*. New York: John Wiley&Sons.
- Vojtovič, S. (2009). Ludský potenciál ako facilitátor rozvoja regiónu. In *Význam ľudského potenciálu v regionálnom rozvoji. Zborník z vedeckej konferencie*, pp. 318-327. Podhájska: EEDA.
- West, M. (2002). Sparkling Fountains or Stagnant Ponds: An Integrative Model of Creativity and Innovation Implementation in Work Groups. *Applied Psychology: An International Review*, vol. 51, no. 3, pp. 355-424.
- West, M., Rickards, T. (1999). Innovation. In M.A. Runco, S.R. Pritzker (Eds.), *Encyclopedia of creativity*, vol. 2 (pp. 45-55). London: Academic Press.

Piotr Kuraś^{1*}

Czestochowa University of Technology
Poland

Małgorzata Kuraś²

Czestochowa University of Technology
Poland

41. THE ANALYSIS OF THE OPERATION OF CLUSTERS IN POLAND

Abstract: The paper is devoted to the problem of the operation of clusters and their significance for the development of individual regions and the entire Polish economy. The reason for selecting such research topics was a growing number of studies indicating the growing importance of cluster structures for the socio-economic development of the country in which they operate. However, there is still an insufficient number of publications which attempt to describe the market of clusters. The main objective of the paper was to determine the number of clusters, structures, organizational forms and industries in which they occur most frequently. An additional objective was to gain knowledge on similarities and differences between clusters functioning in Poland and in other countries. In the empirical part, as the research methods, some of the most general research methods, i.e. analysis and synthesis, were applied. The subject of the analysis was the operating conditions of clusters in Poland. For this purpose, there were used mainly secondary materials in the form of inventory reports on clusters in Poland and benchmarking reports developed by the Polish Agency for Enterprise Development (PARP). The method of synthesis was applied during the research. As a result of the research, there was established the actual number of clusters in Poland, geographical distribution, the most common organizational and legal forms and the industries represented most frequently. The research was to establish the facts on clusters in Poland. The research does not answer the questions about cause-and-effect relationships that may and should be the object of further research in this field.

Keywords: cluster, cluster management, firm strategy.

JEL Classification: O32, L1

1. Introduction

The emergence and development of clusters as well as the formulation and implementation of the principles for cluster management in Poland is still a relatively new phenomenon. The growing number of studies in this field indicate the growing significance of cluster structures for the socio-economic development of the country. Clusters positively affect the productivity and competitiveness of the companies functioning within their framework and consequently contribute to an increase in the competitiveness of the whole Polish economy. Clusters, by creating an innovative environment, attract new enterprises, in particular, the ones interested in operating in such an environment. Such a situation is favorable for the process of diffusion of knowledge, which is particularly important for the SME sector. The acquisition of modern knowledge for these enterprises is often impossible because of too excessive costs. Participation in clusters removes such constraints.

In addition to the positive impact of cluster structures on the competitiveness of the enterprises functioning there, sectors and the whole economy, it is also necessary to emphasize their impact on the labor market. Intensively developing clusters create new jobs. However, the advantage in this case is not an increase in employment itself but its structure. Enterprises in clusters often undertake the implementation of technologically advanced projects. As a result, on the one hand, clusters require highly qualified staff and, on the other, they allow the staff to gain knowledge and experience. The characteristic feature of clusters is the participation of the scientific staff of nearby universities and research units. In this way, the industry may benefit from the latest knowledge and theoretical solutions and scientific ideas have an opportunity to be commercialized.

¹ Eng. Piotr Kuraś Ph.D.; Armii Krajowej 36 B, 42-200 Częstochowa, Poland, piotr.kuras@wz.pcz.pl

² Eng. Małgorzata Kuraś Ph.D.; Armii Krajowej 36 B, 42-200 Częstochowa, Poland, malgorzata.kuras@wz.pcz.pl

* Corresponding author

Another benefit of clusters is their impact on the development of local entrepreneurship. Clusters, as an open structure, allow the merging of the local business environment, increasing the intensity of business relations and, above all, they attract new entities to cooperate and create appropriate conditions for establishing new companies.

An increasing share of clusters in the Polish economy, increasing their actual impact on the structure and quality of human capital of the regions, in the opinion of the authors, are sufficient reasons for in-depth research and analyses in this field.

The main objective of the research was to determine the actual facts concerning the number of clusters functioning in Poland, their structure, organizational forms and industries in which they occur most frequently. An additional objective was to extend knowledge on the clusters identified, in particular, similarities and differences between clusters operating in Poland and in other countries.

2. Theoretical Background

A. Marshall, who proposed the concept of an industrial district, is acknowledged as the pioneer of the research into clusters (Rudzka, Góralski, 2012). In management sciences, the concept of ‘cluster’ was first used and popularized by M. Porter. In his work, *The Competitive Advantage of Nations* (1990), he defined the cluster as geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g. universities), in particular fields that compete but also cooperate. The concept of ‘cluster’ is a new way of thinking about creating the competitiveness of the economy (Porter, 2001). The cluster is a unique formation which, on the one hand, enables and promotes cooperation between enterprises and, on the other, by maintaining full autonomy and independence, allows for competitive actions.

In the literature, there are many definitions of clusters. Generally, they emphasize different aspects of this phenomenon (Brodzicki, Szultka, 2002). Some of them focus on specific areas of interdependent enterprises operating in the same or related industries (Rosenfeld, 1997; OECD, 2000). Others point out interactions and functional relationships between companies and cross-sectoral dimension of clusters (Doeringer, Terkla, 1995). Some authors underline the significance of social and cultural factors that are necessary for the efficient transfer of information in clusters (Jacobs, de Man, 1996).

Clusters are virtually created in all sectors of the economy. They are found both in industrial and service sectors. They occur both in traditional and high technology sectors. Clusters obviously differ from one another with the level of innovation and technological advancement and thus development strategies.

In different types of clusters, there are required different competencies. For example, in the case of clusters functioning in the field of services, interpersonal skills, the ability to operate in complex, often vague and unambiguous conditions take on special meaning (Andersson et al., 2004).

A typical course of the formation and development of clusters includes the following stages (European..., 2002):

- establishment of pioneering companies based on specific local resources of knowledge,
- appearance of specialized suppliers and service companies,
- formation of new organizations serving enterprises creating the cluster,
- increased interest of external companies and qualified staff,
- development of informal relationships that are favorable for the exchange of information and diffusion of knowledge,
- period of decline in the case of closing the cluster on the environment.

The research into clusters around the world indicates that they are the source of potential benefits for the local, regional and even national economy. An effectively functioning cluster leads to increased productivity of local enterprises due to relatively easy access to specialized production factors. In turn, the spatial proximity of other entities stimulates business innovativeness. Ffowcs-Williams (2000) pinpoints that active aggregations contribute to reducing the isolation of enterprises. Also the issues related to risk management are fundamentally changed within clusters (Gorzeń-Mitka, 2018).

According to Enright and Ffowcs-Williams (2000), the cooperation of enterprises in clusters may contribute to:

- an increase in productivity,
- an increase in performance of the organization activities,

- an increase in the level of innovation,
- an increase in the overall competitiveness,
- using the advantages of a small company while simultaneously benefiting from economies of scale (due to cooperation),
- an increase in the level of knowledge as a result of mutual accelerated learning.
- Summing up, clusters have positive impact on innovativeness and competitiveness, skills development and long-term economic development (European..., 2003).

3. Research Methodology

The objective of this paper is to present the results of the analysis of cluster activities in Poland over the last several years. The difficulties of such research consist in the fragmentation of the available data and information. Accordingly, until recently, the research into the functioning of clusters in Poland was fragmentary and the conclusions drawn from the research gave little grounds for reasoning and generalizations. Due to the significance of clusters for the economic development of the regions and the whole country the current and in-depth knowledge on their development, growth potential, resources and implemented projects is necessary.

Having in mind the need for information on clusters in Poland, the Polish Agency for Enterprise Development (PARP)³ has been carrying out systematic studies on clusters in Poland since 2005, using the benchmarking method (PARP, 2014). Additionally, in 2015 the inventory control of clusters functioning in Poland was performed by PARP for the first time. As a result, there was compiled the report (PARP, 2016), which was prepared on the basis of the structured data collected by external experts operating on behalf of PARP. The report particularly allows for defining the population of clusters, approaches the project goals and the adopted method of implementation. The data included in the study allow the analysis of the geographical distribution, age, amount and structure of clusters, the level of employment in cluster entities, organizational and legal forms and economic specializations of clusters.

Scientific cognition requires the application of appropriate research methods. In that case, there were applied some of the most general methods of the processing of the research material, i.e. analysis and synthesis. The subject of the analysis was the conditions for the functioning of clusters in Poland in order to decompose this complex and multi-dimensional phenomenon into smaller components to be able to determine the existing conditions, properties or cause-and-effect relationships. Mental analytical operations refer here to deductive reasoning. During the research into the problem, there was also applied the method of synthesis, in this case, characterized by inductive reasoning.

4. The activities of Clusters in Poland

For the purposes of the research there was adopted the definition formulated by PARP, according to which "the cluster is a geographic concentration of independent entities representing specific economic specialization, cooperating and competing with each other within the value chain. Cooperation within the cluster is formalized, realized both in vertical and horizontal dimensions and directed to the achievement of complex common objectives. The cluster is a source of benefits and creates a new value for all types of entities participating in it, such as enterprises, universities and other research units, business environment institutions, public administration and other support organizations" (Hołub-Iwan, Wielec, 2014).

The functioning of the cluster requires the coordination of its activities. The cluster coordinator is a legal person that organizes and animates the development of interactions, relationships, transfers of knowledge and cooperation in the cluster and also provides specialized services for the benefit of the companies and other entities operating in the specific aggregation. The coordinator represents the cluster in external relations, deals with current cluster administration and performs other functions necessary for its proper functioning (PARP, 2012).

Preliminary definitional criteria were fulfilled by 279 entities. Among these entities there were selected the ones that fulfilled the following additional criteria (PARP, 2016):

- the cluster has at least one valid document testifying to its existence such as: contract, agreement, statute or any other equivalent document,

³ PARP – Polska Agencja Rozwoju Przedsiębiorczości – Polish Agency for Enterprises Development.

- the cluster has a specific unambiguous economic specialization – in the case of several, one must be leading,
- cluster entity structure is diversified, i.e. cluster participants must be at least entrepreneurs and research units,
- the cluster coordinator performs an active role in the cluster, i.e. provides continuous and periodic services for the benefit of cluster members,
- communication and exchange of information in the cluster is regular.

The above conditions were fulfilled by 134 entities, which allows for calling them clusters. There were also isolated 106 entities which did not meet all the adopted criteria which, however, have characteristics allowing for calling them *potential clusters*.

The largest number of clusters is in the voivodeships: Śląskie (28), Mazowieckie (13), Podkarpackie (12), Wielkopolskie (12), Dolnośląskie (11), Lubelskie (11) and Małopolskie (10). The smallest number of clusters is in the voivodeships: Opolskie, Warmińsko-Mazurskie and Łódzkie. The time of cluster formation in individual regions is well visualized in Table 1.

Table 1. The periods of cluster formation by the regions

No.	Voivodeship	Years of cluster formation												
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1.	Dolnośląskie													
2.	Kujawsko-Pomorskie													
3.	Lubelskie													
4.	Lubuskie													
5.	Łódzkie													
6.	Małopolskie													
7.	Mazowieckie													
8.	Opolskie													
9.	Podkarpackie													
10.	Podlaskie													
11.	Pomorskie													
12.	Śląskie													
13.	Świętokrzyskie													
14.	Warmińsko-Mazurskie													
15.	Wielkopolskie													
16.	Zachodniopomorskie													

Source: Based on PARP, 2016

All the analyzed clusters were established over the last 12 years, i.e. between 2003 and 2015. More than 60% of the listed clusters (precisely 81) were set up in years 2011-2015. The analysis of the data included in the table allows for the conclusion that the clusters in Poland are young structures. According to the global research into clusters *Global Cluster Initiative Survey*, the first cluster structures began to emerge in the mid-eighties of the 20th century (Lindqvist Ketels, Sölvell, 2012). On the other hand, in accordance with the research carried out under the project *NGP Excellence*, the largest number of clusters in Europe arose in years 1997-2007 (Müller et al., 2012).

In the analyzed population of clusters, there operates a total of 5868 entities. The number of entities in the cluster ranges from 8 to 171, with an average of 44 objects. The exact data are presented in Table 2.

Table 2. The number of clusters and entities creating clusters by the regions

No.	Voivodeship	Number of clusters	Percentage of clusters (%)	Number of entities in clusters	Percentage of entities (%)
1.	Śląskie	28	20.90	1190	20.28
2.	Mazowieckie	13	9.70	608	10.36
3.	Podkarpackie	12	8.96	488	8.32
4.	Wielkopolskie	12	8.96	499	8.50
5.	Dolnośląskie	11	8.21	554	9.44
6.	Lubelskie	11	8.21	443	7.55
7.	Małopolskie	10	7.46	354	6.03
8.	Podlaskie	8	5.97	272	4.64

9.	Zachodniopomorskie	6	4.48	359	6.12
10.	Pomorskie	5	3.73	427	7.28
11.	Kujawsko-Pomorskie	4	2.99	125	2.13
12.	Lubuskie	4	2.99	82	1.40
13.	Świętokrzyskie	4	2.99	190	3.24
14.	Łódzkie	3	2.24	120	2.04
15.	Warmińsko-Mazurskie	2	1.49	137	2.33
16.	Opolskie	1	0.75	20	0.34
Total:		134	100.00	5868	100.00

Source: Based on PARP, 2016

Ten largest clusters with reference to the number of the participating entities are located in 7 voivodeships: Mazowieckie, Pomorskie and Śląskie (two in each), and the remaining ones in Zachodniopomorskie, Warmińsko-Mazurskie, Podkarpackie and Lubelskie. The clusters with the largest number of participants, respectively: 171, 153 and 150 entities, are in the voivodeships: Pomorskie, Zachodniopomorskie and Śląskie.

In the cluster structure, there are the following types of entities:

- enterprises,
- business environment institutions, including: entrepreneurship centers, innovation centers and non-banking financing institutions,
- research units,
- other entities.



Figure 1. The structure of entities in clusters

Source: Based on PARP, 2016

Enterprises are the most numerous group of entities in clusters. There is a total of 4578 companies, which amounts to 78% of all the participants. Clusters consist of 4 to 146 enterprises, with an average of slightly over 34 enterprises per cluster.

The cluster participants are both micro-, small, medium and large companies. Nearly half of all the enterprises participating in clusters are micro-enterprises. Their exact structure is the following:

- micro – 47%,
- small – 27%,
- medium – 18%,
- large – 8%.

Clusters also associate business environment institutions of a total number of 329 entities. Their structure is the following:

- entrepreneurship centers – 60%,
- innovation centers – 30%,
- non-banking financing institutions – 10%.

In clusters, there operates a total of 513 research units with the number of 1 to 18 units per cluster, with the average of less than 4 units. Research units amount to less than 9% of all cluster members. In Poland, there are not many clusters with a large share of research units (*research driver clusters*). Only 3 clusters indicated the research unit department of more than 30% of participants. The vast majority is the so called *business driver clusters* – over 78%

Nearly half of the clusters (48%) did not give the data concerning employment, therefore, the analysis is limited. In other 70 clusters, there is employed a total of 391223 people. The highest

employment was indicated by the clusters from the voivodeships: Małopolskie, Podkarpackie and Śląskie.

Clusters operate in different organizational and legal forms. Their specification and shares are presented below:

- Contract, agreement – 55.22%,
- Association – 30.60%,
- Limited Liability Company (LLC) – 7.46%,
- Joint Stock Company – 0.75%,
- Foundation – 3.73%,
- Chamber of Commerce – 2.24%.

The above listing indicates that the largest number of clusters operate on the basis of different type of contracts and agreements (74) and in the form of associations (41).

Clusters in Poland represent very different industries from traditional to high technology ones. In total, there were isolated 27 industries/specializations. In detail, this is illustrated in Figure 2.

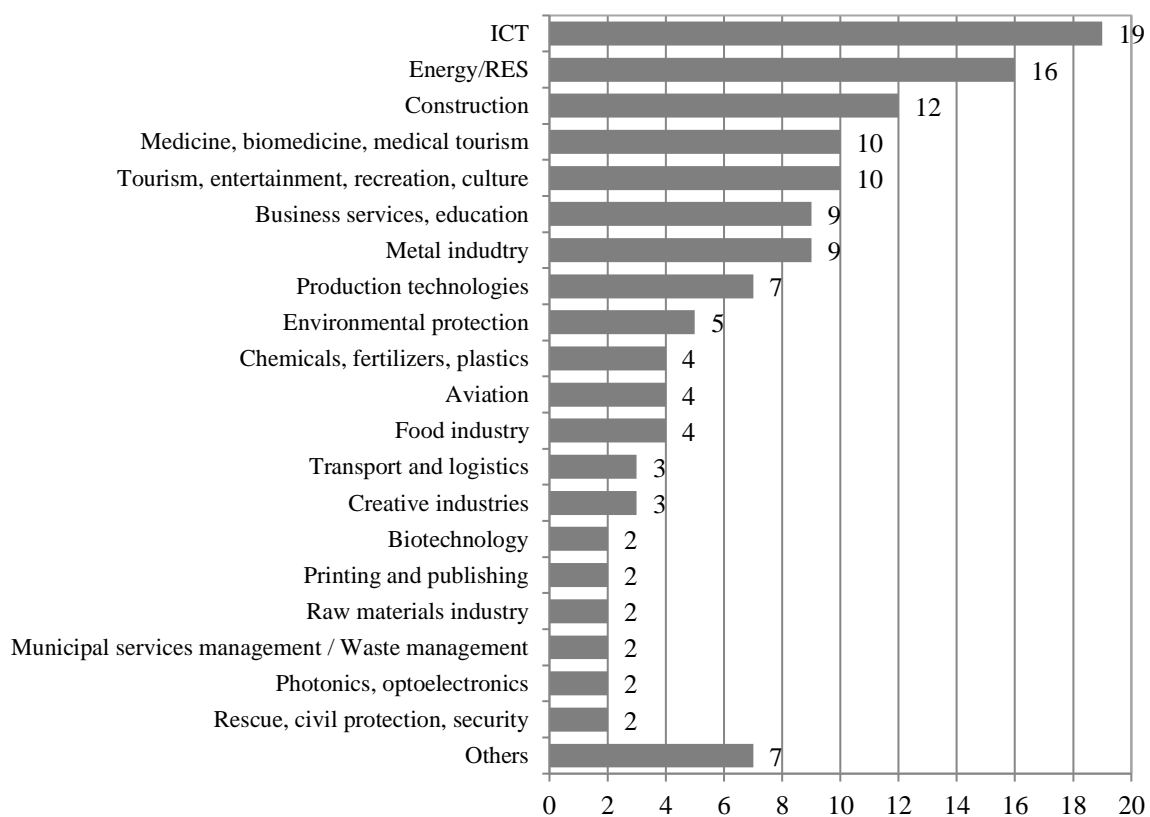


Figure 2. The number of clusters by the economic specialization

Source: Based on PARP, 2016

The largest number of clusters operate in the ICT sector – 14%, energy and renewable energy sources (RES) – 12%, construction – 9% and in the medical industry and tourism - 7.5% each, business services and the metal industry – 7% each, and the production technologies – 5%. The industries: furniture, clothing, machine, timber, nanotechnologies, geodesy and pharmaceutical and cosmetics have single representatives.

The clusters from the energy/RES industry occur in 11 voivodeships and the clusters from the industries: ICT, construction and medical/medical tourism operate in half of the voivodeships. In 7 voivodeships there operate tourism clusters and, in 5, the clusters of the industries: waste management, production technologies and business support services.

There are no accurate data on projects financed from public sources. The information on this topic was given by only 81% of all the clusters. Among them – i.e. 109 clusters, as many as 27 did not implement any project from public sources. One of the clusters implemented as many as 40 projects of

that type. In total, there were launched 360 projects from public sources, which amounts to the average of slightly more than 3 projects per cluster. The information on projects from private sources is even more fragmentary since such information was revealed by merely 89 clusters. Among them, more than a half (52%) did not implement a single project like that. The average for this type of financing amounts to less than one project per cluster. The information on financing projects from own funds was given by 97 clusters. The total number of the implemented project was 240. The average of the projects implemented from own sources amounts to 2.5 per cluster.

5. Conclusion

Numerous studies on clusters in the world indicate the benefits coming from their presence in the economy. This is primarily an increase in competitiveness of enterprises participating in clusters, creating innovative environments (Sipa, 2015), conditions for the diffusion of knowledge and conditions for the formation of social capital (Skibiński, 2017). In the Polish economic realities, clusters are a relatively new phenomenon. Just several years ago there were no structures which, in accordance with the canons adopted in this study, could be called clusters. First clusters began to arise around 2003 but their actual development has been observed only since 2007.

The number of clusters in Poland remains at an average level of 134 entities. When comparing the clusters functioning in Poland with the clusters in other countries it should be concluded that Polish clusters are small structures and they belong to the smallest aggregations of this type in Europe. In Poland, there is one cluster per 44 entities co-creating it and, in Sweden, one cluster, on average, amounts to 40 entities, in Spain – 50, Norway – 60 but in Germany and Denmark – 100, France – 170, Austria – 220 and in Finland – as many as 260 entities (Müller et al., 2012). In the world, an average number of cluster participants is 80 entities (Lindqvist, Ketels, Sölvell, 2012).

In comparison with other countries, Polish clusters are characterized by a relatively large share of enterprises and an average share of research units. However, these comparisons are merely informative since nowadays there is no single pattern which would universally apply to the representation of individual participants in clusters. Great diversity results from the specificity of the economy and various local conditions.

The largest number of clusters is in the voivodeships traditionally considered as the most industrialized in the area of which there are some recognized universities. These are the voivodeships: Mazowieckie, Śląskie, Wielkopolskie, Dolnośląskie, Małopolskie. The largest number of clusters operate in the sector of ICT, energy, RES, construction and medical industry and tourism.

Taking into account the above, in the opinion of the authors, the adopted research objective was accomplished. There were established: the condition, structure, range of activities of clusters in Poland. The research answers the question *what the situation is*. However, it does not give a response to the question *why it is like that*. The answer to this question requires further scientific investigations.

References

- Andersson, T., Schwaag-Serger, S., Sörvik, J., Wise, E. (2004). Cluster Policies Whitebook. IKED – International Organisation for Knowledge Economy and Enterprise Development.
- Brodzicki, T., Szultka, S. (2002). Koncepcja klastrów a konkurencyjność przedsiębiorstw. *Organizacja i Kierowanie*, Warszawa, no. 4 (110), pp. 45-60.
- Doeringer, P., Terkla, D. (1995). Business Strategy and Cross-Industry Clusters. *Economic Development Quarterly*, vol. 9, iss. 3, pp. 225-237.
- Enright, M., Ffowcs-Williams, I. (2001). Local Partnership, Clusters and SME Globalisation. In OECD (Eds.), *Enhancing SMEs Competitiveness* (pp. 115-150), Paris: OECD.
- European Commission (2002). *Regional Clusters in Europe. Observatory of European SMEs*, No. 3. European Commission Publishing.
- European Commission (2003). *Final Report of the Expert Group on Enterprises Clusters and Networks*. Brussels: European Commission Enterprises Directorate-General.
- Ffowcs-Williams, I. (2000). Policy for Inter-Firm-Networking and Clustering: A Practitioner's Perspective. *OECD/Italian Ministry of Industry Bologna Conference for Ministers Responsible for SMEs and Industry Ministers on Enhancing the Competitiveness of SMEs in the Global Economy: Strategies and Policies 2000*.
- Gorzeń-Mitka, I. (2018). Leading markers of risk culture in organization. *European Journal of Sustainable Development*, vol. 7, no. 1, pp. 425-434.

- Hołub-Iwan, J., Wielec, Ł. (2014). *Opracowanie systemu wyboru Krajowych Klastrow Kluczowych. Część I: Charakterystyka Krajowego Klastra Kluczowego w oparciu o analizę źródeł wtórnych*, Warszawa: Polska Agencja Rozwoju Przedsiębiorczości.
- Jacobs, D., de Man, A. (1996). Cluster, industrial policy and firm strategy: A menu approach. *Technology Analysis and Strategic Management*, vol. 8, iss. 4, pp.425-438.
- Lindqvist, G., Ketels, Ch., Sölvell, Ö. (2012). *The cluster Initiative Greenbook 2.0*, Stockholm: Ivory Tower Publishers.
- Müller, L., Lämmer-Gamp, T., Meier zu Köcker, G., Christensen, T. (2012). *Cluster are Individuals. New Findings from the European Cluster Management and Cluster Program Benchmarking*, vol. II, Copenhagen: The Danish Ministry of Science, Innovation and Higher Education.
- OECD (2000). *Local partnership, Cluster and SME Globalisation*. Bologna 2000 SME Conference Business Symposium, Bologna. OECD Publishing.
- PARP (2012). *Kierunki i założenia polityki klastrowej w Polsce do 2020 roku. Rekomendacje Grupy Roboczej ds. Polityki Klastrowej*, Warszawa: Polska Agencja Rozwoju Przedsiębiorczości.
- PARP (2014). *Benchmarking klastrów w Polsce – edycja 2014. Raport ogólny*, Warszawa: Polska Agencja Rozwoju Przedsiębiorczości.
- PARP (2016). *Raport i inwentaryzacji klastrów w Polsce 2015*. Warszawa: Polska Agencja Rozwoju Przedsiębiorczości.
- Porter, M. (1990). *The Competitive Advantage of Nations*. New York: Free Press.
- Porter, M. (2001). *Porter o konkurencji*. Warszawa: PWE.
- Rosenfeld, S. (1997). Bringing Business Clusters into the Mainstream of Economic Development. *European Planning Studies*, vol. 5, no. 1, pp. 2-23.
- Rudzka, M., Góralski, M. (2012). Klastry. In J. Niemczyk, E. Stańczyk-Hugiet, B. Jasiński (Eds.), *Sieci międzyorganizacyjne. Współczesne wyzwanie dla teorii i praktyki zarządzania* (pp. 144-158). Warszawa: C.H. Beck.
- Sipa, M. (2015). Innovation as a key factors of small business competition. *European Journal of Sustainable Development*, vol. 6, no. 1, pp. 344-356.
- Skibiński, A. (2017). The Changes of the Population Structure and its Consequences in Selected EU Countries – Some Aspects. *European Journal of Sustainable Development*, vol. 6, no. 1, pp. 357-368.

Anna Lemańska-Majdzik^{1*}

Czestochowa University of Technology

Poland

Liudmila Shulgina²

National Technical University of Ukraine "Igor Sikorsky KPI"

Ukraine

42. ORGANIZATIONAL FLEXIBILITY IN ENTREPRENEURIAL INTENTIONS – THE POTENTIAL OF FUTURE ENTREPRENEURS

Abstract: The aim of the paper is to review selected literature on the subject of entrepreneurial intentions and organisational flexibility in a turbulent environment, and, based on a questionnaire survey conducted in 2017, to find out entrepreneurial intentions in the area of organisational volatility, including flexibility in entrepreneurial activities. During data analysis, basic statistics and non-parametric correlations between variables using 5-point Likert scale were used. Based on the survey, despite its limitations, it can be concluded that awareness of a company's flexible activities impacts on an increase in entrepreneurial intentions of future entrepreneurs. At the same time, flexibility in entrepreneurial activities is, according to future entrepreneurs, necessary and determined by the external, internal and nearest environment of an enterprise.

Keywords: entrepreneurship, entrepreneurial intentions, flexibility, organization, organizational volatility.

JEL Classification: D22, L26, M21

1. Introduction

A decision to start economic activity is an element of the process of entrepreneurship. It is preceded by entrepreneurial intentions, which in turn are determined by a set of factors that impact how a human being perceives the reality. Entrepreneurial intentions can be considered as the basis for understanding the process of entrepreneurship in a broader sense. This is mainly because they play a key role in paving the way for establishment of a new enterprise. Bratnicki (2001) stresses that entrepreneurship is one of the most important means by which organisations achieve and maintain competitive advantage. Both the process of continuous adaptation to changes in an enterprise's environment and an enterprise's competitiveness result from the company's behaviour on the market. Enterprises use existing market opportunities to meet the challenge posed by transformations in their environment through implementing their own goals and plans. Kanter's concept of entrepreneurial behaviour in a dynamic environment is connected with the personality model of an entrepreneurial person. Essentially, this concept states that in changing conditions entrepreneurship is demonstrated by the entrepreneur who follows the 4F principle, i.e. "Focus, First, Fast, Flexibility." Flexibility refers in this case to both thinking and the activities undertaken as part of the operation of a company (Łuczak, 2003, p. 41). In order to maintain competitive advantage in uncertain environments, new enterprises should respond in a flexible way to competitors' activities and other important changes in their environment to take advantage of business opportunities (DeTienne, McKelvie, 2011). Flexibility in activity gives new entrepreneurs more ways of combining entrepreneurial resources in an uncertain high-risk environment (Korombel, 2012), including resigning from ineffective combination of resources and discovering other possibilities. Peng, Liu and Lin (2015) stress that flexibility of activities mediates in the relation between uncertainty of the conditions in which a company is functioning and the use of an enterprise's resources. Flexibility of activities means that an appropriate combination of resources will have a positive impact on the functioning of a company in the conditions of uncertainty.

¹ Eng. Anna Lemańska-Majdzik Ph.D.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, lemanska@zim.pcz.pl

² Doctor of Economics Prof. Liudmila Shulgina; Voskresenska-Str., 12 b, 177, Kyiv 02-125, Ukraine, shulm@ukr.net

* Corresponding author

The growing interest in research on entrepreneurial intentions results from the key role played by entrepreneurs in the development of entrepreneurship in the conditions of strong competition and volatile, unstable environment (Okreǳlicka et al., 2017). Identification of entrepreneurial intentions in the aspect of the factors underlying the selection of an individual to implement new ventures is vital, especially given the role of new ventures in the economic growth and employment growth (Tomski, 2014).

The aim of the paper is to review literature on the subject of entrepreneurial intentions and organisational flexibility in a turbulent environment, and to find out entrepreneurial intentions in the area of organisational volatility, including flexibility in entrepreneurial activities. Conclusions are based on the findings of the author's own questionnaire survey conducted in 2017 on a group of 238 University students pursuing courses in economic fields of study.

2. Literature Review

2.1. Concept of Entrepreneurial Intentions

Entrepreneurial behaviour, as pointed out by Krueger (2000), refers to a potential entrepreneur's perception of both the opportunities in the environment and his/her own abilities, which is related to his/her intentions or plans. Entrepreneurial behaviour depends on how a potential entrepreneur perceives himself/herself and his/her abilities to act. Numerous authors stress that entrepreneurship involves creative generation of ideas related to identification and use of entrepreneurial opportunities (Wu et al., 2008). A wide range of factors lead to an entrepreneur career, which in turn is reflected in the level of entrepreneurship development in any given economy (Tomski, 2014; Ławińska, 2009). Peterman and Kennedy (2003) point out that the theory concerning entrepreneurship highlights the importance of exploring cognitive factors, such as an entrepreneur's motivation, i.e. his/her attitudes, or perception and intentions, in an attempt to identify the complex process of creating a new company.

In most simple terms, intention is a conscious state of mind that precedes an action (Shook, 2003). Thus, entrepreneurial intention encompasses conscious and planned decisions (resolution) that lead to activities aimed at setting up a business. At the same time, it is a conscious planning of activities connected with the future of a company (Thompson, 2009). An entrepreneurial intention is a strong predictor of entrepreneurship in people who intend to set up a new company in the future (Obschonka, Silbereisen, Schmitt-Rodermund, 2010; Kot, Ślusarczyk, 2013). This indicates that entrepreneurship is a process that takes place for a certain period of time, and so entrepreneurial intentions are the first stage in the development of the idea of running an own business (Liñán, Chen, 2009). Intentions are connected with perception of the reality and oneself, i.e. how a human being perceives their capabilities and desires. We can call intentions a kind of cognitive state which is turned into a specific behaviour in the process of activation of entrepreneurship in a human being (Kurczewska, 2010). It can be assumed that entrepreneurial education is conducive to the development of entrepreneurial intentions. The impact of education may concern both perceived viability and perceived desires (Liñán, 2004). As stressed by Kurczewska (2010), an element that shapes entrepreneurial intentions is entrepreneurial knowledge, which may result from education or gained experience.

2.2. Organisational Volatility in the Aspect of Flexibility of Activities

Review of literature on organisational changes shows that flexibility is one of dynamic capabilities that allows an organisation to counteract and react to changes in the environment (Wright, Snell, 1998; Zając, Kraatz, Bresser, 2000). Organisational flexibility, according to Volberd, refers to an appropriate range of activities which are designed to modify an organisation's current behaviour as a result of relatively permanent changes in its environment (Sopelana, Kunc, Hernáez, 2010). Organisational flexibility is treated as an organisation's attribute (Ansoff, 1965) that allows an enterprise to deal with changes in its environment. Instead of impacting its environment, an enterprise attempts to respond to the environment, making changes within its organisation. Meanwhile, Eppink (1978) thought that flexibility could be perceived as a characteristic of an organisation that makes it less vulnerable to unpredicted changes in its external environment and allows it to respond to them, as it is placed in a better position. However, flexibility requires changes in an enterprise which lead to a temporal change in the level of an organisation's activity (Sharma, Sushil, Jain 2010). Flexibility of activity means that entrepreneurs constantly modify their plans or decisions in a flexible way in order to adapt to changing circumstances (Brettel, Mauer, Engelen, 2012).

The essence of flexibility shows that it is difficult to define this concept in a clear-cut way and distinguish fixed criteria of division. This, according to Osbert-Pociecha, Moroz and Lichtarski (2008), is mainly due to the multifaceted character of this phenomenon, in which causes are intertwined with results, with flexibility being distinguished at various organisational levels.

Flexibility as a sub-dimension of the effectiveness of activity refers to utilization of unpredicted conditions of business environment and the focus on ignoring formal principles and avoiding the planning of the process of entrepreneurship (Brettel, Mauer, Engelen, 2012). Dynamic environments may require cancellation of original plans or decision (McKelvie, Haynie, Gustavsson, 2011), therefore perceiving flexible activities as a necessity may contribute to an organisation's success. Olejczyk-Kita (2012, p. 139) stresses that flexibility is one of the elements, maybe the most important one, that determine an enterprise's success in a turbulent environment. Given market competition, a company's flexibility should be, according to Chajęcki et al. (2012), considered as a set of flexible activities of an organisation which lead to achievement of competitive advantage on the market. Meredith and Francis (2000) suggest that in the case of uncertainty on the market, enterprises' competitive advantage requires organisational agility, which can be created through proactive activities, organisational flexibility, fast adaptation to turbulent conditions of the environment as well as the process of organisational learning. Organisational learning may improve a company's ability to recognise chances, successfully implement new projects and achieve a constant adaptation to its environment (Beer et al., 2005; Lumpkin, Lichtenstein, 2005).

Flexibility in activities allows new companies to turn external changes into opportunities (Chandler, DeTienne, McKelvie, 2011; Fernandez-Perez, Garcia-Morales, Cabeza Pulles, 2016). The literature on the subject also shows that internal changes in a company can be perceived as chances for future activities, but only if they contribute to an enterprise's flexibility (De Leeuw, Volberda 1996; Krupski, 2006).

Flexible activities as part of new ventures lead to better utilization of opportunities, strengthen the enterprise and enable a better combination and use of potential resources. Flexible entrepreneurs usually abandon ineffective solutions in favour of new solutions and combinations (Galunic, Rodan, 1998). Flexible companies are more likely to intentionally create, extend or modify their knowledge, and thus process knowledge in the most effective way, and innovate more intensively in changing conditions of the environment (Kamasaka et al., 2016).

Further, as the literature on the subject shows, entrepreneurial self-assessment has a positive impact on the link between environmental dynamism and flexibility of activity. In a hostile (changing and unpredictable) environment, people who are highly effective in entrepreneurship and have high level of entrepreneurial intentions focus strongly on the company's market competition (Peng, Liu, Lin, 2015). Adverse business environments require higher organisational flexibility of enterprises, i.e. a company needs to be able to keep up with the changes on the market and respond fast to unpredictable and unexpected market conditions (Santos-Vijande, López-Sánchez, Trespalacios, 2012). Thus, when planning his/her activity on today's markets, a future entrepreneur should recognise the necessity of flexibility in a company's activity.

3. Entrepreneurial Intentions and a Company's Flexibility in the Context of Research

3.1. Methodology and Characteristics of the Research Group

The aim of the paper is to assess entrepreneurial intentions based on the findings of the author's own research and to analyse entrepreneurial intentions in terms of organisational volatility, including flexibility in entrepreneurial activities.

To address this research objective, the following research hypotheses have been formulated:

- H1: Flexibility of a company's activity is an essential condition in the process of competing on the market and depends on the change of the conditions of a company's environment, according to future entrepreneurs;
- H2: Awareness of organisational flexibility impacts on the increase in entrepreneurial intentions of students pursuing courses in economic fields of study.

The author's own research was carried out in 2017 on a group of 238 University students pursuing courses in economic fields of study. The students surveyed had knowledge in the field of economics and management, which increases awareness of specific activities connected with the process of entrepreneurship.

The research tool was a survey questionnaire designed by the author, and consisted of demographics and closed questions. The survey was anonymous, which encouraged respondents to express their opinions. For the purpose of this paper, only selected research areas have been analysed.

During data analysis, basic statistics and non-parametric correlations between variables using 5-point Likert scale were used.

At the time of conducting the research, all the respondents were students of full-time first- or second-cycle studies at the Management Faculty of Czestochowa University of Technology, in the fields of management or finance and accounting. As many as 68% of the students surveyed declared that studies in the field they chose would help them to set up their own business. 33% of the respondents declared that there was a family-run business in their family. Females, who made up 73% of all those surveyed, were dominant in the research group. The conditions for carrying out a business activity in Poland were rated by respondents as relatively poor, scoring 2.9 on a 5-point Likert scale.

3.2. Own Research Results

The respondents indicated that they planned to set up their own business during the studies or after graduation. The findings of the survey show that 8.4% plan to set up their own business already during the studies at the university, 17.2% plan to do so after completing the studies, while 17.6% do not plan to start their own business activity. As many as 52.5% of the respondents did not make a definitive decision yet – they rather want to set up their own business but are not entirely sure, while 4.2% want to work for the family business, and 8.4% definitely do not plan to set up their own business (Figure 1).

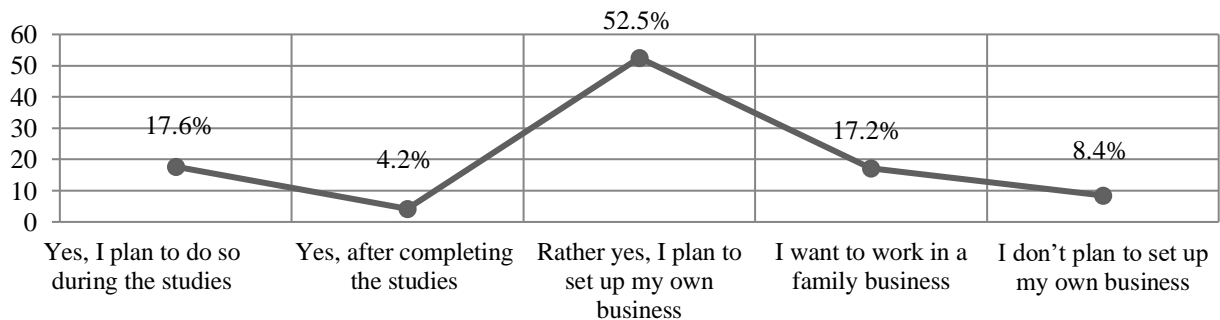


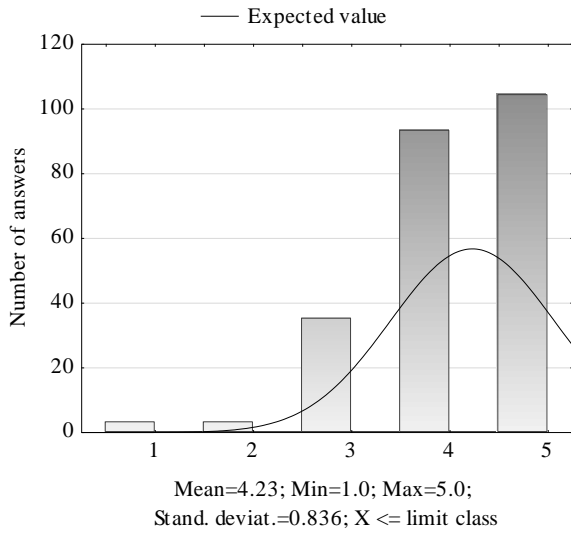
Figure 1. Entrepreneurial intentions

Source: Own study

There are multiple factors that have an impact on entrepreneurial intentions. Based on the review of the literature, these are determinants resulting from the perception of chances and opportunities by future entrepreneurs as well as from their approach to entrepreneurial activities. According to 197 respondents (82.76% of responses), a company should be flexible and change depending on the surrounding conditions. As many as 104 respondents (43.69%) declare that a company's flexibility is definitely necessary and required in a changing environment. Only 2.52% of those surveyed stated that flexibility in activity is not needed in the process of the operation of a company (Figure 2a). Further, over 77% respondents (185 responses) think that a company's flexibility should depend on the external environment, i.e. on everything that can impact the company from outside, such as economic, legal, international, social and technological conditions, as well as competitors, suppliers and business partners (Figure 2b). Over 68% (163 responses) of those surveyed stated that a company's flexibility should change depending on the conditions in an enterprise's internal environment, i.e. an enterprise's internal forces, including management, employees and organisational culture (Figure 2c). The survey also shows that 76.05% of respondents (181 responses) maintained that flexibility in a company's activities should depend on a company's nearest environment, i.e. changes in the activity of competitors, launch of new products/services by competitors, changes of the terms of cooperation with contractors and suppliers, as well as changes of customers' expectations (Figure 2d).

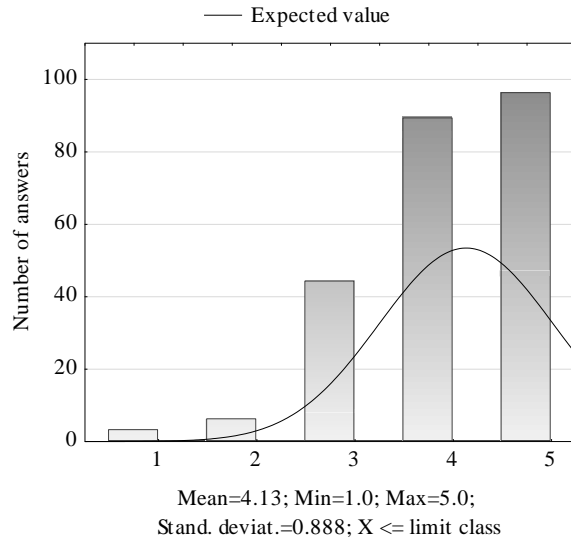
2a. A company should be flexible and change depending on the conditions of its environment

K-S d=0.25935, p<0.01; Lilliefors p<0.01



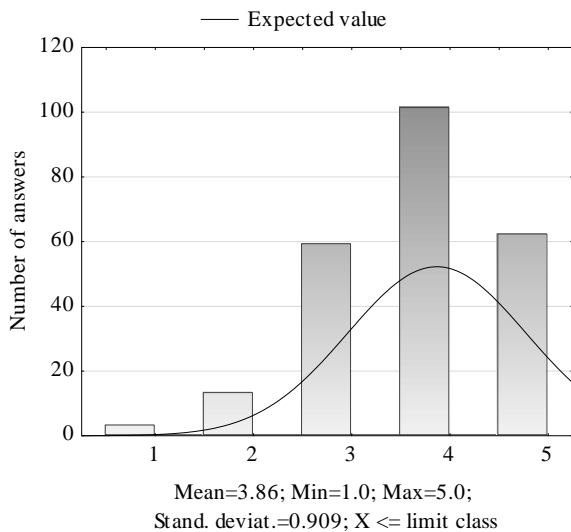
2b. Changes in the company should depend on the conditions of the external environment

K-S d=0.23963, p<0.01; Lilliefors p<0.01



2c. Changes in the company should depend on the conditions of the internal environment

K-S d=0.24369, p<0.01; Lilliefors p<0.01



2d. Flexibility of the company should depend on the enterprise's nearest environment

K-S d=0.24342, p<0.01; Lilliefors p<0.01

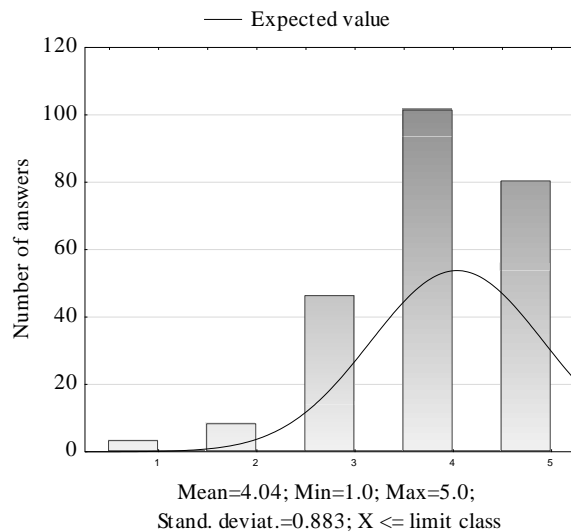


Figure 2. Flexibility of a company's activity according to future entrepreneurs (n=238)

Source: Own study

In all the analysed situations connected with flexibility in a company's activities, an overwhelming majority of future entrepreneurs declare flexibility, which is also reflected in the average rating for this variable, ranging between 3.86 and 4.23 on a 5-point scale (Figure 2abcd).

Table 1. Organisational flexibility according to future entrepreneurs and entrepreneurial intentions of future entrepreneurs

	I intend to start economic activity immediately after graduation from the university
A company should be flexible and change depending on the conditions of its environment	Gamma rank correlation (p-value<0,05)
	0.063

Source: Own study

The research shows that there is a statistically significant positive relationship ($p\text{-value} < 0.05$) between the variables: flexibility of activities in a company and plans to start economic activity (level of entrepreneurial intentions among surveyed students). It has been found out that the more flexible a company should be according to students, the higher their entrepreneurial intentions ($\gamma = 0.063$). This shows that students pursuing courses in the field of economics whose declarations indicate organisational volatility manifested in the flexibility of a company's activities have a higher level of entrepreneurial intentions, i.e. they more often wish to set up their own business (Table 1).

4. Conclusion

The research presented in this paper extends the knowledge on entrepreneurial intentions of young people and how they perceive their own entrepreneurial potential in the aspect of organisational volatility, which is inevitable in a changing environment. In today's turbulent environment, flexibility of activities is no longer an opportunity to achieve competitive advantage, but a necessity in its achievement and maintenance.

The research conducted, despite its limitations, enables verification of the hypotheses formulated for the purpose of achieving the aim of this paper, namely:

- Hypothesis H1 has been generally confirmed, as it has been found out that almost 83% of those surveyed declared that a company should be flexible and change depending to the conditions of its environment; flexibility in entrepreneurial activities is determined by volatility of the enterprise's external environment (77% of responses) and internal environment (68% of responses), but at the same time it depends on the nearest environment of the company (76% of responses of the respondents).
- Hypothesis H2 has been confirmed, as it has been found out that awareness of flexible activities of a company impacts on an increase in entrepreneurial intentions of future entrepreneurs ($\gamma = 0.063$; $p\text{-value} < 0,05$).

The limitations of the research presented in the paper include a relatively small research group and the fact that it was conducted only at one university. However, it can indicate the direction of future research, which should be conducted on a larger research group and among students pursuing courses in economic and non-economic fields of study who are inclined to set up their own business, i.e. show entrepreneurial intentions.

The research confirms studies conducted by other authors and shows that the subject that has been addressed is very interesting and needs to be further analysed due to the role of entrepreneurship in the development of the economy. An increasing market competitiveness, to which entrepreneurs consciously contribute, should result from conscious activities determined by the conditions of an enterprise's environment.

References

- Ansoff, H.I. (1965). *Corporate Strategy: Business Policy for Growth and Expansion*. New York: McGraw-Hill.
- Beer, M., Voelpel, S.C., Leibold, M., Tekie, E.B. (2005). Strategic Management as Organizational Learning: Developing Fit and Alignment through a Disciplined Process. *Long Range Planning*, vol. 38, iss. 5, pp. 445-465.
- Bratnicki, M. (2001). Refleksje teoretyka nad przedsiębiorczością i przedsiębiorcami współczesnego biznesu. *Przegląd Organizacji*, vol. 5 (736), pp. 8-11.
- Brettel, M., Mauer, R., Engelen, A. (2012). Corporate effectuation: Entrepreneurial action and its impact on R&D project performance. *Journal of Business Venturing*, vol. 27, iss. 2, pp. 167-184.
- Chandler, G. N., DeTienne, D., McKelvie, A. (2011). Causation and effectuation processes: A validation study. *Journal of Business Venturing*, vol. 26, iss. 3, pp. 375-390.
- De Leeuw, T., Volberda, H.W. (1996). On the Concept of Flexibility: A Dual Control Perspective. *OMEGA*, vol. 24, iss. 2, pp. 121-139.
- Eppink, D.J. (1978). Planning for Strategic Flexibility. *Long Range Planning*, vol. 11, iss. 4, pp. 9-15.
- Fernandez-Perez, V., Garcia-Morales, V.J., Cabeza Pulles, D. (2016). Entrepreneurial decision-making, external social networks and strategic flexibility: The role of CEOs' cognition. *European Management Journal*, vol. 34, iss. 3, pp. 296-309.
- Galunic, C., Rodan, S. (1998). Resources recombination in the firm: Knowledge structures and the potential for Schumpeterian innovation. *Strategic Management Journal*, vol. 19, iss. 12, pp. 1193-1201.

- Kamasaka, R., Yavuzb, M., Karagullec, A.O., Agcad, T. (2016). Importance of Strategic Flexibility on the Knowledge and Innovation Relationship: An Emerging Market Study. *Procedia - Social and Behavioral Sciences*, vol. 229, pp. 126-132.
- Kot, S., Ślusarczyk, B. (2013). The Role of Biomass in the Energy Production in the European Union Countries. *Proceedings of the 7th International Scientific Symposium on Electrical Power Engineering (Elektroenergetika 2013)*. pp. 559-561. Kosice: Technical University of Kosice.
- Korombel, A. (2012). Enterprise Risk Management in Practice of Polish Small Business – Own Research Results. *The 7th International Scientific Conference "Business and Management"*, vol. 2, pp. 1137-1143. 10-11 May 2012, Vilnius, Lithuania, Vilnius: VGTU Publishing House "Technika".
- Krueger, N.F. (2000). The cognitive infrastructure of opportunity emergence. *Entrepreneurship Theory & Practice*, vol. 24, no. 3, pp. 5-23.
- Krupski, R. (2006). Elastyczność organizacji – elementy teorii, Refleksje społeczno-gospodarcze. *Zeszyty Naukowe WWSZiP*, no. 9 (2), pp. 4-11.
- Kurczewska, A. (2010). Intencje przedsiębiorcze, czyli co decyduje o przedsiębiorczości człowieka. *Przegląd organizacji*, vol. 10 (849), pp. 20-23.
- Lemańska-Majdzik, A., Okręglika, M., Gorzeń-Mitka, I. (2016). Selected Development Factors of Small and Medium Enterprises. In *28th International Business Information Management Association Conference (28th IBIMA), Vision 2020: Innovation Management, Development Sustainability and Competitive Economic Growth*, Sevilla, Spain, 9-10 November 2016, vol. I – VII, pp. 1090-1099.
- Liñán, F., Chen, Y.-W. (2009). Development and Cross-Cultural Application of a Specific Instrument to Measure Entrepreneurial Intentions. *Entrepreneurship Theory and Practice*, vol. 33, iss. 3, pp. 669-694.
- Lumpkin, G.T., Lichtenstein, B.B. (2005). The Role of Organizational Learning in the Opportunity-Recognition Process. *Entrepreneurship Theory and Practice*, vol. 29, iss. 4, pp. 451-472.
- Ławińska, O. (2009). Gminne inwestycje infrastrukturalne jako czynnik rozwoju małych i średnich przedsiębiorstw. In M. Okręglika, O. Ławińska (Eds.), *Determinanty rozwoju małych i średnich przedsiębiorstw w Polsce*. (pp. 31-47). Częstochowa: Wydawnictwo Politechniki Częstochowskiej.
- Łuczak, M. (2003). *Przedsiębiorczość w zarządzaniu firmą*. Warszawa: Wyższa Szkoła Ekonomiczna w Warszawie.
- McKelvie, A., Haynie, J.M., Gustavsson, V. (2011). Unpacking the uncertainty construct: Implications for entrepreneurial action. *Journal of Business Venturing*, vol. 26, iss. 3, pp. 273-292.
- Meredith, S., Francis, D. (2000). Journey towards agility: the agile wheel explored. *The TQM Magazine*, vol. 12, iss. 2, pp. 137-143.
- Obschonka, M., Silbereisen, R.K., Schmitt-Rodermund, E. (2010). Entrepreneurial intention as developmental outcome. *Journal of Vocational Behavior*, vol. 77, iss. 1, pp. 63-72.
- Okręglika, M., Havierníková, K., Mynarzová, M., Lemańska-Majdzik, A. (2017). Entrepreneurial Intention Creation of Students in Poland, Slovakia and Czechia. *Polish Journal of Management Studies*, vol.15, no. 2, pp. 162-172.
- Olejczyk-Kita, K. (2011). Redundancja zasobów jako narzędzie rozwoju przedsiębiorstwa [w:] Skalik J. (red.), *Zmiana warunkiem sukcesu. Przełamywanie barier rozwoju i wzrostu przedsiębiorstw*, *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu Nr 219*, Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, Wrocław, s. 189-194.
- Osbert-Pociecha, G., Moroz, M., Lichtarski, J.M. (2008). Elastyczność przedsiębiorstwa jako konfiguracja elastyczności cząstkowych, *Gospodarka Narodowa*, no. 4, pp. 59-84.
- Peng, X.B., Liu, Y.L., Lin, Y. (2015). The Impact of Environment Uncertainty and Effectual Flexibility on Entrepreneurial Resource Combination: The Moderating Effect of Entrepreneurial Self-efficacy. *Frontiers of Business Research in China*, vol. 9, iss. 4, pp. 559-575.
- Peterman, N.E., Kennedy, J. (2003). Enterprise Education: Influencing Students' Perceptions of Entrepreneurship, *Entrepreneurship Theory and Practice*, vol. 28, no.2, pp. 129-144.
- Santos-Vijande, M.L., López-Sánchez, J.Á., Trespalacios, J.A. (2012). How organizational learning affects a firm's flexibility, competitive strategy, and performance. *Journal of Business Research*, vol. 65, iss. 8, pp. 1079-1089.
- Sharma, M.K., Sushil, Jain, P.K. (2010). Revisiting Flexibility in Organizations: Exploring its Impact on Performance, *Global Journal of Flexible Systems Management*, vol. 11, no. 3, pp. 51-68.
- Shook, C.L., Priem, R.L., McGee, J.E. (2003). Venture Creation and the Enterprising Individual: A Review and Synthesis. *Journal of Management*, vol. 29, no. 3, pp. 379-399.
- Sopelana, A., Kunc, M., Hernáez, O.R. (2010). Organizational flexibility: A dynamic evaluation of Volberda's theory. Paper presented at The 28th International Conference of the System Dynamics Society, Seoul, [online]. Available: <https://pdfs.semanticscholar.org/2e7f/95c26bfa9e7f8cdc3cc006638cf02bbfc388.pdf>. [2017, October 10].

Thompson, E. (2009). Individual Entrepreneurial Intent: Construct Clarification and Development of an Internationally Reliable Metric, *Entrepreneurship Theory and Practice*, vol. 33, iss. 3, pp. 669-694.

Tomski, P. (2014). Entrepreneurship as a Career Choice. The Empirical Perspective. *Polish Journal of Management Studies*, vol. 9, pp. 244-253.

Wright, P.M., Snell, S.A. (1998). Toward a unifying framework for exploring fit and flexibility in strategic human resource management. *Academy of Management Review*, vol. 23, iss. 4, pp. 756-772.

Wu, C., McMullen, J.S., Neubert, M.J., Yi, X. (2008). The influence of leader regulatory focus on employee creativity. *Journal of Business Venturing*, vol. 23, pp. 587-602.

Zajac, E.J., Kraatz, M.S., Bresser, R.K.F. (2000). Modeling the dynamics of strategic fit: a normative approach to strategic change. *Strategic Management Journal*, vol. 21, iss. 4, pp. 429-453.

Natália Letková^{1*}

Alexander Dubček University of Trenčín
Slovakia

Adriana Martošová²

Alexander Dubček University of Trenčín
Slovakia

Katarína Škrovánková³

Alexander Dubček University of Trenčín
Slovakia

43. PERSONNEL MARKETING AS A NEW DEVELOPMENT STAGE OF EMPLOYER BRANDING

Abstract: The primary objective of the paper is to draw attention to the role of personnel marketing, and to introduce it as a new development stage of an employer branding, a new platform covering all activities related to recruiting, retaining employees, and building the employer's position on the labour market and eventually as a new development stage of human resource management. The authors draw on their own practical experience, reviewed the available literature and scientific articles, analysed situation in labour market and conducted brief survey addressed to HR managers of companies operating in Slovak Republic with the intention of identifying what HRM issues they are currently experiencing. As it turns out, the use of traditional HRM methods reaches its limits and is insufficient to cover the current problems and the use of employer branding often encounters barriers within the company's structure. The key might be the application of methods of personnel marketing which synthesizes all the areas of research, tools and solutions. The authors point to the need to define personnel marketing as a separate discipline and outline the necessary perspectives.

Keywords: employer branding, human resource management, labour force, new perception of the HR management, personnel marketing.

JEL Classification: O15, J20, M31

1. Introduction

Our society stands at the threshold of a new era, where the main engines of economic growth are high quality information and sophisticated approach to human resources. Businesses are forced to produce more, with the same or fewer employees, which is caused by an increasing demand on efficiency. The situation puts higher acquirements on the company organization and HR management, with the key focus on acquiring and retaining skilled employees. Apparently, it will not be possible for businesses to face new challenges by using old methods. Requirements on employees are growing rapidly due to fast technological development. This change comes much faster than change in population structure. The main problem of many businesses today seems to be a lack of labour force with the suitable professional profile. The paradox is that there are many of unemployed people on the labour market who have inappropriate skills and abilities. Another serious problem is declining of the active population in developed countries. Under these conditions not only employees struggle to get employed, but more and more companies must fight for a quality employee. HR management has gone a long way from unsophisticated management of personnel, where the organization was only a passive observer of the labour market, through more or less successful use of employer branding in attempt to attract employees. Using of marketing methods in HRM often leads to problems with the knowledge of these methods and the practical use by HR managers, or determining which department is responsible for the performance of these activities. The result is often chaos in competencies and uncoordinated process. We suggest that marketing (employer branding) and HR activities should be fully integrated under one platform which would cover all activities related to recruiting, retaining

¹ Ing. Natália Letková; Študentská 2, 911 50 Trenčín, Slovakia, e-mail: natalia.letkova@tuni.sk

² Ing. Adriana Martošová; Študentská 2, 911 50 Trenčín, Slovakia, e-mail: adriana.martosova@tuni.sk

³ Ing. Katarína Škrovánková; Študentská 2, 911 50 Trenčín, Slovakia, e-mail: katarina.skrovankova@tuni.sk

* Corresponding author

employees, and also building the employer's position on the labour market. This is also the moment to realize, that HRM and employer branding in their present forms no longer serve their purpose and should move to the next level, which would be their fusion and further action under name personnel marketing.

2. Literature Review

As the most appropriate way to deal with research problems authors considered reviewing of the existing literature, then performing analysis of labour market and a survey among companies operating in Slovakia to find out if companies suffer from the anticipated problems associated with managing of human resources. The assumption was that companies suffer from a shortage of skilled employees and from a high level of turnover, while there are enough unemployed people in the labour market not meeting the criteria of these companies.

While in European literature the term personnel marketing is widely used, authors from Anglo-Saxon countries prefer term employer branding.

Palmer and Gray (2003) state that a strong favourable brand is a powerful “navigational tool” to a variety of stakeholders, which includes not only existing employees and shareholders, but also potential employees. Attracting knowledge workers is recognised as a critical success factor by organisations. In order to succeed in the war for talent many organisations realise they need to brand themselves as employers of choice (Sutherland, Torricelli, Karg, 2002). As Backhaus and Tikoo (2004) argue, employer branding “suggests differentiation of a firm’s characteristics as an employer from those of its competitors, the employer brand highlights the unique aspects of the firm’s employment offerings or environment.

Because employees are central to corporate brand management, internal branding and employer branding have recently been introduced to the branding literature. While internal branding focuses largely on the adoption of the branding concept inside an organisation to ensure that employees deliver the brand promise to the external stakeholders, employer branding offers a way of ensuring that an organisation recruits the right people in the first instance (Foster, Punjaisri, Cheng, 2010).

Employer branding is an activity where principles of marketing, in particular the “science of branding”, are applied to HR activities in relation to current and potential employee (Edwards, 2009).

According to the authors, term employer branding is based on branding as a marketing concept in business thinking. It strives for the highest perception of the brand in the recipients’ minds and for the best possible positioning in terms of perception of quality. Branding is therefore essentially interactive, but only in terms of identifying and influencing that perception. In this case, while dealing with brand perception in terms of HR, and therefore from the perspective of brand perception by existing or potential employees, we can admit certain reciprocal feedback, but in terms of the necessary pro-activism towards the employee, this concept is overtaken today by various proactive tools in practice used by HR departments of companies. Therefore, we consider the classification of the HR activities and tools within the employer branding to be overcome, inadequate and confusing. Another contradiction arises in the possible application of employer branding in practice, where there is a lack of clarity regarding the competency setting in the organizational structure of the company and between its departments. Many authors resolve this endeavour differently, but the basic practical contradiction remains. Although the term personnel marketing first time appeared in German literature in the 1960s, opinions of experts regarding personnel marketing and its functions are still quite diverse. Personnel marketing can be considered a tool for finding and acquiring human capital, a tool for stabilizing it in the organization, as well as a tool for strengthening the human capital's involvement in the enterprise. A personnel marketing focuses primarily on attracting attention to the employers' quality of the enterprise when searching, acquiring and stabilizing the workforce in the company (Koubek, 2000). The main purpose of personnel marketing is to provide workforce for the company and subsequent development of this workforce (Tuma, 2003). Personnel marketing is not only a method of obtaining human resources from the labour market, it is above all a system of thinking and management oriented both to the outside environment of the enterprise and to the inner environment of the enterprise (Stýblo, 2003). In personnel marketing (Poláková, Häuser, 2003) a potential employee becomes a “client” and company management through marketing tools does everything to gain and maintain employees in the company. A personnel marketing helps to identify the needs and desires of employees, both existing and potential, which can bring competitive

advantage over other organizations. Aim of personnel marketing is the planning and implementation of activities that promote business attractiveness in the labour market. An important part of personnel marketing is the analysis and survey of factors in the labour market that influence the formation and existence of the workforce in the organization. The aim of such personnel research is to optimally implement own internal and external personnel policy and strategy. From this point of view, each organization must monitor the overall labour market situation, especially the demographic, economic, legislative, political and socio-cultural factors as well as the degree of openness of national economies to entry of investment and other capital (Vojtovič, Krajňáková, 2014). It is also important for company management to understand the importance of personnel marketing and the dependence of its success on the quality of corporate structure, culture and strategy. Companies might find themselves in different stages of economic cycle, each of the stages requiring different kind of decisions. Even strategic management, whose goal is a successful development and prosperity, might lose its importance in the crisis (Vojtovič, 2016). What doesn't lose its importance in any of stages of economic cycle is personnel marketing, because one of its main functions: to build attractiveness of company as an employer, is always important. What may change in different stages of economic cycle are just particular activities provided by personnel marketing. Without the existence of a corporate culture and a good corporate structure, personnel marketing cannot be successfully applied. Firstly, the communication of the company messages towards the potential employee would have been unconvincing, on the other hand, there would only be one part of the problem solved, which is recruiting, but the company would still face turnover of employees, who would not be motivated to remain in the company after being confronted with the weak corporate culture and the bad workplace climate (Arnold et al., 2007). Adjustment of both company climate and culture is important for implementation of personnel marketing. According to Vojtovič et al. (2013): „In order to exploit the potential of personnel marketing, two main features are to be considered: work with company image and personnel recruiting. According to Szarková et al. (2014): „Personnel marketing is a modern scientific discipline based on management, marketing and personnel management, which currently offers a variety of methods and procedures oriented on recruitment of workforce suitable for positions that company offers or plan to offer on the labour market.

The authors consider all these views to be correct in principle, but none of them brings full and exact definition of personnel marketing and its position in company management. Authors suggest that HRM itself without marketing is not sufficient to solve the issues experienced by today's companies. Marketing is the science and art of exploring, creating, and delivering value to satisfy the needs of a target market at a profit. It defines, measures and quantifies the size of the identified market and the profit potential. It pinpoints which segments the company is capable of serving best and it designs and promotes the appropriate products and services (Kotler et al., 2015). Similarly, employer branding without HRM is irrelevant, as branding as such is part of marketing and employer branding as part of classic sales-oriented marketing, as a rule, has little relevance - it gains its importance in fusion of marketing and HRM. If we think of employer branding as of a supporting activity for HRM, then, its anchoring in marketing is generally inadequate, as we have already indicated, due to the original marketing scope of branding itself. Poláková and Häuser see a potential employee as a client, which according to us, describes the economic dimension of this relationship, as a qualified, motivated, productive and loyal employee not only saves costs but also contributes to generation of profit. Therefore, it is necessary to approach the employees as a client in the sense of Closed loop marketing (CLM) and to acquire and maintain them by using analogous tools derived from the business perception of CLM and their application in practice. We also agree with Szarková et al. (2013), but we consider it to be a simplified view of the issue. The practice, but especially the HR needs of companies today, requires a new classification of personnel marketing as a separate marketing discipline, based on the fusion of marketing in general, employer branding and HRM, including its adaptation to the company's organizational structure, as well as specific tools and channels.

Therefore, authors don't consider current definition of personnel marketing to be the equivalent of employer branding as defined in Anglo-Saxon countries. Nevertheless, we do not consider the existing European definition of personnel marketing to be sufficient and comprehensible. Based on this, the authors have come to the opinion that there is a need for a new definition of personnel marketing, a reclassification of the perception of this discipline and its tools.

3. Aim and methodology

The main objective of the paper is to draw attention to HRM challenges facing businesses today and to the role of personnel marketing, which is here introduced:

- as a new development stage of an employer branding,
- as a new development stage of human resource management,
- as a new platform covering all activities related to recruiting, retaining employees, and building the employer's position on the labour market.

Naturally, the article's aim is not an exhaustive categorization of the whole area of personnel marketing, including all its tools. The ambition of the authors is to point out the need for its redefinition and categorization, its practical significance, new possibilities and scope for development in this area, especially by linking know-how of marketing and HRM, with the possibility and need of analogical derivation of personnel marketing tools from classical marketing and marketing communication.

The subject of the article was based on two research problems:

1. Solving the problems of organizations (business, manufacturing, but also organizations of public sector) with a shortage of available, qualified and properly motivated staff requires a comprehensive, innovative and systematic approach, since current classification of research, tools and their application in practice are insufficient.
2. It is necessary to define a new area of research: personnel marketing as a higher development stage of employer branding, as a separate marketing discipline based on the fusion of marketing in general, employer branding and HRM, including its adaptation to the company's organizational structure, as well as its specific tools and channels.

In order to achieve the aim of the article the authors reviewed the literature and analysed the labour market through statistical data, conducted a survey among companies operating in Slovakia, then used correlation analysis to validate results.

4. Status of Labour Market in Slovakia

After the difficult period of the global economic crisis, the year 2017 was relatively favourable for the Slovak economy, with solid GDP growth, which involved both foreign and domestic demand, and unemployment fell below 10% to 6,14 % in October 2017, which is quite favourable, but relying on that one number as an indicator for the economy as a whole, ignores important problems hiding just below the surface (Štefančíková, 2015). This growth is not leading into raising the standard of living (Vojtovič, Krajňáková, 2014). Problems are especially the large regional differences in employment (Štatistický úrad, 2017), and problems with long-term unemployment in certain groups like young people, older people, mothers after maternity leave, minority groups, etc. (Grenčíková, Španková, 2016; Grenčíková, Španková, Kordoš, 2016). The high number of new SMEs indicates the openness of the business environment, but it is largely due to the fact, that many unemployed people are resolving their situation by establishing own businesses. On the other hand, the main problem of larger companies is the shortage of skilled labour force and employee turnover. Table 1 reveals job positions employers in Slovakia were most frequently trying to fill in 2016 and job positions the applicants were interested in. Surprisingly they are very similar. Problem is that quality of labour force – its education, skills, health condition, age, etc. is not corresponding with employers' requirements (Grenčíková, Španková, 2016).

These problems in Slovakia are therefore naturally related to education and its connection to the needs of the labour market. This article does not provide sufficient space to deal with systemic overall state measures, especially the alignment of the education system with the market requirements, which would be the most effective solution (Lubyová, Štefánik, 2015). These measures are already taking place. In the document "Quality of Education - Responding to the Challenges of the Future", which was prepared by the Committee for Industrial Research and Development the Commission focuses on the basic idea: European education systems must respond as much as possible to changes in production, they must contribute to the economic growth of Europe and to ensuring competitiveness in the world. From this, a concrete measure is being developed for the education systems of all countries of the European Union at all levels (Grenčíková, Španková, 2012). On the other side, it is clear from

the data that inconsistency brings increased demands on companies in process of obtaining limited workforce. They need to focus on lowering employee turnover and on retaining the talent and knowledge held by their workforce. Increased demands on HRM activities also require a more sophisticated approach, tools and synergies of individual activities to meet the needs of companies.

Table 1. Most frequently offered and sought positions in Slovak Republic in 2016

	List of most frequently offered positions	List of most frequently sought positions
1.	Administrative worker	Shop assistant
2.	Operator in production	Administrative worker
3.	Joiner	Waiter
4.	Nurse	Operator in production
5.	Waiter	Tailor
6.	Cook	Driver
7.	Hairdresser	Nurse
8.	Shop assistant	Teacher
9.	Construction worker	Joiner
10.	Truck driver	Cook

Source: Own work based on Eures

5. Survey Results

In September 2017 authors conducted own brief survey among HR managers of companies of all sizes. The purpose of the survey was to refute or confirm the presumption that companies operating in Slovakia suffer from the shortage of qualified labour force, high turnover, as well as to find out if companies know and use methods of personnel marketing. Table 2 shows the questions asked to HR managers of randomly selected companies of all sizes. Questions were addressed via e-mail and/or telephone. The authors addressed 45 companies of all sizes (15 micro companies, 15 SMEs, 15 large companies), of which 35 actually participated in the survey (15 micro companies, 12 SMEs and 8 large companies).

The results of the survey (Table 2) suggest that involved micro companies do not suffer from a shortage of employees or a lack of interest on the part of job applicants. The problem of more than half of them (60%) is high staff turnover, which is also problem that could be solved by using methods of personnel marketing. Of the addressed micro companies, none uses personnel marketing methods. Half (50%) of involved SMEs suffer from a shortage of skilled labour force while only 20% of them claim general lack of interest on the part of job applicants, which confirms the general tendency of a shortage of skilled labour force. Other SME results have shown a relatively high turnover rate (claimed by 70% involved SMEs) and non-use of personnel marketing methods, as only two of the twelve SMEs indicated its use. The largest problems with a lack of qualified workforce have emerged in the category of large companies where 8 out of 8 companies reported this problem. At the same time, only 5 large companies said their problem was a total lack of interest from the job applicants. The use of personnel marketing methods was most evident in the large enterprise category where 5 out of 8 companies indicated that they use these methods, and the remaining three said they planned to apply these methods but are not yet in place.

The authors considered that there could be dependence between the size of the company and the shortage of qualified workforce (1st question of the survey), so they decided to confirm or refute this assumption by Pearson's chi-squared test:

Hypotheses:

- H0: There is no statistically significant correlation between the size of the company and the occurrence of the problem with a shortage of qualified workforce.
H1: There exists statistically significant correlation between the size of the company and the occurrence of the problem with a shortage of qualified workforce.

Table 2. Questions and results of survey (n=35)

	Micro companies		SMEs		Large companies	
	yes	no	yes	no	yes	no
Does your company face a shortage of qualified workforce?	5	10	6	6	8	0
Does your company suffer from a general lack of job applicants?	3	12	2	10	5	3
Does your company suffer from a lack of qualified applicants meeting your requirements?	3	12	6	6	8	0
Does your company suffer from a high employee turnover?	9	6	8	4	4	4
Do you know term Personnel marketing?	3	12	7	5	8	0
Does your company use methods of personnel marketing?	0	15	2	10	5	3

Source: Own work

To test the null hypothesis, authors compared the computed test statistic (9.47) with the critical value at a selected level of significance $\alpha = 0.05$. The critical value for selected level and degree of freedom is 5.99. As the observed chi-square test statistic is greater than the critical value, the null hypothesis can be rejected, which suggests that there might be correlation between the size of the company and occurrence of problem with shortage of qualified workforce in terms that larger companies face problems with shortage of qualified workforce more likely. This result indicates the necessity to distinguish personnel marketing methods suitable for different company sizes depending on their problems.

Authors also used Pearson correlation coefficient to find relationship between answers to 5th and 6th question. According to logic there should be high correlation between knowledge of personnel marketing and its use, but result 0.46 shows less than moderate correlation between these answers. Authors therefore consider it necessary to conduct a more detailed survey aimed on finding out if companies claiming to use personnel marketing understand properly what personnel marketing involves and if they use it correctly.

6. Conclusion and Recommendations

Statistical data and own research on the sample of the labour market in the Slovak Republic confirmed the existence of serious HR problems of organizations (3.2, 3.3). Furthermore, the literature review (3.1) confirms that the current definition of concepts and categorization in the area of personnel marketing is insufficient, respectively is not at the necessary level and companies cannot eliminate problems by existing HR tools. In the available literature, the authors did not find any definition of personnel marketing or a similar activity that would meet the necessary criteria. Based on this finding, the authors came to the conclusion that such a comprehensive definition and categorization of personnel marketing does not exist.

The authors therefore recommend new definition of personnel marketing as a separate marketing discipline based on the fusion of marketing in general, employer branding and HRM. The personnel marketing defined in this way is also understood to be a higher stage of the employer branding (Anglo-Saxon preferred term and a point of view), and a higher stage of the personnel marketing in the context of a previous understanding of this term (European previously preferred term and point of view).

Similarly, based on the modified classical model of marketing mix, the authors define the application of the personnel marketing mix. The advanced 7P model (product, price, place, promotion, people, process and physical environment) needs to be tailored to the target audience (potential and existing employees, also the public in the broader context) as follows:

- PRODUCT in the perception of an employee as a client is a job position.
- For the PRICE component, consideration should be given to the salary offered in relation to the value of the job position and what the employee gives up for the company (free time, other job opportunities).
- PLACE represents workplace and its specific conditions (possibility of working from home).

- PROMOTION as a component of personnel marketing mix differs from marketing in target audience, communication channels, strategies, tools, etc.
- Component PEOPLE represents HR managers and other managers who come into contact with employees from the recruiting process, subsequently throughout the entire work-life of an employee.
- By PROCESS are meant all processes in company related to human resources (recruitment, training, education, etc.).
- PHYSICAL ENVIRONMENT represents company environment, in which the employee performs work (climatic conditions, lighting conditions, noise, etc.).

Based on this definition and categorization of personnel marketing, it is also easily to be adapted to the existing organizational structure of the company, without the need to create new structures or radically change existing ones. By analogy with the cooperation of the marketing department with the sales department, it is possible to implement the personnel marketing on the basis of close cooperation between the marketing and HR departments of the company. Active work with individual Ps can bring success not only with existing employees but also with potential employees. By applying closed loop marketing method (CLM) to personnel marketing, it is possible to better know the employee as a target audience based on data, to more efficiently maintain an existing and potential employee in the system (database, communication, etc.), better target, achieve higher efficiency in recruiting and, as a result, lower costs (and therefore increase profitability) of employees for the employer. By proactive personnel marketing it is possible to proceed to a passive personnel marketing, which as goodwill can close this “loop” and communicate the message about the quality of the employer. It is necessary to remember that one of the communication channels is also the existing employees, who through word-of-mouth spread information on the quality of the employer to the public. In addition, an existing employee is always cheaper for the employer than finding a new one. The CLM application also gives the possibility of a precisely quantified response in the medium and large employers' segments on the state of the labour market for their own needs as well as for the state and education system. In this way defined, categorized and applied personnel marketing allows to systematize and sophisticatedly apply all the tools mostly used in marketing aimed at the target audience from a business perspective. A good example might be direct e-mailing, an e-marketing tool used in marketing communications. The clear majority of medium and large companies now employ advanced databases of candidates – cloud-based talent management software vendors. By working more actively with databases in general (from a classical marketing point of view, potential clients are anyone who leaves their contact, in the first phase it doesn't have to be a complete CV profile), by working more actively with data on candidates (collected by traditional marketing methods, not only by the current HRM methods) and linking their databases to advanced mailing systems, proactive access can also be made to potential candidates who have not responded directly to the advertised position or do not fully meet the required profile for that position. However, they might be retrained. A significant advantage of this link is the precise targeting of target groups that are not possible to reach within classical methods of position advertising.

As a further example, we describe the use of marketing processes: segmentation of (labour) market, targeting, and positioning of the employer's brand in the perception of target groups. Labour market segmentation needs to be carried out in the phase preceding the recruitment process. Sources of potential employees might be: current staff, unemployed people, former employees, school students. Also, other segmentation criteria might be used (geographical, etc.). In targeting, company must focus on the potential staff resources that are most manageable (due to the costs of training, the risk of turnover, etc.). In positioning, company need to focus on key qualities that differentiate the company from the competitor employers and communicate appropriately-formulated messages through the right channels to the target categories of potential employees.

Finally, the new definition, categorization and application of personnel marketing also opens the space for the development and exploration of new personnel marketing tools or channels that will emerge from fusion and synergy effect.

References

Arnold, J., Silvester, J., Patterson, F., Robertson, I., Cooper, C., Burnes, B. (2007). *Psychologie práce pro manažery a personalisty*. Praha: Computer Press.

- Backhaus, K., Tikoo, S. (2004). Conceptualizing and researching employer branding. *Career Development International*, vol. 9, iss. 5, pp. 501-517.
- Grenčíková, A., Španková, J. (2012). Prispôsobovanie vzdelávania potrebám ekonomiky. *Sociálno-ekonomická revue*, vol. 10, iss.3, pp. 34-39.
- Grenčíková, A., Španková, J. (2016). The role of human resource strategic management in developing the employment policy. *Proceedings of the 1st international conference contemporary issues in theory and practice of management: CITPM 2016*, Czestochowa: Czestochowa University of Technology, Faculty of Management, pp. 103-108.
- Grenčíková, A., Španková, J., Kordoš, M. (2016). Entry of a new generation „Millenians“ on the labor market. In *3rd international multidisciplinary scientific conference on social sciences and arts SGEM 2016: Political sciences, law, finance, economics and tourism*, vol. 3, pp. 861-868.
- Grenčíková, A., Španková, J. (2016). Predpokladané trendy v migrácii pracovnej sily do zahraničia: Plány a zámery pracovných emigrantov do budúcnosti. *Ekonomické a sociálne dôsledky migrácie pracovnej sily do zahraničia – Trenčín: TnUAD*, pp.155-157.
- Edwards, M.R. (2009). An integrative review of employer branding and OB theory. *Personnel Review*, vol. 39, iss. 1, pp. 5-23.
- European network of European Services of Employment – Eures (2016). [online]. Available: <https://ec.europa.eu/eures/main.jsp?acro=Imi&lang=sk&parentId=0&countryId=SK> [2017, December 10].
- Foster, C., Punjajstri, K., Cheng, R. (2010). Exploring the relationship between corporate, internal and employer branding. *Journal of Product & Brand Management*, vol. 19, iss. 6, pp. 401-409.
- Kotler, Ph., Armstrong, G., Stewart, A., Denize, S. (2015). *Principles of Marketing*. Pearson Australia.
- Koubek, J. (2000). Personálny marketing a marketing personálnej práce. *Personálny a mzdový poradca podnikateľa*, vol. 8, pp. 86-104.
- Lubyová, M., Štefánik, M. (2016). *TRH PRÁCE NA SLOVENSKU 2016+*. Bratislava.
- Poláková, I., Häuser, S. (2003). Personální marketing. *Moderní řízení*, vol. 38, iss. 8, Praha: Economia, pp. 46-47.
- Štatistický úrad (2017). Statistics, [online]. Available: <http://portal.statistics.sk> [2017, November 28].
- Štefančíková, A. (2015). Investície do rozvoja ľudského kapitálu v kontexte ekonomického myslenia. *Sociálno-ekonomická revue*, vol.13, iss.2, pp. 33-41.
- Stýblo, J. (2003). Uplatňování personálního marketingu v praxi. *Práce a mzda*, vol. 51, iss.4, pp.18-26.
- Sutherland, M.M., Torricelli, D.G., Karg, R.F. (2002). Employer-of-choice branding for knowledge workers. *South African Journal of Business Management*, vol. 33, iss. 4, pp. 13-20
- Szarková, M., Volár, J, Gažová-Adamková, H., Klimentová, L. (2013). *Personálny marketing a personálny manažment*. Bratislava: Ekonóm.
- Tuma, M. (2003). Kritériá rozpoznávania manažérskeho potenciálu. *Personálny a mzdový poradca podnikateľa*, iss. 3-4, pp.172-189.
- Vojtovič, S. (2016). Managerial decision-making process in the times of economic volatility. In M., Okręglicka, I., Gorzeń-Mitka, A., Lemańska-Majdzik, M. Sipa, A. Skibiński, (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management 2016*, pp. 459-464. Czestochowa: Wydawnictwo Wydziału Zarządzania Politechniki Czestochowskiej.
- Vojtovič, S., Grenčíková, A., Kajanová, H., Karbach, R., Krajňáková, E., Masárová, T., Sedláček, M., Strunz, H., Španková, J., Tolksdorf, G., Živčicová, E. (2013). *Personálny manažment v organizácii*. Plzeň: Vydavatelství Aleš Čeněk, s.r.o.
- Vojtovič, S., Krajňáková, E. (2014). Development of new economy human capital. *Vadyba: Journal of management*, vol.25, iss. 2, pp. 145-150.

44. THE CONCEPT OF CUSTOMER RELATIONSHIP MANAGEMENT IN SERVICES

Abstract: The content of the paper was a presentation of information on the concept of customer relationship management (CRM) and the active use of the different types of instruments in the process of managing customer relationships between operators providing accommodation services. The answers to the research questions were obtained through a survey of the investigation. The questionnaire had been distributed by e-mail, sending the contact email addresses of individual properties. Questionnaire investigation participated entities active in the region of Žilina properties in 2015. Among the CRM tools, standard communication tools such as phone, e-mail, e-business through a website are the most used. They also used the social networking environment to establish contacts with their customers. Accommodation facilities, however, do not leave out standard tools used in the service environment, such as a guestbook, a book of complaints and desires. They performed customer satisfaction analysis and pay attention to customer service. Questionnaire investigation of guest houses, the fact that companies are using CRM tools and at the same time realizes that CRM is an important tool to increase their competitive power.

Keywords: accommodation, customers, customer relationship management, research, tools.

JEL Classification: M31, Z33

1. Introduction

The aim of the paper is, to submit information regarding the concept of CRM, and use of the different instruments in the conditions of market of accommodation services.

CRM is, in the opinion of the author, at present quite an established professional term, which is dedicated by the whole range of experts primarily from the fields of marketing, logistics and informatics. In those business processes in developed market economies the CRM has its firm position not only from the perspective of economic theory, but also in practice. A more detailed elaboration of the concept of CRM on conditions of market services and in particular the use of their tools in the market services offering by accommodation facilities in Central European economies in both scientific and technical literature is lacking. “In the related literature of CRM; a very few studies have been conducted on discussion of distribution service industry” (Pai, Tu, 2011, p. 1). On this gap, therefore, the author responds with the content of the following paper, whose information come from a secondary and a primary research in particular.

2. Literature Review

Customer relationship management (CRM) is a concept based on the formation of relationships with customers, and orientation to customer needs (Hommerová, 2012, p. 136). Customer relationship management is an interdisciplinary matter that applies to all employees and all departments of the company (Dohnal, 2002, p. 164). Customer relationship management is a management process of detailed information about each customer and careful coordination of all “interfaces” that come into contact with the customer (Kotler, Keller, 2007, p. 788). In the case of accommodation facilities, a guest meets the interface points when booking, check-in, check-out, payment, use of hotel loyalty programs, hotel services, sports facilities, restaurants, bars and other additional services.

In its traditional form, CRM is a business strategy and systematic approach issued from relationship and one-to-one marketing which is based on the integrated and active management of personalized individualized with consumers (Camponovo, Pigneur, Rangone, 2005).

¹ Doc. Ing. Xenie Lukoszová Ph.D.; Sokolská třída 33, 702 00 Ostrava 1, Czechia, xenie.lukoszova@vsb.cz

* Corresponding author

Sales based on CRM technology is designed to help sales professionals manage customer relationships by improving communication, learning more about customer needs, and creating customized solutions for the customer (Agnihotri et al., 2017). Given the strong competition in the hotel sector, it is difficult to maintain long-term relationship with profitable customers and it is therefore necessary to give customers' needs top priority in hotel strategies (Mohammed, Rashid, Tahir, 2017).

3. Methodology of the Research

The aim of the implemented marketing research was to obtain primary information about the active use of various types of tools in the process of customer relationship management within the bodies providing accommodation services.

The answers to the research questions were obtained by the technique of electronic polling. The questionnaire was sent to the contact e-mail addresses of individual accommodation facilities. Return of the questionnaires was 16%. Basic set consisted of 844 accommodation facilities and 142 questionnaires returned. All the obtained questionnaires have undergone review process validity. In the final phase of the research was used for statistical purposes 134 questionnaires. These questionnaires were further processed into an editable form, the individual questions were coded and processed into the form of overview tables in MS Excel and processed using SPSS (Kozel, 2006, p. 280; Möller, 2017).

The questionnaire investigation involved the entities providing accommodation services, operating in the region of Žilina, Slovakia, in the year 2015. Among the reasons for the choice of this interesting tourist region of Slovakia was growing promotion, formation of clusters, local associations that support the development of mutual cooperation in the region and the competitive environment, the boom in tourism and many innovative things to do on use of market opportunities, both in the area of Liptov, Orava, Turce, the area of Kysúce. Most of the businesses evaluated were 134 hotels from category *** (53%). Among the guest houses were the most represented category ** (29%) and *** (26%). Representation of the accommodation facilities according to the classes and categories is clearly shown in the following Figure 1.

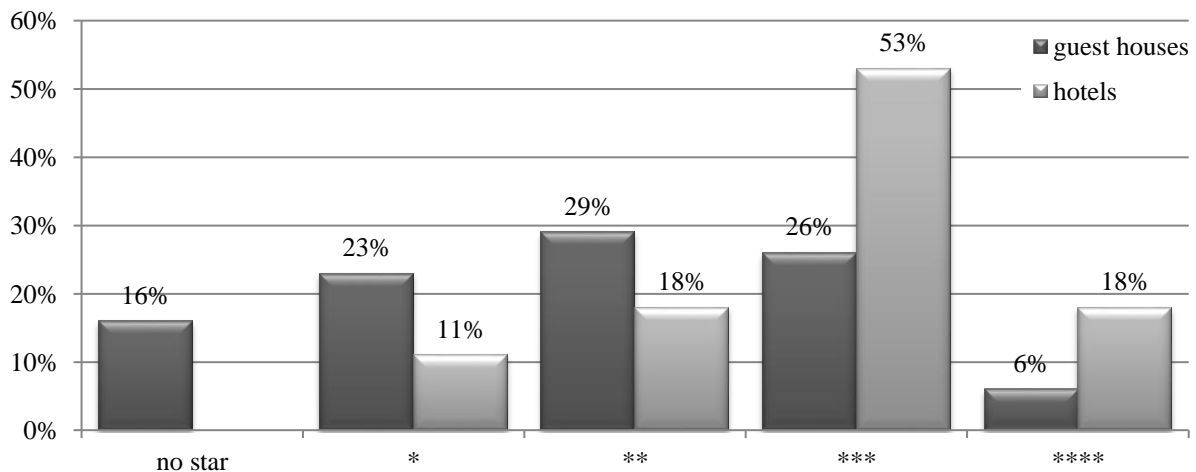


Figure 1. Representation of the accommodation facilities according to the classes and categories

Source: Own study Ošková and Lukoszová, 2017

The research subjects operating in the market of accommodation in the region of Žilina belonged to the group in terms of size of micro, small or medium-sized businesses². The following Figure 2 shows the percentage of each organization by number of employees.

² The category of micro, small and medium-sized enterprises comprise those which employ fewer than 250 persons, which annual sales not exceeding 50 million euros and/or total annual balance does not exceed 43 million euros. (Úrad pre normalizáciu, metrológiu and skúšobníctvo SR, [online: 03.11.2014], Available: http://www.unms.sk/?definicia_MSP).

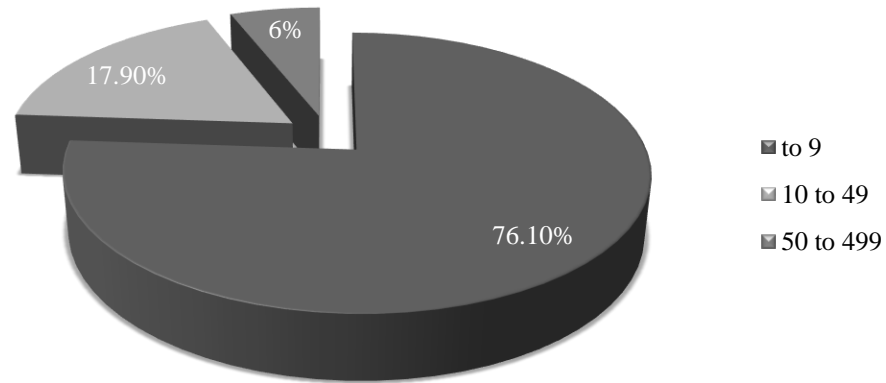


Figure 2. Characteristics of the accommodation facilities by number of employees

Source: Own study

The largest representation among all interviewees were micro-enterprises, this group accounted for more than three-quarters of the respondents. At least then, the accommodations were represented with the number of employees over 50. Organizations were laid out in the representation according to the period of developing, and that since 1990 until the year 2014. The largest representation of the enterprises is arising from the interval 2000-2010. This was about businesses that have started to take up after the year 1989, after the release of the business environment. Mostly they were relatively young organizations, the existence of which lasted for about 10 years. Facilities with a number of customers with annual attendance estimated in the range of 100 to 500 customers, about 10 customers per week, were represented in the highest degree. This characteristic was said by 42% of enterprises. The number is typical for smaller facilities with a lower capacity. 20% of respondents, however, come into contact with a much larger number of customers, and that over 30 people a week. Between them, which is visited by fewer than 100 customers a year was put by 22% of the respondents. They were mostly private accommodation providers.

4. Research Results and their Argumentation

Contemporary world writers are concerned the issue of CRM (Baran, Galka, 2013; Berger, 2012; Buttle, 2009; Dyché, 2002; Hippner, 2006; Kostojahn, Paulen, Johnson, 2011; Palmatier, 2008; Payne, 2007; Wessling, 2002; and others), with mainly as a business strategy and technology in general. Authors: Agnihotri et al., 2017; Camponovo, Pigneur and Rangone, 2005; Mohammed, Rashid and Tahir, 2017; Pai and Tu, 2011 are then in their works exploring the CRM in particular national markets. Grundey (2006) deals with the application of the CRM tools on the market of services. The results of the research referred to in the following text, therefore, brings the extension of available knowledge about the primary information about previously theoretically defined CRM tools in the application in accommodation services on the market in Slovakia.

4.1. The Perception of the Customer Relationship Management by Respondents

Based on empirical research, it was found that individual representatives of the accommodation facilities consider CRM to the extent as a marketing tool. The claim was said by 24% of the respondents (see Figure 3). The second most response (18%) was the answer, that CRM is a communication technology. The third most response was the incorporation of CRM to business processes. 13% of respondents replied as follows. Overall, more than half of the respondents rank CRM within the technological tools. Only 25% of respondents ranked CRM among the strategic tools. 7.5% of respondents identified CRM as a software program. As the strategy of CRM, it was marked by only 9% of respondents, as well as 9% of respondents identified CRM as philosophy and only 7.5% of the respondents considered it as the concept. 9% of those interviewed did not know how to define the concept of CRM; they had never met such a term before. The results of the research suggest that CRM is in the awareness of businesses still mostly perceived just as a technological tool.

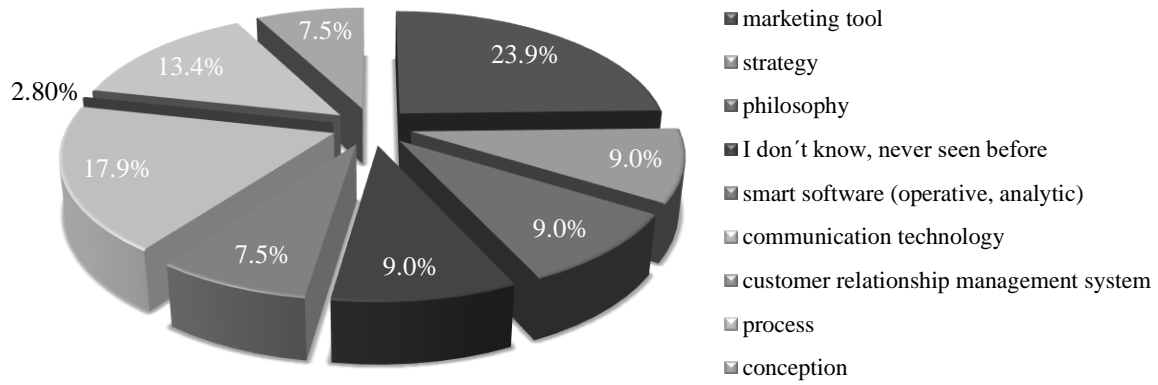


Figure 3. Consideration of CRM

Source: Own study

The question of whether entities are implemented in the course of their business some forms of CRM, more than 80% of those interviewed replied that they apply the customer relationship management. Almost 43% of the respondents confirmed that CRM refers to all or most of the activities that are implemented in the company. Less than 41% of the respondents realized just in CRM activities associated with direct, personal contact with the customer. 14% of the respondents commented that they do not apply the subjects of CRM and they do not recognize the importance of it (see Figure 4).

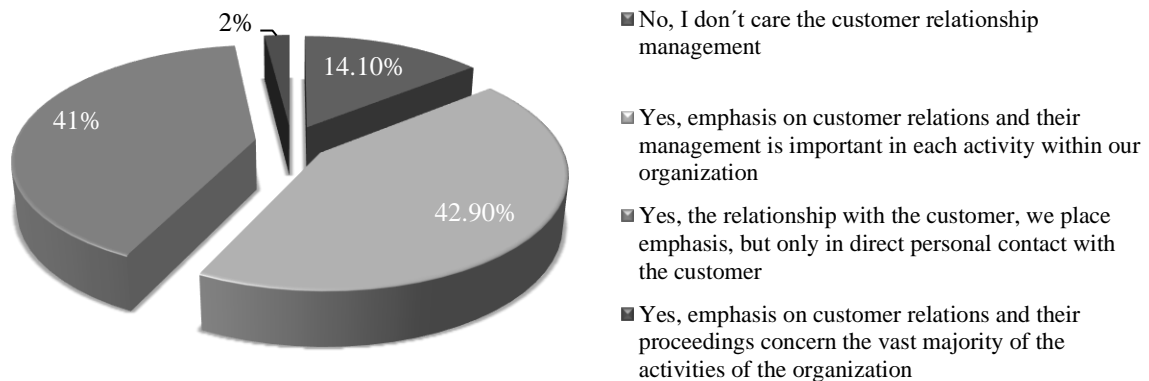


Figure 4. Implementation of CRM

Source: Own study

Overall, the research results are very positive; the organizations usually implement CRM in most of their activities. Either they are trying to incorporate customer relationship management into all of their activities or at least into the activities of direct contact with the customer.

4.2. Utilization of CRM Tools

4.2.1. Physical Archiving Tools and Sorting Information

Paper filing cabinet, diary, copy book

Representatives of the accommodation facilities have confirmed that currently the practice is not the way from use and storage of information in a physical form, such as in the form of paper-based files, folders or calendars, diaries, notebooks, or copy books etc. For example, research has shown that through the paper index stores information about customers only 34% of those surveyed, 66% of respondents, such a form does not use and prefer the storage of information in digital form. The paper form of a diary (calendar) is currently used by 49% of those interviewed. Companies prefer practical and faster electronic form that has several useful properties, such as the speed of the search, the availability of information in the database of all relevant persons, possibility for practical processing and analysis of information. Paper filing cabinet is used by 33% in private accommodation, 32% of

guest houses and 40% of hotels. The paper form of diary or calendar is applied by 43% accommodation in privacy, 65% guest houses and 27% of hotels. This tool is considered as CRM conception only by 30% of organisations and paper for of diary just by 34% of respondents.

Guest book

A popular and often-used tool is the guestbook. The book is used by a total of 60% of the surveyed (57% of the accommodation in private, 61% guest houses and 60% hotels). As part of the CRM, it is considered by 54% of the respondents. Guestbook is in an environment of accommodation services one of the most important tools. If the information from the guestbook links the wishes and complaints, companies have the opportunity to obtain the amount of references and customer feedback.

4.2.2. Electronic Tools

Electronic card index, calendar, diary

An electronic card index for the purpose of storage of information is used by 39% of those surveyed entities, 38% of accommodation in private, a 29% of guest houses and 60% of hotels. A similar percentage of respondents uses in their activities the electronic diary (30%); 33% in private accommodation, 23% of guest houses and 40% of hotels. Electronic support tools of diary, calendar (33%), card index (43%) as part of the CRM concept, they are thought of only a small percentage of those surveyed entities.

Simple electronic database

Tabular statistical files of type as Microsoft Excel are used to store and process of customer information by 24% of accommodation in private, 19% of guest houses and 27% of hotels. In the overall percentage of representation that represents 22% of the respondents. Storage of information in a tabular format is straightforward, easily editable and manageable. Excel software contains a wide variety of options and features, how to deal with the data. This method is also cheap. As part of the concept of CRM; it is considered as statistical tools by 42% of the respondents.

Contact management

39% of respondents uses in their activities the form of contact management tool; 33% of the accommodation in private, 32% of guest houses and up to 60% of hotels. Contact management is important in particular for the facilities which is visited a higher number of customers every year or seasonally and in which higher number of employees works who need to have quickly processed in detail the available customer information, but also suppliers and other partners. This forms the basis for the client information database. As part of CRM; it is considered by 49% of the respondents.

CRM software applications

CRM software application is used by 13% of those surveyed. 86% of respondents do not use technological support of any complex applications. 5% of those questioned in private accommodation has in its information system the applied software of CRM. Such information support has 6% of guest houses and 40% of hotels. Due to the organizational performance of the acquisition of CRM software solution and to its costs was expected from the research that this form of technological support will be utilized by larger facilities that have a larger capital base and built better technological support for the application. In the case of 6% of guest houses and 5% of private accommodation, the CRM was primarily about CRM application within the accounting systems. These systems of CRM application offer as an additional product. As part of CRM software tools is considered 40% of respondents.

4.2.3. Tools for Direct Contact to Customers

Phone and client help line

Nearly 96% of respondents said that in their activities they use a phone or directly set up separately customer service or help line. This is because every customer expects to be able to in their communication with the service provider to use the phone. Here there were no fundamental differences between the three groups defined accommodation facilities. Private accommodation in 95% utilization, guest houses in 94% and hotel facilities in 100%. Help line as part of the portfolio of tools CRM shall be established by 57% of respondents.

E- tools

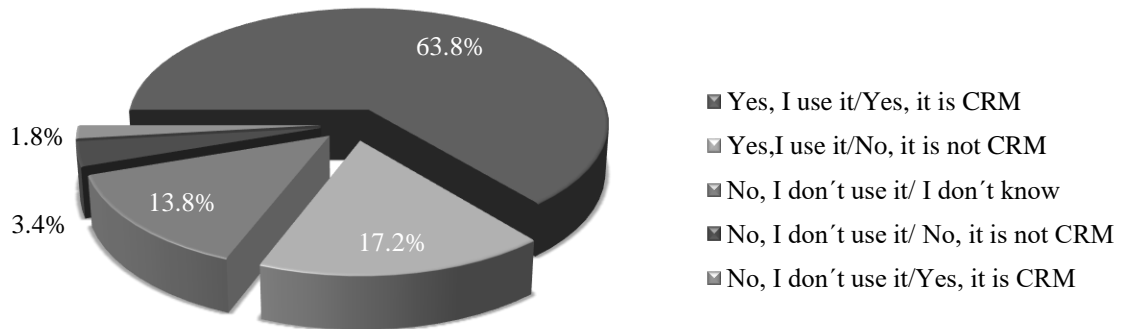


Figure 5. Website

Source: Own study

81% of the interviewees of private accommodation stated that they have their website. In the segment of guest houses 84% of the respondents replied as follows. Only 73% of hotels said they have set up a website. This number is quite surprising, there was not expected to be the lowest frequency in the representation of hotels. Up to 64% of the surveyed companies count and present their communication through the website as part of the CRM concept (see Figure 5). It is positive that the organizations aware of how it is in the context of on-line communication important to adhere to the principles of the concept of customer relationship management.

Social networks

Figure 6 shows that 49% of all respondents have created a profile on a social network. Only 38% of private accommodation indicated that it has set up a profile on a social network. Almost half of respondents (48%) from a series of boarding houses said that on the social network it operates. In the hotel's environment is the action on the social networks used in the highest degree, in 67%. For CRM tool is considered a total of 56% of the respondents. Similarly, as in the case of perception of the implementation of contacts through websites, and social networks are in awareness accommodation providers generally perceived as part of the CRM.

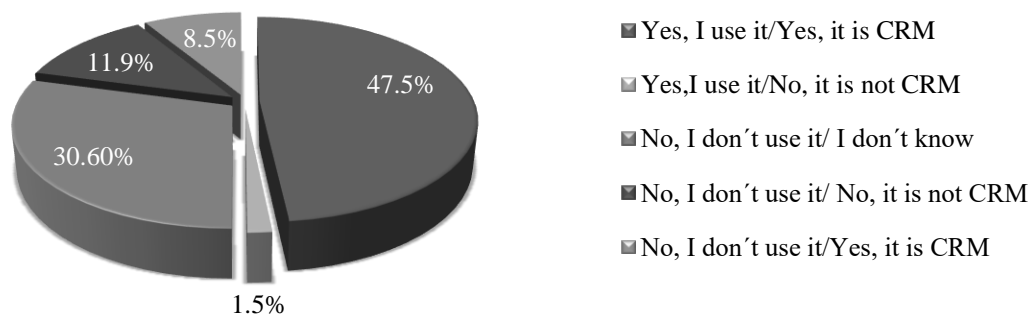


Figure 6. Social network profiles

Source: Own study

E-mail

E-mail form of communication has been confirmed by 76% of those polled private accommodation, 90% of guest houses and 100% of hotels. E-mail communication is one of the most important tools of CRM. A lot of customers use electronic communication to inquire the services, and also to order. It is the cheapest and quite simple way to obtain and provide information. A total of 88% of the respondents use email to communicate with their clients. Email as part of the CRM, is confirmed by 64% of the respondents.

On-line consultancy – web chat

This kind of tool is, in practice of the accommodation facilities, being used in relatively small extent, in 7%. It is used by 5% of private accommodation, 10% of guest houses and 7% of hotels. As part of the CRM concept; it is considered the form of communication, by 34% of respondents.

4.3. Analytic Tools

Customer satisfaction analysis is used by 38% of private accommodation, 48% of guest houses and 60% of hotels. Overall, the use of this tool represents 48%; 55% of organisations, however, sees it as part of CRM. Segmentation is applied by 29% of private accommodation, 19% of guest houses and 47% of hotels. As a whole, the segmentation is used by 28%, but 42% of the companies think, it is one of the CRM tool. Analysis and monitoring of the sales are used in relatively high levels in guest houses (45%), private accommodations use this analysis tool in 24%. The research shows that only 13% of hotels perform the sales analysis. Overall, 31% of respondents use monitoring sales. 43% of respondents consider this tool as part of the CRM. 46% of the organisations perceive the creation of the campaign as one of CRM tool, but in fact only 25% of the total number of respondents also uses this tool.

4.4 Strategic Tools

Strategic tools (Grundey, 2006) in the form of implementation of the corporate governance, corporate culture, ethics, or business vision is applied by relatively low percentage of companies. While we consider these tools as very important. 40% of all respondents said they have established and well-defined vision and corporate culture. 33% of private accommodation has in its organisational structure well established corporate culture and clearly defined business vision. In environment of guest houses, this is in 42% of cases. The most strategic tools are used by hotels, respectively in 47%. A total of 42% of the respondents consider the defining of corporate culture, ethics, and clearly defined visions as part of the concept of CRM.

4.5 Customer Care and Complaints Rules

Customer care, after-sales, and at least also the complaints rules are a very important part of CRM. Range of application of these tools based on the results of research is quite good because 43% of private accommodation, 52% of guest houses and 53% of hotels has established customer service care including complaint regulations. Overall, 49% of respondents mentioned the use of these tools. On the question of whether the complaints procedure is a part of CRM, 43% of respondents answered affirmatively.

5. Conclusion

Information regarding the use of the concept of CRM in the service is based on the implementation of the survey. They are only based on the answers of the respondents, which can be distorted, for example, the effort to match the answer much more erudite than it is in reality. However, the finding information, in particular with regard to the size and structure of the sample, is served quite objective picture of the implementation of CRM in the service of accommodation facilities. So they can stand in good stead for SMEs in accommodation services to help in the future, more systematically and more efficiently use the tools of CRM.

The lesson from the questionnaire survey is the positive fact that enterprises in accommodation services have applied the CRM tools. Their individual representatives then largely consider CRM for a marketing tool. Within the CRM tools, they are the most used standard communication tools, such as phone, e-mail, e-business via the website. Businesses in the accommodation services also use social network environment, therefore, to establish contacts with their customers. But they do not even miss standard tools used in the service market, such as guest book and the book of wishes and complaints. They carry out the measurement of customer satisfaction, whereas they also place emphasis on customer service. Within the concept of CRM is used a number of tools. The strategic tools of CRM include a clearly defined vision of the business, well-established corporate culture, clear rules of behaviour and communication not only between enterprises and customers, but also between enterprises and their strategic partners or between the elements their internal environment. Technological tools are broken down by application level of CRM to the operation plane, analytic and

collaborative. These are all about communication tools that help businesses in the management of communication with their customers, and then they are also tools to support the collection, archiving, and analysis of information about customers.

Customer relationship management allows accommodation facilities to provide a quality service through effective use of information about each customer. Businesses in the light of feedback can offer adequate services to your customers, optimize their pricing, implementation and promotion.

References

- Agnihotri, R., Trainor, K.J., Itani, O.S., Rodriguez, M. (2017). Examining the role of sales-based CRM technology and social media use on post-sale service behaviors in India. *Journal of Business Research*, vol. 81, pp. 144-154.
- Baran, R.J., Galka, R.J. (2013). *CRM The Foundation of Contemporary Marketing Strategy*. Oxford: Elsevier Ltd.
- Berger, M. (2012). *Social media as a marketing relationship tool – opportunities, threats and barriers of implementation*. Bratislava: EKONÓM.
- Buttle, F. (2009) *Customer Relationship management. Concepts and technologies*. Oxford: Elsevier Ltd.
- Camponovo, G., Pigneur, Y., Rangone, A. (2005). Mobile customer relationship management: An explorative investigation of the Italian consumer market. *Mobile Business, 2005. ICBM '05 International Conference on Mobile Business*, pp. 42-48. Sydney, Australia.
- Dohnal, J. (2002). *Řízení vztahů se zákazníky. Procesy, pracovníci, technologie*. Prague: Grada Publishing.
- Dyché, J. (2002). *The CRM Handbook: A Business Guide to Consumer Relationship Management*. Boston: Addison-Wesley.
- Grundey, D. (2006). CRM as a customer relationship management tool in services market - Monograph. *Transformations in Business & Economics*, vol. 5, pp. 171-173.
- Hommerová, D. (2012). *CRM v podnikových procesech*. Prague: Grada Publishing, a.s.
- Hippner, H. (2006). *Grundlagen des CRM*. Wiesbaden: Gabler.
- Kostojahn, S., Paulen, B., Johnson, M. (2011). *CRM Fundamentals*. New York: Apress.
- Kotler, P., Keller, K.L. (2007). *Marketing Management*. Prague: Grada Publishing, a.s.
- Kozel, R. (ed.) (2006). *Moderní marketingový výzkum*. Prague: Grada Publishing, a.s.
- Mohammed, A.A., Rashid, B.B., Tahir, S.B. (2017). Customer relationship management and hotel performance: the mediating influence of marketing capabilities-evidence from the Malaysian hotel industry. *Information technology & Tourism*, vol 17, no. 3, pp. 335-361.
- Möller, K. (2017). Questioning the theory-praxis gap in marketing – types and drivers of research implementation. *European Journal of Marketing*, vol. 51, iss. 7/8, pp. 1163-1172.
- Office of standards, metrology and testing of SR, [online]. Available: http://www.unms.sk/?definicia_MSP [2014, November 03].
- Ošková, J., Lukoszoová, X. (2017). Povedomie a využívanie koncepcie riadenia vzťahov so zákazníkmi v bytovacích službách. *Young Science*, vol. 5, iss. 1, pp. 49-66.
- Pai, J., Tu, F. (2011). The acceptance and use of customer relationship management (CRM) systems: An empirical study of distribution service industry in Taiwan. *Expert Systems with Applications*, vol. 38, pp. 579-584.
- Palmatier, R. (2008). *Relationship marketing*. Cambridge, Massachusetts: Marketing Science Institute.
- Payne, A. (2007). *Handbook of CRM*. Oxford: Elsevier Ltd.
- Wessling, H. (2002). *Network Relationship Management: Mit Kunden, Partners und Mitarbeitern zum Erfolg*. Wiesbaden: Dr. Th. Babler Verlag GmbH.

45. PUBLIC-PRIVATE PARTNERSHIP AS A TREND OF INVESTMENT MANAGEMENT IN EUROPE IN 2007-2016

Abstract: Public-private partnership is a form of cooperation of public entities which allows them to carry out investments in an effective way. Such cooperation is an example of modern management in public organisations. The aim of this paper is to assess public-private partnership as a trend in investment management in Europe in 2007-2016. The paper is theoretical and empirical in character. The theoretical part, which presents literature review, uses literature-based studies, which involve collection, specification and characterisation of data. Based on the information gathered in the theoretical part, the empirical part was completed with the aim to achieve the objective of the paper. The paper relies on secondary data, mainly that published by European PPP Expertise Centre. The findings of the studies indicate a slump in the activity of the European PPP market between 2007 and 2016. There was a growth in the interest in cooperation between the public and private sectors, but it did not result in an increased number of completed investments. The downward trend in the number of PPP projects is a more adequate indicator of the decline in the PPP market in Europe in the period analysed than the value of transactions.

Keywords: Europe, investment management, public-private partnership.

JEL Classification: H54, L33, R42

1. Introduction

Recent years have seen an increasing interest in long-term cooperation between public sector and private sector entities. This cooperation is referred to as public-private partnership (in short PPP). It is undertaken with the goal to bring benefits to both parties, including meeting social needs and achieving specific commercial objectives, such as for instance a certain return rate, taking into account risk-sharing.

The issues of PPP have been addressed for many years in discussions on effective delivery of public services and implementation of infrastructure investments (Grimsey, Lewis, 2002). The development of the PPP concept since the late 1990s has been a direct consequence of the concept of New Public Management (Korenik, 2015, p. 182; Essig, Batran, 2005; Rutkowski, 2010, pp. 64-65). International institutions, policy makers and scholars became interested in this issue, with EU authorities (COM 327/2004) proposing the implementation of various types of PPP in the area of public investments (Monteduro, 2014; Soukopová, Vaceková, Klimovský, 2017, p. 202). Legal regulations on public-private partnership in Europe are relatively new, as they have been in force only for nearly 25 years.

The PPP framework may provide a way to solve investment problems of national economies (Łakomy, 2012, pp. 65-66). Many European governments have implemented investment execution and delivery of public services in the PPP framework (Warner, Hebdon, 2001; Reynaers, Parrado, 2017, p. 269; Okręglicka, Lemańska-Majdzik, 2016). Market-oriented concepts focused on higher efficiency have paved the way for elimination or limitation of the role of government and local self-governments in the area of investments and public services. Cooperation between public and private partners varies in terms of its development across countries. In Europe, EU institutions, national governments and local public authorities are increasingly giving attention to cooperation with the private sector in the PPP form (Cabrera, Suárez-Alemán, Trujillo, 2015; Cruz, Marques, 2012; Marques, Berg, 2011; Marra, 2006).

¹ Olga Ławińska Ph.D.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, olawinska@op.pl

* Corresponding author

The aim of this paper is to assess public-private partnership as a trend in investment management in Europe between 2007 and 2016.

2. Literature Review

The term *public-private partnership* (PPP) was first used in the United States in the 1950s to refer to joint financing of educational programmes by the public and private sectors. Over time, the term has entered into common usage - it was used, for instance, when governments, aid agencies and the private sector organised joint actions to combat AIDS, malaria and other global diseases (Mikołajczyk, 2010, p. 110). Skelcher (2005) maintains that PPP combines government resources with private entities to accomplish social goals. The forms of PPP include conclusion of agreements for delivery of services, management of a public utility company, and design of hybrid organisations for risk sharing and cooperation between government administration and private entities.

The literature often presents the definition proposed by The National Council for Public-Private Partnerships. According to this interpretation, "public-private partnership is a contractual arrangement between a public agency and a commercial private entity. Through this agreement, the skills and assets of each of these sectors are used in delivering a service or facility for recipients." (Rutkowski 2010, p. 31; Ławińska, Wolniakowska, 2014).

Public-private partnership is also defined as "permanent cooperation between public and private entities where these entities develop joint products and/or services and where the risk, costs and benefits are shared" (Klijn, Teisman, 2003, p. 137). PPP is often promoted by claiming that it ensures better quality than traditional public procurement (Demirag, Dubnick, Khadaroo, 2004; Reeves, 2011; Shaoul, 2011) by transferring risk to the private sector. It is important to understand how the risk is allocated, transferred and managed in PPP. Recent studies focus mainly on the perception of threats by the public sector (Demirag et al., 2011), which provides only partial insight into the risk in PPP. Scientific research has so far essentially concentrated on relations between the public and private sectors in terms of risk transfer and/or management (Edwards, Shaoul, 2003; Iseki, Houtman, 2012). Earlier studies did not explore different relationships with stakeholders under PPP, especially in the road sector. This constitutes a significant gap in the literature, as this sector is one of the three main areas of European spendings as part of PPP (EPEC, 2017; Burke, Demirag, 2017, p. 28).

Clarity of the concept is a pre-condition for the discussion on public-private partnership. The terms: public, private and partnership are widely examined in the literature, both individually and collectively, and their meanings depend on the context. In Western Europe, the term *public-private partnership* refers specifically to the mechanism of distributing risk, obtaining non-budget financing, and increasing innovativeness in the area of designing, building and operating infrastructure projects. The unified interpretation in the USA is broader and includes various instruments by means of which the government engages in business and non-profit causes in order to deliver societal goal (Skelcher, 2005, pp. 347-348). In this paper, the term PPP has been used in its general sense to refer to the ways in which the government and private entities act jointly to pursue societal objectives.

The development of public-private partnership provides evidence for real advantages of using this framework in public tasks (Brzozowska, 2006). Experience of numerous European countries, such as Great Britain, among others, shows that especially infrastructure investments are much cheaper in the PPP form than in the traditional model. Today, public-private partnership takes on particular importance, as new responsibilities are assigned to local self-governments and budget deficit needs to be decreased (Łakomy, 2012, p. 68). This is because public-private partnership allows for: creating a leaner public administration, replacing governance with shared management, focusing the decision-making on the mission and established objectives, replacing the allocation of public funds with an effective search for alternative sources of financing, and promoting the market mechanism at the expense of bureaucratic mechanisms.

The basic advantage of the public-private partnership framework is the possibility of taking advantage of the private partner's knowledge and skills so that they maximally complement the public partner's experience. The public sector has potential whose value can be multiplied by combining it with the qualifications of the private sector.

There are multiple possibilities of implementing PPP – from delivery of services by a private company using its own assets, to handing over the management of public infrastructure to a private entity, to a temporary assuming of the title to ownership of public property by a private entity. In

a broad sense, Skelcher (2005) distinguishes five basic forms of public-private partnership: Public leverage, Contracting-out, Franchising, Joint ventures, Strategic partnering. Some of them are managed mainly by the state, while others are based on presumed reciprocity of interest and risk-taking (Korombel, 2007). Their institutional forms can be distinguished in temporal, financial and partnership-relations terms.

The number of PPP models and forms that can be implemented, which vary in terms of principles, tasks, ways of financing and obtaining funds, is practically unlimited. The European paths of PPP implementation differ significantly from each other, in terms of the ideas underpinning the construction of models, their forms and ways of their execution as well as the extent and scope of the private sector's involvement. Traditionally, we distinguished British, French and German models. Nowadays, the Portuguese model is also increasingly mentioned (Słodowa-Hełpa, 2014, p. 19). In practice, mixed models are used which combine characteristics of at least two basic models. Despite certain shared characteristics, infrastructure financing models vary significantly - the variants applied in France or Spain are clearly different from those in Italy, Belgium, Holland, Germany or Portugal.

The form of PPP is selected in such a way as to suit the type of the project to be implemented as well as economic and social objectives it is to deliver. Analysis of selected PPP models and forms shows that irrespective of the model of partnership, a quite strong relationship exists between the type of the project being implemented and the principles underlying its financing, management and operation. This means that during decision-making about the implementation of a PPP infrastructure project, the project approach should be more dominant than the model approach (Słodowa-Hełpa, 2014, p. 19). Such suggestions are consistent with "Guidelines for successive public-private partnership" prepared by Directorate-General for Regional Policy of the European Commission in January 2003.

PPP is European Commission approved form of cooperation between private entrepreneurship and public sector at all levels. The European Commission does not impose rigid recommendations as to the organisational model of PPP. It only stresses that the general assumption behind this type of endeavours is to create such a relationship between entities from the public and private sectors where the risk is borne by the party who is able to manage it most effectively in terms of costs, and where each party can best pursue the objectives it set for itself (Gawroński 2010, pp. 123-124). Among the most common variants of the concession model, the European Commission distinguished the following (Słodowa-Hełpa, 2014, p. 25; Rutkowski, 2010, p. 73): BOT (Build-Operate-Transfer), DBFO (Design-Build-Finance-Operate), and BOO (Build-Own-Operate).

There are also other known models of cooperation based on public-private partnership: BOOT (Build-Own-Operate-Transfer), BTL (Build-Transfer-Lease), BOR (Build-Operate-Renewal), BT (Build-Transfer), DBO (Design-Build-Operate), MOT (Modernise Own/Operate-Transfer), BLT or BRT (Build-Lease-Transfer or Build-Rent-Transfer), DCMF (Design-Construct-Manage-Finance), and ROO (Rehabilitate-Own-Operate).

For instance, in Design-Build-Finance-Maintain-Operate (DBFMO) contracts - a special type of PPP - governments transfer responsibility for designing, building, financing, maintaining and operating public infrastructure (e.g. roads, sewage plants, public utility services building such as schools, hospitals, etc.) to private consortia under long-term contracts (Bult-Spiering, Dewulf, 2008; Reynaers 2014; Reynaers, Parrado, 2017).

The European Union authorities recognised the development of the concession contract market, seeking to harmonise the legal systems of its member states in the area of granting and performing concession contracts. Within the meaning of Community law, concession is a specific form of public procurement and is now used in all EU states (Guidelines for Successful Public Private Partnerships, 2003). The value of concession contracts for building and managing infrastructure in such countries as Germany, Italy, Spain, Portugal, Holland, Scandinavian countries, Ireland, Greece, Czech Republic, Bulgaria, Romania, and Hungary, amounts to hundreds of millions Euro. Examples of such investments include, among other things: development of a water supply and sewerage system in Rostock, tunnel under the Warnow river in the same town, construction and operation of TAV rail network in Italy, Amsterdam-Brussels-Paris high-speed rail network (HSL-Sud) and paid motorways in Spain. These investments were mostly based on the British or French modes (Słodowa-Hełpa, 2014, p. 25).

3. Methodology of Research

The paper is theoretical and empirical in character. The theoretical part, which presents literature review, uses literature-based studies, which involve collection, specification and characterisation of data. The paper is based on literature on the subject of public-private partnership and public investment management. Based on the information gathered in the theoretical part, the empirical part was completed with the aim to achieve the objective of the paper. The method of temporal and spatial statistical and dynamic comparisons was used.

The paper is based on secondary data from various reports on the functioning of PPP in Europe. The most important source was data published by European PPP Expertise Centre (EPEC), based in the Advisory Services Department of the European Investment Bank (EIB). EPEC features the European PPP project data collected for the period from 1990 to 2016. EPEC PPP project data covers transactions in EU-28 countries as well as Turkey and countries of the Western Balkans region:

- transactions structured as DBFO or DBFM or concession arrangements which feature a construction element, the provision of a public service and genuine risk sharing between the public and the private sector,
- transactions financed through „project financing” that reached financial close in the relevant period, and
- transactions of a project value (defined as the external financing requirements for projects at the time of financial close – i.e. the sum of debt and equity, excluding public capital contributions) over EUR 10 million.

It should be noted that the data used in this paper are EPEC's own aggregation of information collected from a variety of sources, in particular Projectware, Inframation, IJGlobal and Inspiratia, cross-checked, where appropriate, against the EIB's own project files (EPEC, 2017).

4. Results of Research and Discussion

The present situation on the European market of public-private partnership is described as shaky stabilisation with a relatively low level of the value and number of transactions. In terms of the value and number of transactions, the PPP market is still significantly smaller than in the phase of its peak in 2005-2007. Figure 1 presents the total number of European PPP projects in 2007-2016.

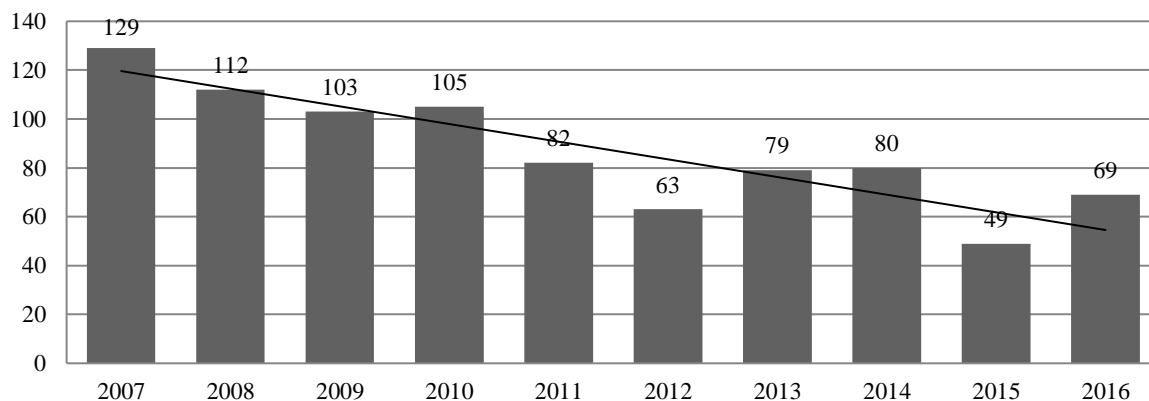


Figure 1. Total number of the European PPP projects (all countries) in 2007-2016

Source: Own study based on data from European PPP Expertise Centre (European Investment Bank)

In total, in all European countries 871 PPP projects were completed in the analysed period (with the total value of 180.3 billion EUR):

- in 2007-2011: 531 projects (with the total value of 101.3 billion EUR),
- in 2008-2016: 340 projects (with the total value of 79 billion EUR).

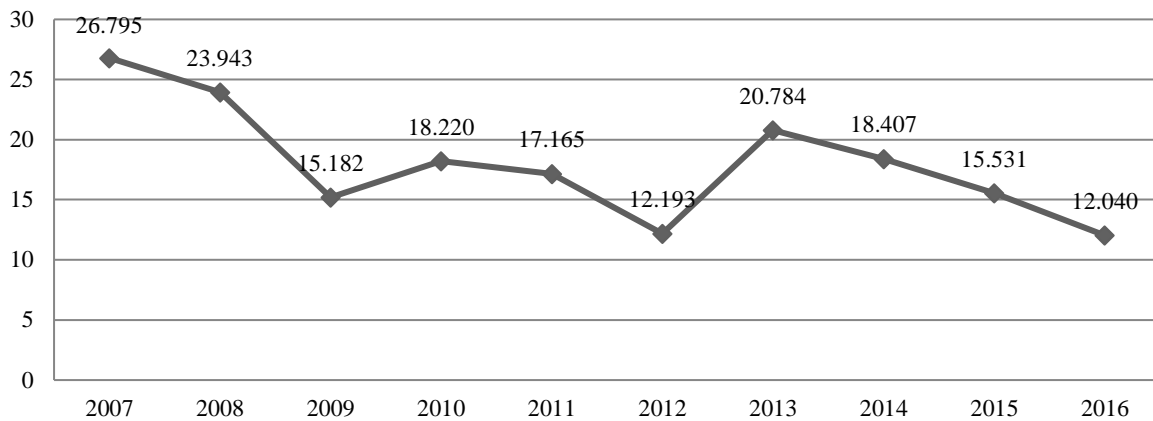


Figure 2. Total value (in EUR bn) of the European PPP projects (all countries) in 2007-2016

Source: Own study based on data from European PPP Expertise Centre (European Investment Bank)

The trends over the last ten years are rather not optimistic (Figures 1 and 2). According to EPEC data, in 2012 the value of PPP transactions in EU countries was around 12 bn EUR, which was the lowest figure in the analysed period. Thus, it does not seem likely that the downward trend will be reversed. In value terms, in 2009-2012 the volume of the market decreased only slightly, but it was mainly due to a series of large infrastructure projects implemented in France. Thanks to carrying out infrastructure investments, France dominated the PPP market in Europe in 2011-2012. In this period, the second position in Europe in terms of the value of PPP projects was occupied by Great Britain, which for a very long time had been an undisputed leader in the European market. The British PPP market succeeded in retaining the first place in terms of the number of transactions, although with a long-term downward trend. It seems that the declining trend in the number of PPP projects is recently a more accurate indicator of the crisis of the PPP market in Europe than the value of transactions. It is also reflected in the gradually diminishing number of EU countries where PPP projects have been successfully completed.

The causes of the clear contraction in the European PPP market lie in the overall unfavourable situation of the European economy, which has been weakened by the consequences of the global banking crisis in the years 2007-2009 as well as the financial crisis of the Euro zone, which has continued with varying intensity since autumn 2009. The recessionary trends in the economies of many countries have led to a decrease in the number of initiated infrastructure projects, but the factor that hit the PPP market the hardest was the banking crisis, which dramatically limited the access to and increased the cost of financing PPP projects.

Figure 3 presents the total number of PPP projects implemented in the individual countries across Europe in 2007-2016. According to this data, the main area where PPP investments are implemented is still Western Europe. The position of pioneer and global leader in investment activity in PPP model is still maintained by Great Britain. However, it is important to note that the intensity, structure and manner of implementation of PPP vary across England, Wales, Scotland and Northern Ireland. In terms of investment activity, Germany is worth mention. Until recently, Spain recorded a high number of PPP projects completed and planned in the area of transport infrastructure. The projects completed in this country included, among other things: M45 motorway in Madrid, paid Toledo-Madrid motorway and a motorway around Alicante, a paid Ibiza-San Antonio road, construction of many road sections, continuation of motorway-building projects, investments in high-speed rail, a suburban railway line and construction and maintenance of an underground in Malaga. While in 2010 Spain was leading in the European PPP market, in 2013 it occupied only sixth place. Already in 2011, it was replaced by France, and in 2013 the second position - after Great Britain - was taken by Italy (4.4 bln Euro), followed by Holland in fourth position.

The figures below present the total number (Figure 4) and value (Figure 5) of PPP projects implemented in the different sectors in Europe in 2007-2016.

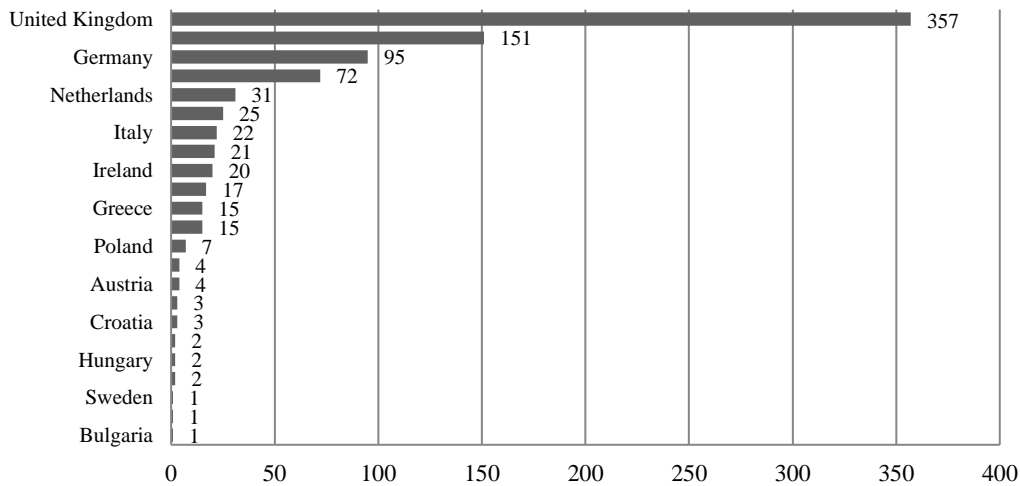


Figure 3. Distribution of European PPP projects (all sectors) by country in 2007-2016

Source: Own study based on data from European PPP Expertise Centre (European Investment Bank)

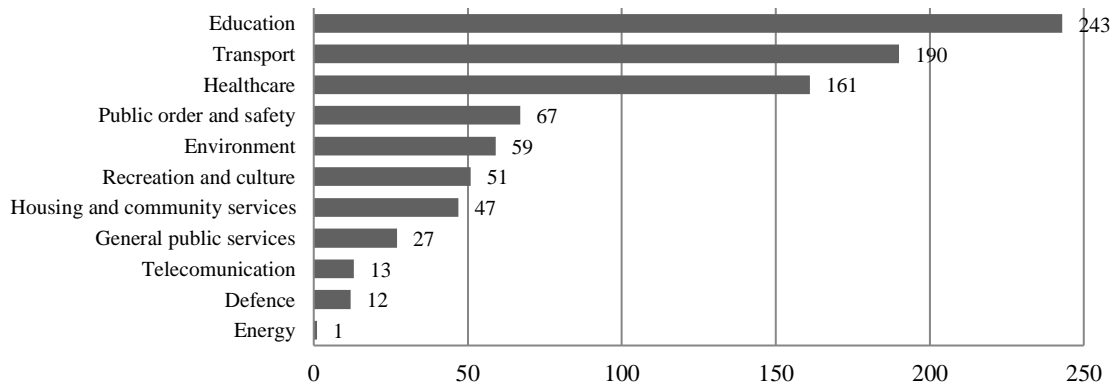


Figure 4. Total number of European PPP projects by sector (all countries) in 2007-2016

Source: Own study based on data from European PPP Expertise Centre (European Investment Bank)

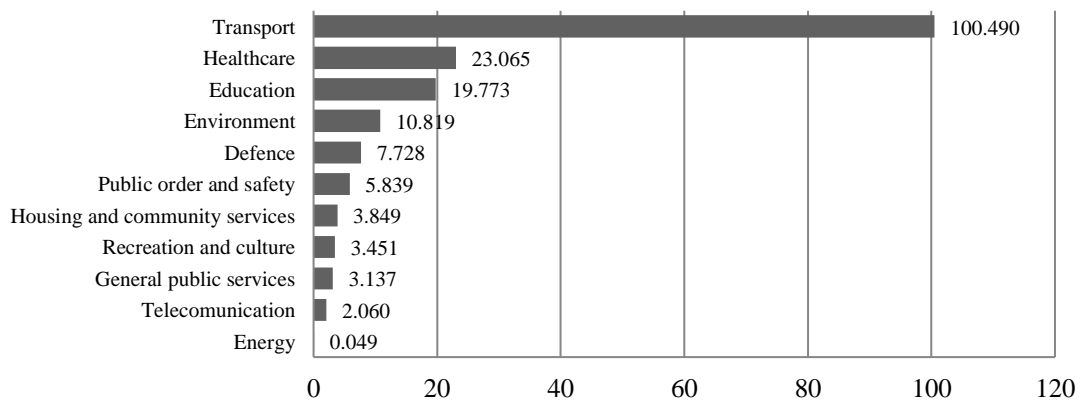


Figure 5. Total value (in EUR bn) of European PPP projects by sector (all countries) in 2007-2016

Source: Own study based on data from European PPP Expertise Centre (European Investment Bank)

In total, in all European countries PPP projects were implemented in the analysed period mainly in 3 sectors: Education, Transport and Healthcare:

- in 2007-2011: Education – 150 projects (of the total value of 13.461 bn EUR), Transport – 113 projects (54.402 bn EUR), Healthcare – 101 projects (12.491 bn EUR),
- in 2008-2016: Education – 93 projects (of the total value of 6.312 bn EUR), Transport – 77 projects (46.088 bn EUR), Healthcare – 60 projects (10.574 bn EUR).

5. Conclusion

The theoretical discussion presented in the paper indicates a widespread use of the public-private partnership framework as an instrument of modern management of public investments. This contributes to a better and more effective operation of public sector entities. Through implementation of this tool, the orientation of public organisations management may shift from focusing only on the level of public funds to competitiveness and effects.

In the analysed period, the development of public-private partnerships was undoubtedly affected by the economic and political situation in the different European countries. The period of economic growth encouraged investments, while the recession and economic crisis made the private sector reluctant to bear investment risk, with increasing shortage of financial resources in the public sector. Neither British nor German PPP market (i.e. leaders in PPP) has had only successes. Each of these countries has undergone a quite long phase of searching and acting on a trial-and-error basis.

In 2007-2016, undoubtedly there was a broader recognition that the public sector alone is unable to meet social needs and expectations in the area of public services and development of modern infrastructure for delivery of such services. Although the price of raising capital is higher in the case of a private entity, PPP is cheaper than the traditional form of carrying out an investment. What is more, global experience shows that PPP projects are implemented faster and more efficiently compared to the traditional approach. Even more important is higher quality of services delivered by the private partner, due to private entities' better access to innovative knowledge, economies of scale and experience gained in earlier projects of similar profile. The main barrier to the development of PPP is insufficient participation of the state and lack of financial involvement of central authorities in the implementation and financing of investment projects. Experts from France, Great Britain and other countries think that political involvement of the government and an active role of local authorities are the main success determinant of PPP.

Carrying out investments in the PPP framework in Europe can be assessed as a promising model of performance of public tasks. The European Commission highlights the issue of subsidizing PPP projects from EU funds. In the case of huge infrastructure investments, support from EU funds seems necessary, especially as far as infrastructure of strategic importance is concerned (e.g. roads, railway, environmental protection). In the case of smaller projects, the main source of financing should be funds from both the public and private parties, supported by loan capital. It is also worth stressing the key role of the European Investment Bank (EIB) in financing European PPP projects. EIB has become the main instrument of the EU public sector in saving PPP financing in Europe - according to EIB estimates, in 2010 its loans accounted for 18% of the whole structure of PPP projects financing, with the total share of public loans and subsidies at 28%. However, this expansion of EIB loans was a temporary factor resulting from a special loan programme launched by this institution in the period 2008-2010. Therefore, the conditions of PPP financing in Europe are not very likely to improve in the nearest future, unless there is a breakthrough in overall financial and economic stabilisation of the Euro zone. However, we can forecast that PPP investments will play a key role in filling the infrastructure gap in Europe.

References

- Brzozowska, K. (2006). *Partnerstwo publiczno-prywatne. Przesłanki, możliwości, bariery*. Warszawa: CeDeWu.
- Bult-Spiering, M, Dewulf, G. (2008). *Strategic issues in public-private partnerships: An international perspective*. Oxford: Blackwell Publishing.
- Burke, R. Demirag, I. (2017). Risk transfer and stakeholder relationships in Public Private Partnerships, *Accounting Forum*, vol. 41, pp. 28-43.
- Cabrera, M., Suárez-Alemán, A., Trujillo, L. (2015). Public-private partnerships in Spanish ports: current status and future prospects. *Utilities Policy*, vol. 32, pp. 1-11.
- COM 327/2004. *Green Paper on Public-Private Partnerships and Community Law on Public Contracts and Concessions*, [online]. European Commission, Available: <http://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=celex%3A52004DC0327>. [2017, December 10].
- Cruz, N., Marques, R.C. (2012). Mixed companies and local governance: No man can serve two masters. *Public Administration*, vol. 90, pp. 737-758.
- Demirag, I., Dubnick, M., Khadaroo, I. (2004). A framework for examining accountability and value for money in the UK's private finance initiative, *Journal of Corporate Citizenship*, vol. 15, pp. 63-76.

- Demirag, I., Khadaroo, I., Stapleton, P., Stevenson, C. (2011). Risks and the financing of PPP: Perspectives from the financiers. *The British Accounting Review*, vol. 43, iss. 4, pp. 294-310.
- Edwards, P., Shaoul, J. (2003). Partnerships for better or worse. *Accounting Auditing and Accountability Journal*, vol. 16, iss. 3, pp. 397-421.
- EPEC (2017). [online]. Available: <http://www.eib.org/epec/>. [2017, December 29].
- Essig, M., Batran, A. (2005). Public-private partnership – Development of long term relationships in public procurement in Germany. *The 15th Annual IPSERA Conference 2005: Public Procurement*, pp. 221-231.
- Gawroński, H. (2010). *Zarządzanie strategiczne w samorządach lokalnych*. Warszawa: Oficyna WoltersKluwer business.
- Grimsey, D., Lewis, M.K. (2002). Evaluation the risk of public-private partnership for infrastructure projects. *International Journal of Project Management*, vol. 20, pp. 107-118.
- Guidelines for Successful Public Private Partnerships (2003). European Commission, Brussels, [online]. Available: ec.europa.eu/regional_policy/sources/docgener/guides/ppp_en.pdf. [2017, December 18].
- Iseki, H., Houtman, R. (2012). Evolution of progress in contractual terms: Two case Studies of recent DBFO PPP projects in North America. *Research in Transportation Economics*, vol. 36, iss. 1, pp. 73-84.
- Klijn, E.-H., Teisman, G.R. (2003). Institutional and strategic barriers to public private partnership: An analysis of Dutch cases. *Public Money and Management*, vol. 23, iss. 3, pp. 137-146.
- Korenik, D. (2015). Partnerstwo publiczno-prywatne jako metoda pozyskania rentownej realizacji usługi publicznej. *Ekonomiczne Problemy Usług* no 118, *Zeszyty Naukowe Uniwersytetu Szczecińskiego*, vol. 881, pp. 181-189.
- Korombel A. (2007). *Ryzyko w finansowaniu działalności inwestycyjnej metodą project finance*. Warszawa: Difin.
- Łakomy, M. (2012). Istota i rozwój rynku partnerstwa publiczno-prywatnego w Polsce, In B. Kryk, B. Czerniachowicz (Eds.) *Makro- i mikroekonomiczne zagadnienia gospodarowania, finansowania, zarządzania*, Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania nr 30, Szczecin: Wydawnictwo Naukowe Uniwersytetu Szczecińskiego.
- Ławińska, O., Wolniakowska, K. (2014). Rozwój partnerstwa publiczno-prywatnego w Polsce ze szczególnym uwzględnieniem inwestycji infrastrukturalnych. In M. Sipa, K. Wolniakowska (Eds.), *Zarządzanie współczesną organizacją*, Sekcja Wydawnictw Wydziału Zarządzania Politechniki Częstochowskiej, Częstochowa, pp. 91-103.
- Marques, R.C., Berg, S. (2011). Risks, contracts, and private-sector participation in infrastructure. *Journal of Construction Engineering and Management*, vol. 137, iss. 11, pp. 925-932.
- Marra, A. (2006). Mixed Public-private Enterprises in Europe: Economic Theory and Empirical Analysis of Italian Water Utilities. *Bruges European Economic Research Papers*, vol. 4, pp. 1-36.
- Mikołajczyk, D.P. (2010). Teoretyczne aspekty partnerstwa publiczno-prywatnego – zalety, wady, bariery rozwoju w Polsce oraz związek z ideą nowego zarządzania publicznego, prywatyzacji i zamówień publicznych. *Acta Universitatis Lodzensis, Folia Oeconomica*, vol. 243, pp. 109-124.
- Monteduro, F. (2014). Public-private versus public ownership and economic performance: evidence from Italian local utilities. *Journal of Management and Governance*, vol. 18, pp. 29-49.
- Okreglicka, M., Lemańska-Majdzik, A. (2016). *The ICT Adoption and the Development of Small and Medium-Sized Enterprises*, In *Lecture Notes in Management Science nr 58, 3rd International Conference on Management Innovation and Business Innovation*, Manila, Filipiny, Singapur: Singapore Management and Sports Science Institute, pp. 42-48.
- Reeves, E. (2011). The only game in town: Public private partnerships in the Irish water services sector. *The Economic and Social Review*, vol. 42, iss. 1, pp. 95-111.
- Reynaers, A. (2014). Public Values in Public Private-Partnerships. *Public Administration Review*, vol. 74, pp. 41-50.
- Reynaers, A.-M., Parrado, S. (2017). Responsive regulation in public-private partnerships: Between deterrence and persuasion. *Regulation & Governance*, vol. 11, pp. 269-281.
- Rutkowski, J. (2010). *Partnerstwo publiczno-prywatne w Polsce i jego funkcjonowanie na przykładzie wybranych projektów*. Łódź: Wyd. Uniwersytetu Łódzkiego.
- Shaoul, J. (2011). Sharing Political Authority with finance capital: The case of Britain's public private-partnerships. *Policy and Society*, vol. 30, iss. 3, pp. 209-220.
- Soukopová, J., Vaceková, G., Klimovský, D. (2017). Local waste management in the Czech Republic: Limits and merits of public-private partnership and contracting out, *Utilities Policy*, vol. 48, pp. 201-209.
- Skelcher, Ch. (2005). *Public-private partnerships and hybridity*. In E. Ferlie, L.E. Lynn, Ch. Pollitt (Eds.), *The Oxford Handbook of Public Management* (pp. 348-362). New York: Oxford University Press.
- Słodowa-Hełpa, M. (2014). Zagraniczne doświadczenia w zakresie partnerstwa publiczno-prywatnego – inspiracje i rekomendacje dla Polski. *Studia BAS*, vol. 3, iss. 39, pp. 9-50.
- Warner, M., Hebdon, R. (2001). Local Government Restructuring: Privatization and its Alternatives. *Journal of Policy Analysis and Management*, vol. 20, pp. 315-336.

Róbert Magda¹ *

Szent István University

Hungary

Norbert Bozsik²

Eszterházy Károly University

Hungary

46. ANALYSIS OF THE HUNGARIAN AGRI-FOOD TRADE WITH POLAND AFTER THE EU ACCESSION

Abstract: The goal of paper was to evaluate the competitiveness of the Hungarian agri-food products on the Polish market. The agri-food trade with Poland has increased dynamically, however, the analysis pointed out the problems of the Hungarian agri-food trade. The data came from the database of the European Commission, regarding the period between 2004 and 2016. To evaluate the competitiveness of agri-food product groups the price–quality method was chosen. Application of the two variables allowed to categorize the product groups into four segments. Unfortunately, none of the Hungarian agri-food product groups were part of the successful quality competition segment. Successful price competition segment encompassed two groups of products, that is vegetable and fruit as well as feeding stuff for animals. Five Hungarian products groups belonged to the unsuccessful quality competition segment. These are the live animals; the meat and meat preparations; the coffee, tea, cocoa, spices; the miscellaneous edible products and preparation as well as beverages. The unsuccessful price competition segment contains three groups, that is dairy products eggs; the fish, crustaceans molluscs reparation and the tobacco manufactures. In case of two product groups (cereals and cereal preparations as well as sugar, sugar preparation and honey) the competitiveness cannot be detected exactly. Governmental interventions have a key role in the enhancement of competitiveness. The governmental policies should promote the small and medium-sized Hungarian businesses to produce more quality competitive products. Besides, these businesses must be directed by highly qualified managers to be able to produce high added-value foods.

Keywords: added value, agri-food trade, competitiveness, EU market, integration.

JEL classification: F14, L66, Q17

1. Introduction

The agri-food industry is a significant economic sector of the Hungary with great traditions. Due to the favourable natural endowments the country is capable of producing food products with excellent quality valuable for the market and competitive in foreign markets (Magda, 2008). In general, the accession had a positive impact on the Hungarian agri-food sector. It resulted in a consolidation of production, higher current prices, higher export and import quantities, and especially higher farmers' incomes (Csáki, Jámor, 2009; Potori, Chimelinski, Karwat-Wozniak, 2014). Unfortunately, the financing, marketing and management problems of the Hungarian agri-food industry remained important factors of the marketability of our foods on the international markets.

The Hungarian agri-food export has increased significantly since the accession to the EU with the exception of the year 2009. This paper focused on the development of agri-food trade between Hungary and Poland since EU accession. Main goal of paper was to evaluate the competitiveness of the Hungarian agri-food products on the Polish market. The agri-food trade with Poland has increased dynamically; however, the analysis points out the problems of the Hungarian agri-food trade.

2. Literature Review

The European Union is a very important exporter and importer of agri-food products in the world (its share in global trade in food amounts to 41%), and about 72% of the value of trade of the EU agri-food sector takes place as part of intra-EU trade (Figiel et. al., 2014). Hungary's joining to the

¹ Assoc. Prof. Róbert Magda; H-2100 Gödöllő, Páter Károly út 1, Hungary, Magda.Robert@gtk.szie.hu

² College Prof. Norbert Bozsik; H-3200 Gyöngyös, Mátrai Út 36, Hungary, bozsik.norbert@uni-eszterhazy.hu

* Corresponding author

European Union has brought a lot of advantages. In the case of foreign agricultural trade the possibility of expansion has opened after the integration, and so would be able to build and stabilise new trading relations (Vásáry, Vasa, 2015). Besides, the mutual links among the Visegrad four countries represent an important part of each country's economy. Regardless of their EU membership, individual Visegrad countries are important partners for each other in all areas of their economy (Svatos, Smutka, 2014). The 2004 accession significantly reduced the barriers to bilateral trade with the old EU Member States. On the other hand, the EU membership itself allowed the free movement of goods within the new Member States (Vásáry, Kránitz, Baranyai, 2012; Constantinovits, Sipos, 2016).

After Poland's accession to the EU it turned out that the threats were lesser than it had been previously estimated and that Polish food producers take good advantage of the opportunities that have emerged as the result of the opening of the large and wealthy European market for food. This sector was well prepared to operate on the common market (Juchniewicz, 2017). The most analyses proved that in the period 2004-2016 national producers of the certain assortment operated efficiently on markets of other EU Member States (Braja, Sawicka, 2017). Since 2003, Poland has transformed from a net importer to an important net exporter of food products. (Bulkowska, 2012) The agri-food products are one of few commodities that maintained a positive trade balance and agri-food import products for the Polish market is also increasing, although not in such rate like the export (Ambroziak, Bułkowska, Szczepaniak, 2014; Grzelak, Roszko-Wójtowicz, 2015; Miszczyk et al., 2015; Firlej, Kowalska, Piwowar, 2017).

3. Material and Methods

The data of analysis come from the database of the European Commission (in COMEXT system) regarding the period between 2004 and 2016. Trade flows are aggregated according to the products (main groups of SITC classification) and according to the partners (Hungary, Poland). In our survey "agri-food" refers to food and live animals; beverages and tobacco (SITC 0 and 1).

The term competitiveness is commonly used in the economic research and also in public debate. Competitiveness can be defined as the ability to face competition and to be successful. Competitiveness would then be the ability to sell products that meet demand requirements (price, quality, quantity) and, ensure profits over time that enable the firm to thrive. Competitiveness is a relative measure. It is, however, a broad concept and there is no agreement on how to define it, nor how to measure it precisely. (Latruffe, 2010).

The competitiveness of estimation results show that the connection between quality and agri-food export performance clearly depends on the product category and country (but not on the period) and differs, but not in all cases, according to the export destination. (Fischer, 2007)

To evaluate the competitive positions of Hungarian agri-food product groups on Polish market we chose the price-quality method. This concept was developed by Aiginger (1997, 1998) to evaluate whether the external performance of a given country depends on price competitiveness or non-price competitiveness. Bojnec and Fertó (2008) combined export-to-import unit values and trade balance by product for assessing price competition and product quality in trade. Application of the two variables allows us to categorize the product groups into four segments:

- Category 1 - Unsuccessful quality competition. Trade deficit is achieved at higher export price than import price.
- Category 2 - Successful quality competition. Trade surplus is achieved at higher export price than import price.
- Category 3 - Unsuccessful price competition. Trade deficit is achieved at lower export price than import price.
- Category 4 - Successful price competition. Trade surplus is achieved at lower export price than import price. The essence of the method is shown in Table 1.

Table 1. Competitiveness matrix

Relation between export unit value and import unit value	Trade balance	
	$X_j < M_j$ (trade deficit)	$X_j > M_j$ (trade surplus)
$UV^x > UV^m$	unsuccessful quality competition (1)	successful quality competition (2)
$UV^x < UV^m$	unsuccessful price competition (3)	successful price competition (4)

* X_j means export of a given group; M_j means import a given group; the UV^x is the export unit value; the UV^m is the import unit value.

Source: Own elaboration based on Poór, 2010

It should be noticed that the term „quality” does not mean quality in technological terms, but in economic term as higher price is assumed to reflect higher quality.

4. Results and Discussion

The Hungarian agri-food export has increased significantly since the accession to the EU with the exception of the year 2009. While the value of Hungarian agri-food export was 2.7 billion euro in 2004, Figure 1 shows an increase to 6.6 billion euro by 2016. However, the dynamism of the growth rate weakened in 2012 and it has been stagnating ever since. A similar trend can be seen on the import side. The import of agri-food products has been also increasing, in such rate like the export. In the year of the EU accession the value of Hungarian agri-food import was 1.8 billion euro then it increased almost two and a half times and in 2016 it amounted to 4.6 billion euro. On this basis the entire agri-food trade balance rose from 880 million euro (2004) to 2.05 billion euro (2016). Another important fact is that 84% of the agri-food trade are now completed in the European Union (Figure 1.)

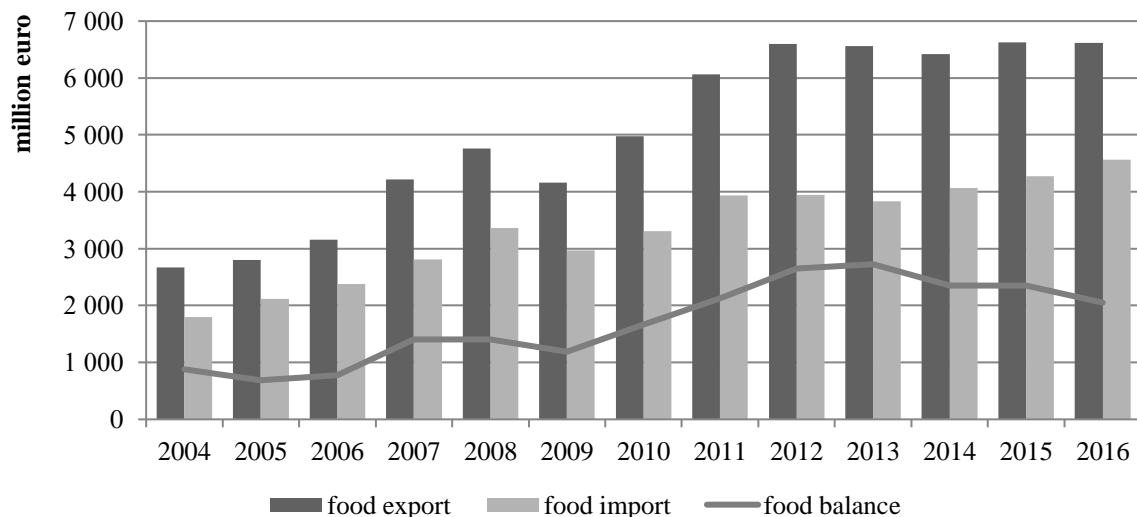


Figure 1. The development of Hungary's foreign trade in food (2004-2016)

Source: Own edition on the basis of Eurostat data, 2017

Hungary was one of the countries that could maintain a positive balance of foreign trade throughout the whole period (Rajcániová, 2012). However, agricultural trade with the EU grew much more dynamically than Hungary's total trade with the EU or the total agricultural trade of Hungary (Hegedűs, Kiss, 2014).

The export of agri-food goods is dominated by a small number of products, the import is concentrated to a lesser extent. The 80% of the agricultural export and the two-third of the import is based on 10-10 commodity groups. The five greatest commodity groups –cereals, meats, animal fodders, vegetable oils as well as vegetable and fruit products – contributed by 51 percent to the total agricultural export. The five commodity products with the greatest import values – meats, edible

preparations, dairy products, eggs and honey as well as oilseeds – represented 40 percent of the total agricultural import in 2014 (Varga, Kruppa, 2015).

4.1. The Development of Hungary’s Agri-food Trade with the Poland

After the accession the Hungarian agricultural trade increasingly shifted towards the European Union but our EU membership had no significant impact on the product structure (Jámbor, Vásáry, 2014). Poland is the sixth most important Hungarian agri-food export market, but export growth came almost solely from the increase of the market size (Juhász, Wagner, 2013). Hungarian agri-food export to Poland increased 2.3 times (from 118 million euro to 270 million euro) from 2004 to 2016. This corresponds to the average of the total exports. A serious problem is that we can export the same value of food to Poland (38.4 million people) as to the Czech Republic (10.5 million people) while the population of the former is almost four times larger. Hungary’s food import also showed a dynamic and – as opposed to the export – balanced growth between 2004 and 2016. The Hungarian food import from Poland more than tripled (from 169 million euro to €550 million euro) during this period! The Hungarian agri-food trade deficit with Poland has been increasing in the post-accession period and it reached 280 million euro in 2016 (Figure 2.)

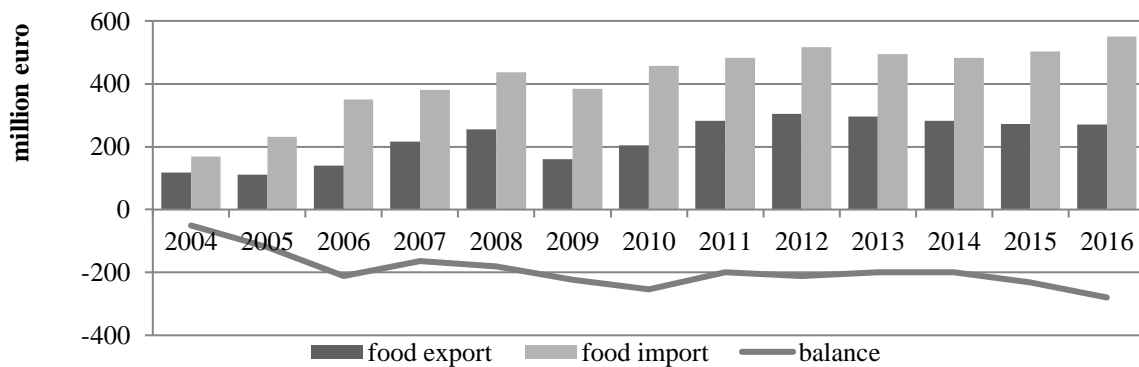


Figure 2. Hungary’s foreign trade of agri-food with Poland (2004-2016)

Source: Own edition on the basis of Eurostat data, 2017

Poland's share in the Hungarian-EU food exports ranged between 5-6.4% recently which makes Poland our sixth most important export market in the EU. Hungary’s most important export items are the vegetable and fruit product group (59 million euro), which provides near to a quarter (21.8%) of the total food exports on the Polish market. The other significant export groups are feeding stuff for animals (44 million euro) and the group of miscellaneous edible products and preparation (32 million euro).

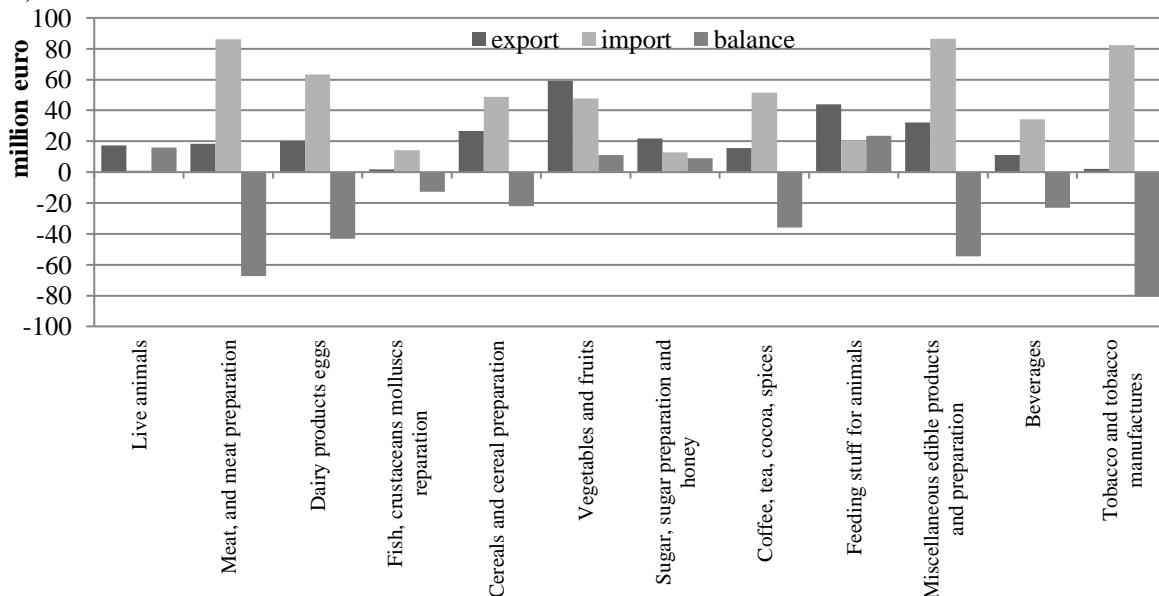


Figure 3. The state of agri-food trade between Hungary and Poland by product groups (2016)

Source: Own edition on the basis of Eurostat data, 2017

As for the import it can be stated that Poland's share in the Hungarian agri-food import is very high, approximately 12.6 percent. In respect of imports the most important items are miscellaneous edible products and preparation (87 million euro); meat and meat preparation (86 million euro); tobacco and tobacco products (82 million euro); and milk, dairy products, and eggs (63 million euro). (Figure 3.)

The balance trade of feeding stuff for animals (+23.4 million euro) and group of vegetable and fruit (+11.2 million euro) with Poland highly positive. Although the Hungarian live animal trade with Poland shows a significant surplus (+16.0 million euro), but the deficit amounted to 67.5 million euro in the case of meat and meat products in 2016. The balance is also similarly negative in the case of milk, dairy products, eggs (-43.2 million euro), cereals and cereal preparations (-22.2 million euro); coffee, tea, cocoa (-35.8 million euro), and the miscellaneous edible products and preparation (-54.5 million euro). Nevertheless, the greatest difference can be detected in the balance of foreign trade of tobacco and tobacco products because our export amounts to only 1.9 million euro compared to 82.4 million euro of import!

4.2. Evaluation of Competitiveness

We can state that only a few Hungarian agri-food product groups were competitive on the market of Poland. Unfortunately, none of the Hungarian agri-food product groups were part of the successful quality competition segment (2) on the Polish market. It means that export quantities of products did not exceed the import quantities despite higher unit values in exports than in imports.

Successful price competition segment (4) encompassed two groups of products, that is vegetable and fruit as well as feeding stuff for animals. It means that the Hungarian positive trade balance is achieved with lower export price than import price.

Five Hungarian products groups belonged to the unsuccessful quality competition segment (1). These are the live animals; the meat and meat preparations; the coffee, tea, cocoa, spices; the miscellaneous edible products and preparation as well as beverages. These groups showed negative trade deficit with higher unit values in exports than in imports.

The unsuccessful price competition segment (3) contains three groups of products, that is dairy products eggs; the fish, crustaceans molluscs reparation and the tobacco manufactures. In this case the Hungarian negative agri-food trade balance is achieved with lower export price than import price (Table 2).

Table 2. Competitiveness matrix of the Hungarian agri-food products on the market of Poland in 2004-2016

HS	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
00	1	1	1	1	1	1	1	1	1	1	1	1	4
01	1	1	3	1	1	1	1	1	1	1	1	1	1
02	1	3	3	3	3	1	3	3	3	3	3	3	3
03	3	3	3	3	3	1	3	3	3	3	3	3	3
04	3	3	3	4	4	4	4	4	4	4	3	3	3
05	4	4	3	4	4	4	4	4	4	4	4	4	4
06	1	1	1	1	1	3	4	4	4	4	4	4	4
07	1	1	1	1	1	1	3	1	1	1	1	1	1
08	4	4	4	2	4	4	4	2	4	4	4	4	4
09	1	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	1	1
12	3	3	3	3	3	3	3	1	3	3	3	3	3

00 Live animals, 01 Meat, and meat preparation, 02 Dairy products eggs, 03 Fish, crustaceans molluscs reparation, 04 Cereals and cereal preparation, 05 Vegetable and fruit, 06 Sugar, sugar preparation and honey, 07 Coffee, tea, cocoa, spices, 08 Feeding stuff for animals, 09 Miscellaneous edible products and preparation, 11 Beverages, 12 Tobacco and tobacco manufactures

Source: Own calculation based on European Commission COMEXT database

In case of two product groups the competitiveness exactly can not be detected. The group of cereals and cereal preparations showed an unsuccessful price competitive picture at the beginning of the examined period (2004-2006) and during the last three years (2014-2016). From 2007 to 2013 the cereals and cereal preparations proved to be successful price competitive, due to the trade surplus. The

position of sugar, sugar preparation and honey products moved from unsuccessful quality competitive segment to successful price competitive segment. Nowadays, we can realize trade surplus at lower export price than import price.

This paper contributes to the field of agri-food international trade, because we could detect the competitiveness of the Hungarian agri-food products with Poland on the basis of the quality and price method. The results differ from other studies because we evaluated the competitiveness of the Hungarian agri-foods on the Polish market not by indices (e.g. RXA, RCA, RMA etc.) or models (e.g. CMS) but by price–quality method.

5. Conclusion

The Hungarian food trade have increased significantly since the accession to the EU. The agri-food export to Poland increased 2.3 times, the import more than tripled during this period. A serious problem is that we can export the same value of food to Poland as to the Czech Republic while the population of the former is almost four times larger. The Hungarian agri-food trade deficit with Poland has been increasing in the post-accession period and it reached 280 million euro in 2016. Poland's share in the Hungarian-EU food exports ranged between 5-6.4% recently which makes Poland our sixth most important export market in the EU. Poland's share in the Hungarian agri-food import is very high, approximately 12.6 percent.

Hungary's most important export items are the vegetable and fruit product group, feeding stuff for animals as well as the group of miscellaneous edible products and preparation on the market of Poland. In respect of imports the proportion of miscellaneous edible products and preparation; meat and meat preparation; tobacco and tobacco products; milk, dairy products, and eggs are significant.

To evaluate the competitive positions of Hungarian agri-food product groups on Polish market we chose the price–quality method. We can state that only a few Hungarian agri-food product groups were competitive on the market of Poland. Unfortunately, none of the Hungarian agri-food product groups were part of the successful quality competition segment. Successful price competition segment encompassed two groups of products, that is vegetable and fruit as well as feeding stuff for animals. Five Hungarian products groups belonged to the unsuccessful quality competition segment. These are the live animals; the meat and meat preparations; the coffee, tea, cocoa, spices; the miscellaneous edible products and preparation as well as beverages. The unsuccessful price competition segment contains three groups of products, that is dairy products eggs; the fish, crustaceans molluscs preparation and the tobacco manufactures. In case of two product groups (cereals and cereal preparations as well as sugar, sugar preparation and honey) the competitiveness can not be detected exactly.

Limitation of the study is that the exchange rate of the two countries was not taken into consideration. The exchange rate was an exogenous factor. However, the undervaluation or overvaluation of a currency significantly influences the value of trade and the external competitiveness.

Analysing the agri-food trade between Hungary and Poland since EU accession we can conclude that there is a lot to do to improve the competitiveness of Hungarian agri-foods. The trade with Poland highlights a problem that concerning different product groups the proportion of raw materials in our food export is high, while we import agri-food products of high added-value. We create jobs abroad, not at home. The export should be improved by producing own-brand food products with high added value. Governmental interventions (e.g. in improving the labour market situation of the sector) have a key role in the enhancement of competitiveness. The governmental policies should promote the small and medium-sized Hungarian businesses to produce more quality competitive products. Besides, these businesses must be directed by highly qualified managers to be able to produce high added-value foods. In food businesses, management processes should be implemented, which will help improve efficiency and product quality.

References

- Aiginger, K. (1997). The use of unit values to discriminate between price and quality competition. *Cambridge Journal of Economics*, vol. 21, pp. 571-592.
- Aiginger, K. (1998). A framework for evaluating the dynamic competitiveness of countries. *Structural Change and Economic Dynamics. Austrian Institute of Economic Research and University of Linz*, vol. 9, iss. 2, pp. 159-188.

- Ambroziak, Ł., Bułkowska, M., Szczepaniak, I. (2014). *Assessment of the competitiveness of Polish food producers in the European Union*, [online]. Available: <https://ageconsearch.umn.edu/record/206065/files/PW%20126.1.pdf>. [2017, November 13].
- Bojnc, S., Fertő, I. (2008). Price Competition vs. Quality Competition: The Role of One-Way Trade. *Acta Oeconomica*, vol. 58, iss.1, pp. 61-89.
- Braja, M., Sawicka, J. (2017). Competitive advantages of Polish food producers on the European Union market in the post-accession period. *Acta Scientiarum Polonorum. Oeconomia*, vol. 16, iss. 2, pp. 37-48.
- Bulkowska, M. (2012). Poland's status in the European Union trade in agri-food products. Proceedings of „*Global Commodity Markets: New Challenges and the Role of Policy.*” pp. 171-176. Nitra.
- Constantinovits, M., Sipos, Z. (2016). *Nemzetközi üzleti technikák*. Budapest: Akadémiai kiadó.
- Csáki, Cs., Jámbor, A. (2009). *The Diversity of Effects of EU Membership on Agriculture in New Member States*. Policy Studies on Rural Transition No. 2009-4. FAO Regional Office for Europe and Central Asia, [online]. Available: <http://www.fao.org/docrep/017/aq336e/aq336e.pdf> [2017, November 13].
- Figiel, Sz., Hamulczuk, M., Klimkowski, C., Kufel, J. (2014). *Potential Trade Implications of Joining the Euro Zone for the Polish Agro-food Sector*, [online]. Available: http://ageconsearch.umn.edu/bitstream/182836/2/14th_EAAE_Congress_Poster_Paper-828.pdf. [2017, November 13].
- Firlej, K., Kowalska, A., Piwowar, A. (2017). Competitiveness and innovation of the Polish food industry. *Agricultural Economics - Czech*. vol. 63, iss. 11, pp. 502-509.
- Fischer, C. (2007). Food quality and product export performance. An empirical investigation of the EU situation. *EAAE Seminar 'International Marketing and International Trade of Quality Food Products'*, Bologna.
- Grzelak, M.M., Roszko-Wójtowicz, E. (2015). Development of Polish Foreign Trade in Agri-food Products After Poland's Accession to the EU. *Acta Scientiarum Polonorum Oeconomia*, vol. 14, iss. 4, pp. 37-48.
- Hegedűs, Zs., - Kiss, J. (2014). The impact of ten years of European Union membership on Hungarian agricultural trade. *Studies in Agricultural Economics*, vol. 116, iss. 2, pp. 87-94.
- Jámbor, A., Vásáry, M. (2014). A magyar agrárkereskedelem tíz évvel a csatlakozás után. *Gazdálkodás*, vol. 58, iss. 3, pp. 237-246.
- Juchniewicz, M. (2017). Food producers' competitiveness gap in Poland on the European Union market. *Acta Scientiarum Polonorum. Oeconomia*, vol. 16, iss. 2, pp. 65-77.
- Juhász, A., Wagner, H. (2013). An analysis of Hungarian agri-food export competitiveness. *Studies in Agricultural Economics*, 11, pp. 150-156.
- Latruffe, L. (2010). Competitiveness, Productivity and Efficiency in the Agricultural and Agri-food Sector. *OECD Food, Agriculture and Fisheries Papers No. 30*. France.
- Magda, R. (2008). *A magyarországi természeti erőforrások gazdaságtana és hasznosítása*. Mezőgazda Kiadó. Budapest.
- Miszczyk, K., Rutkowski, J., Staśkiewicz, R., Walczak, M. (2015). *Poland 2015 on Foreign Trade*, [online]. Available: <https://www.mr.gov.pl/media/15721/ROHZ2015.pdf>. [2017, November 13].
- Poór, J. (2010). *Érték- és alapú módszerek a külkereskedelmi versenyképesség mérésében a magyar hústermékek külkereskedelmének példáján*. Doctoral thesis. Keszthely: Pannon University.
- Potori, N., Chimelinski, P., Karwat-Wozniak, B. (2014). A comparison of the agri-food sectors in Poland and Hungary from a macro perspective. In Potori, N., Chimelinski P., Fieldsend A. (2014): *Structural changes in Polish and Hungarian agriculture since EU accession: lessons learned and implications for the design of future agricultural policies*. (pp. 9-23). Budapest: Research Institute of Agricultural Economics.
- Rajcániová, M. (2012), V4 Food Trade and Market Insights: from Economic Theory to Consumer's Reality. In Horska E. et al. (2012). *Food Sciences and Business Studies. Global – Regional – Local Approach*. Nitra. Slovak University of Agriculture in Nitra.
- Svatos, M., Smutka, I. (2014). Visegrad countries – agrarian foreign trade development in relation to their total merchandise trade performance. *Scientific Journal Warsaw University of Life Sciences – SGGW Problems of World Agriculture* volume 14 (XXIX), number 4, pp. 158-172.
- Varga, É., Kruppa, B. (2015). *Agricultural Trade of Hungary in 2014*. vol. XVIII., iss. 3, Research Institute of Agricultural Economics, pp. 3-7.
- Vásáry, M., Kránitz, L., Baranyai, Zs. (2012). Versenyképesség a Visegrádi országok agrárkereskedelmében. *Proceedings of 54th Georgikon Scientific Conference 2012*. pp. 531-540. Keszthely: Pannon. University.
- Vásáry, M., Vasa, L. (2015). Agrárkereskedelmi eredmények a tízéves uniós tagság fényében. *Külügyi Szemle*, vol. 14, iss. 1, pp. 117-140.

Iryna Manaienko¹ *

National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"
Ukraine

Olga Ławińska²

Czestochowa University of Technology
Poland

47. DEFINITION AND FACTORS OF INFLUENCE ON THE EXPORT POTENTIAL OF THE ENTERPRISE

Abstract: The major objective of this research was the evaluation and characteristics of the basic assumptions of the concept about export potential of the enterprise, and improvement of the theoretical provisions of export potential. The article examined different approaches to the definition of the concept of „export potential“ – resource, production, reproductive, systemic. The groups of factors influencing the formation of the export potential of the enterprise are presented. There were a group of factors that affect the export potential of the enterprise, enabling highlight different conditions of formation and realization of potential. The paper used a method of system analysis, thematic synthesis and comparing the information obtained, morphological analysis, generalization. The main results of research was the generalization of different approaches to the interpretation of the concept of export potential of the enterprise and the differentiation of factors of influence on the enterprise, which is oriented on the international market. The conclusions indicate the complexity and systematic nature of the category «export potential of the enterprise». Further research on those issues can be directed to development of practical recommendations for strengthening the export potential of Ukrainian enterprises that cooperate with European business partners.

Keywords: economic potential, enterprise, external market, factors, resources.

JEL Classification: F23, L20, M21

1. Introduction

A key factor of economic growth of the state is its export potential. The export orientation of the economy increased business opportunities in international business environment. The ability of industrial enterprises export their products regarded as an important measure of competitive success on the domestic and foreign markets. The basis of the export potential is resource-raw materials economy and providing scientific, technological, industrial, social and cultural development that achieves sustainable growth rate of export production and high standard of living, taking into account market conditions. Since the export potential is a key aspect for the development of an exit strategy on the external market, the factors that affect its development indirectly determine the procedure for the formation of an exit strategy on the external market and the level of representativeness.

The ability of an industrial company to export a part of their goods is considered an important measure of competitive success in the domestic and foreign markets. For successful operation of an enterprise it is necessary to have a precise idea of its possibilities of managing the market, that is, a prerequisite for the exit of the company to the foreign market is a thorough analysis of its export potential.

These positions allow us to confirm the relevance of the research topic. The development of theoretical aspects of the essence of the export potential of the enterprise will strengthen the basis for the development of scientific and practical principles of the exit of enterprises into new markets.

¹ Iryna Manaienko Ph.D.; Kyiv, 03056, Solomenskiy district, ave. Pobedy, 37, Ukraine; verholiad@ukr.net, tel.: +38-067-301-44-14.

² Olga Ławińska Ph.D.; Al. Armii Krajowej 36b, 42-200 Częstochowa, Poland, olawinska@op.pl

* Corresponding author

The major objective of this research is the evaluation and characteristics of the basic assumptions of the concept about export potential of the enterprise, and improvement of the theoretical provisions of export potential.

2. The Research Subject and Research Methodology

The importance of our research project is underscored by the timeliness of the topic for exploration. Scientific and practical problems related to the development of the export potential of the enterprise and the ways of their solution are reflected in the work of domestic and foreign scientists. However, the scientific and methodological approach to the development of export potential of enterprises remains at the stage of formation. An important area of research is the scientific substantiation of the essence of the investigated category from the standpoint of various scientific and methodological approaches, factors of its development in the process of implementation of the enterprise of foreign economic activity. The aforementioned questions did not find a definitive solution in the work of isolated scientists, which determines the relevance of the topic of the study, its practical significance.

The research subject is the scientific methodological approaches and principles of functioning of the export potential of the enterprise.

The research methodology includes: the desk review, system analysis, morphological analysis, comparison, generalization. The results of the study, conclusions and recommendations have been grounded based on the integrated approach. To present the given topic, available literature, as well as internet sources have been used.

In the paper, literature review method, as well as comparative analysis were employed. The article is theoretical in character, based on relevant international literature. Research papers considered for inclusion in this literature review are: written in English, Polish, Ukrainian from peer-reviewed journals or monographs, and accessible through electronic management databases.

The analytical information on the rating of Ukraine in The Enabling Trade Index was taken from the official website of the rating agency. The Global Enabling Trade Report (2016) is a joint publication by the World Economic Forum and the Global Alliance for Trade Facilitation.

3. Literature Review

Some Polish researchers argue that the company should take into account the development of the theory of knowledge economy. This is also true for the foreign-oriented enterprise. The economy based on the knowledge puts new challenges to the enterprises in the effective and efficient development of organizational learning processes (Bitkowska, 2016; Korombel, 2013). It is quite logical that the development of export potential should take into consider the provisions of the theory of knowledge economy.

According to the scientific findings of some Ukrainian scientists, the export potential affects of the international brand of the country. One of the key components of a national brand are exports (the impression of residents of different countries on the products that they buy or avoid buying) (Okhrimenko, 2015).

An important role in the development of export potential is the country's entry into integration groups. Different levels of integration stimulate or restrict export development. For example, the European Union has often opted for economic policy instruments – developmental aid, regional cooperation, trade agreements – to pursue foreign policy goals in its close vicinity and globally (Manoli, 2013). The development of exports is significantly influenced by trade agreements between the countries of integrational entities. Some European scholars are investigating these issues (Soete, Hove, 2017). While free trade agreements strongly increase import competition in the European Union market, their effect on European exports is much more complex.

The development of an enterprise that exports products is impossible without taking into account the innovation activity (Ivanová, Kordoš, 2017). This is especially true for small and medium enterprises. These businesses are very dependent on world trends. Therefore, they must be innovative. This will help strengthen their export opportunities.

The functioning of the export potential of an enterprise depends on many factors. Among these factors is the development of foreign investment. Foreign investment can intensify the process of entering an enterprise into new markets, consolidating its position in existing markets. Scientific works of some scholars (Melnyk, Kubatko, Pysarenko, 2014) are devoted to the topic of foreign

investment and its impact on the growth of the economies of the countries, including the strengthening of their export opportunities. This is especially true of transition economies.

Export stimulation stems from a variety of factors, and may vary according to time, spatial, and industry contexts. There are certain motives that constantly play a key role in encouraging smaller firms to export, such as the desire to achieve extra sales, profits, and growth, utilise better idle production capacity, exploit a unique or patented product, avoid the threats of a saturated domestic market, reduce home market dependence, and respond to unsolicited orders from abroad. There are numerous other stimulating factors, but these should not be underestimated because their role may increase under certain conditions or become complementary to export stimuli with a stronger impact (Leonidou et al., 2007; Branch, 1990).

There is a dispute in the literature regarding the effectiveness of supporting the export potential of enterprises by the state. Some authors agree that state export promotion expenditures have no significant effect on the probability of exporting (Bernard, Jensen, 2006). Especially in developing countries a lot of economists have tried to answer the question: how can economic policy contribute to a strong export performance by small and medium enterprises (SMEs) in developing countries? Many activists governments and non-governmental institutions have been practicing SME export-supporting interventions of different types but with extremely little in the way of evaluation of their effectiveness. In many countries where potentially interesting support programs for SME sector exporters have been introduced, their effects may well have been swamped by the continuing legacy of regulations and practices which discriminate against the SME sector in many ways, as in the tax system, access of foreign exchange, access to credit, inappropriate monetary and fiscal policies, and the general weight of red-tape (Levy, Berry, Nugent, 1999, pp. 1-2; Ławińska, 2009).

4. Results and Discussion

In today's conditions of formation and development of the international environment, its serious aspects are the progressive internationalization and globalization of the world economy. Organizational and economic barriers to the movement of goods and resources are reduced, or their impact on the formation of costs for the movement of goods and resources is greatly reduced due to the international division of labor, the results of technical progress and the development of information and communication technologies. One of the important factors in the country's economic growth is its export potential.

There are two development directions of export potential in modern economic situation. The first direction is connected with the increase of sales volume, expansion of the geographic and product boundaries, prevention of customers' claims, which is performed within a systematic approach to the planning of business processes in the organization. The second direction is based on the identification and integration of the elements of unrealized export potential through the development of individual projects. The export potential of the enterprise is determined by a number of components that characterize the diversification of its operation. Therefore, first of all, it is necessary to analyze the concept of «export potential» from the standpoint of alternative scientific and methodological approaches (resource, production and marketing, reproductive, systemic and potential) (Table 1).

According to the Law of Ukraine „On Foreign Economic Activity“ (1991), the export of goods is the sale of goods by Ukrainian subjects of foreign economic activity to foreign business entities with the export or non-export of these goods through the customs border of Ukraine, including the re-export of goods. The export orientation of the economy increases business opportunities of enterprises in the international environment. Stechenko (2002) and Lytvyn (2016) considers that export potential is the volume of blessings, which a national economy can produce and realize after the limits, and also its ability, to reproduce the competitive edges on the world economy scene.

On the basis of the considered definitions of the studied category from the standpoint of various scientific and methodological approaches, it came to the conclusion that the definition of the concept of „export potential“ is ambiguous in nature and differs within each approach. However, it should be noted that a wide range of scientific and methodological approaches should be grouped into several categories based on the definition of the subject of „export potential“ .

The basis of export potential is the resource and raw material base and the state of the economy, which provide scientific, technological, industrial, social and cultural development. This allows to achieve stable growth rates of export production and a high standard of living of the population, taking

into account market conditions. Export potential is a key aspect for developing a strategy for the company to enter the external market. Factors influencing its development indirectly determine the procedure for forming the strategy of the company's exit to the external market and the level of representativeness of the enterprise on it. Given this, one of the prerequisites for choosing and forming an export strategy for the development of the export potential of the enterprise is to study and study the factors that influence its formation.

Table 1. Definition of the concept of “export potential”

Authors	Definition of the concept of «export potential»	Assessment of the criterion
1	2	3
Resource approach		
Avdeenko, V. N., Kotlov, V. A. (1989)	aggregate of resources available for use in production activities.	Export potential as resources
Stakhorsky, O. O. (2010)	aggregate of resources exported by Ukrainian subjects of foreign economic activity to foreign entities.	
Production approach		
Azrilyan, A. N. (1994)	the ability of industry, of the entire social production of this country to produce, as a whole, the required quantity of competitive goods for the external market.	Export potential as production and sales
Matalka, S. M. (2011)	integral representation of the possibilities of the subject of economic activity to transform input resources into economic good and, thus, maximally satisfy economic and social interests.	
Reproductive Approach		
Shvettsova, M. B. (2010)	is that part of the economic potential of an enterprise, which, in case of efficient use of resources of the region, the country, is able to reproduce the competitive advantages of the enterprise in the foreign market and provide profit.	Export potential as a reproduction of competitive advantages
Pepa, T. V. (2001)	the ability of the economy to reproduce its competitive advantages in the global economic arena.	
System approach		
Bestuzheva, S.V. (2003)	reflects the real system of internal and transborder relations, the interaction of which determines the vital activity of the enterprise as a subject of foreign economic activity.	Export potential as a system of relations
Episkkina, O. V. (2007)	complex dynamic economic system of available and potential aggregate opportunities of individual formations (production, infrastructure, government bodies).	

Source: Compiled by the author

There is a certain group of factors that influence the export potential of the enterprise, which make it possible to distinguish between different conditions for the formation and realization of this potential. Economic conditions include: system of limitations on the quantitative volume of extraction of export raw materials; investment and innovation climates in the region; development of consulting and marketing companies; system of interaction between enterprises, research and development organizations, etc.

Political and legal conditions include: existing international cooperation agreements; the presence or absence of protectionist measures in the importing country; legal regulation of export activity, taking into account export quotas, various privileges to exporters-producers.

Socio-cultural conditions include (Chernysh, Pyrozhkova, 2015): age and qualification structures of the population of the region; level of labor culture of workers; degree of knowledge of modern information technologies; foreign language proficiency, staff mobility. Specifications include: level of development of market infrastructure of the region; level of use of modern means of communication; availability of research institutes.

The natural and climatic conditions include: geographical location of the region; provision of natural resources; characteristic of climatic conditions.

Dunskaya (2013) considers such the most important factors in the development of export potential: organization of enterprise management; information provision of foreign economic activity; planning of export production; accounting and analysis of export supplies; personnel management.

Depending on the conditions for the formation of export potential directly to its structuring is influenced by a range of factors, which are indicated in Table 2. The nature of the impact of each factor depends on the environment and specifics of the enterprise. The sectoral and territorial affiliation of the enterprise also has a special influence.

Table 2. Characteristics of the factors affecting the export potential

Factors affecting export potential 1	Characteristics of factors 2
Inside	Influence on export potential takes place directly in the middle of the enterprise.
Exterior	Impact on export potential from outside.
Controlled	Those directly affiliated with the enterprise are its own organizational structures, financial, production, economic services, logistics, sales, advertising.
Uncontrolled	Political, social, economic, international, technological, market, competitive.
Quantitative	Ability to assess the state of export potential
Qualitative	Use of expert methods.
Scientific and technical	Innovations in the field of product creation. Innovations in technology. Innovation in management. Innovation in marketing.
Investment type	The ability to invest in profitable projects.

Source: Based on own compilation

The research of the development of export potential helps to identify the key factors which ensure effective realization. The impact of these factors has the cause-and-effect relation. These factors include: competitiveness of goods, the possibility to produce export assortment in the necessary volume, the quality of the sales network, presence of foreign relations department in the company, nature of used communication. The cumulative effects of the selected factors influence all stages of management of the export potential of the enterprise. The analysis should be conducted systematically, rather than sequentially.

Factors of the internal environment are controlled directly by the enterprise, it can effectively manage them. External factors affect the company externally, it should take them into account when developing a business strategy and penetrating external markets. Depending on the degree of control, the factors affecting the export potential of the enterprise are divided into endogenous and exogenous (Figure 1).

Endogenous factors are primarily related to the activity of the enterprise, its foreign economic activity, marketing strategy, management characteristics. Exogenous factors include the characteristics of the political, geographical, natural and climatic environment of the domestic and foreign markets.

The consideration and estimation of exogenous factors is accompanied by considerable difficulties caused by unpredictability of changes in the international environment. Estimation of the nature and level of influence of endogenous factors on the export activity of the enterprise is carried out by the structural divisions of the enterprise according to their functional purpose.

The problems of realization of export potential arose up on the different stages of economic development of many countries of the world. The special actuality they purchased in countries with a transformation economy, where realization of own external economic policy became the most important condition of economic and political self-determination of the state and including of it in the world economic system on rights for equal partnership.

Presently the active motivational factor of development of export potential was become by strengthening processes of globalization, which overcame the almost entire countries of the world.

To investigate the export potential of an enterprise it is necessary to determine its presence, which requires its quantitative assessment of a particular business unit. This leads to the need to consider and analyze the methods for evaluating the category under study.

Some academic schools of economic theory have expressed doubts about the possibility of quantifying export potential. This is due to a significant number of factors influencing it and the subjectivity of the very category of export potential. As well as the selection of indicators for which its evaluation is carried out. Melnyk (2008) believes that in most cases, the study of export potential is a prediction of the commodity and sectoral structure of export of products based on the results of the analysis of the dynamics of exports, its commodity and sectoral structure. The scientist substantiates the impossibility of quantifying the export potential based on the subjective nature of the concept and the absence of a direct link between the potential and the position of the enterprise in the market.

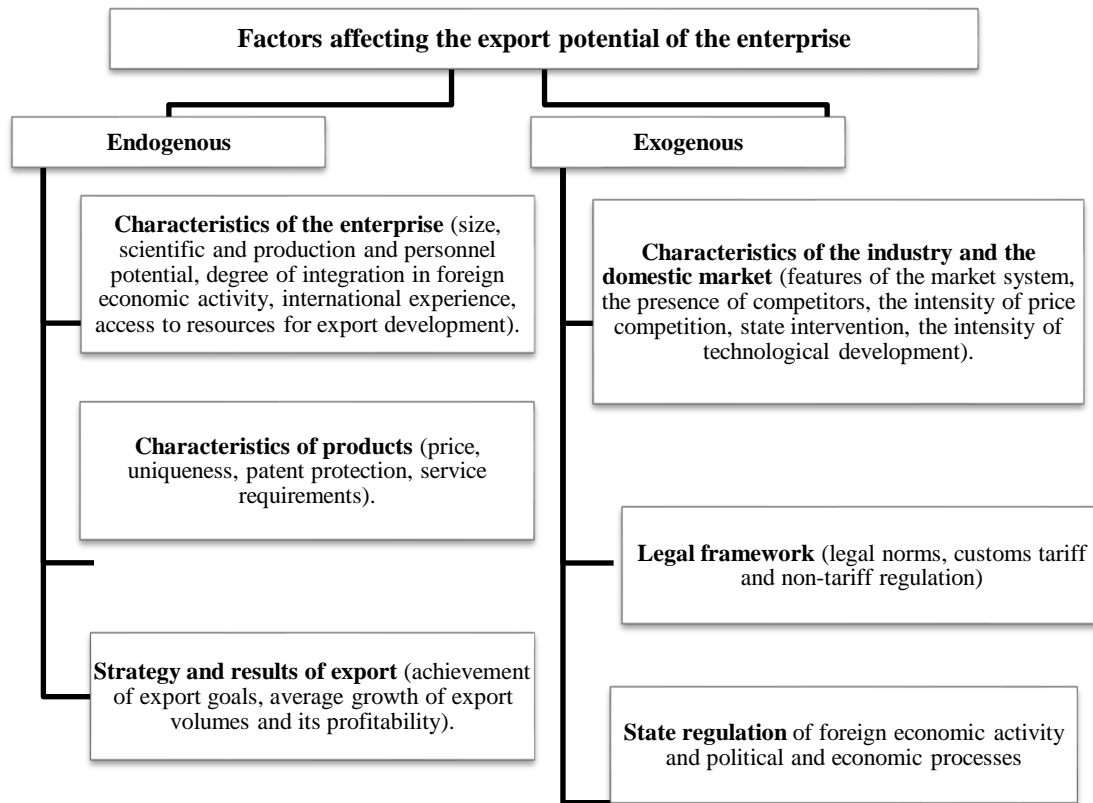


Figure 1. Factors affecting the export potential of the enterprise

Source: Based on own compilation

Practical realization of export potential of enterprises demonstrate the development of international activity of the country. The Global trade enabling index was considered on the example of Ukraine. This example shows some factors affecting the export potential of Ukrainian enterprises. The Enabling Trade Index assesses the extent to which economies have in place institutions, policies, infrastructures and services facilitating the free flow of goods over borders and to their destination. This rating shows information about 136 countries of the world. Ukraine holds 95th position. The components of its ranking are shown in the table 3.

Table 3. The Enabling Trade Index of Ukraine

Performance overview	Rank (max 136)	Score (1-7)
Subindex A: Market access	80	4.4
Pillar 1: Domestic market access	24	5.5
Pillar 2: Foreign market access	110	3.3
Subindex B: Border administration	95	4.1
Pillar 3: Efficiency and transparency of border administration	95	4.1
Subindex C: Infrastructure	69	3.9
Pillar 4: Availability and quality of transport infrastructure	72	3.4
Pillar 5: Availability and quality of transport services	69	4.0
Pillar 6: Availability and use of ICTs	73	4.4
Subindex D: Operating environment	125	3.5
Pillar 7: Operating environment	125	3.5

Source: The Enabling Trade Index, 2016

Most problematic factors for exporting for Ukrainian enterprises: identifying potential markets and buyers; difficulties in meeting quality/quantity requirements of buyers; access to trade finance; technical requirements and standards abroad; inappropriate production technology and skills; access to imported inputs at competitive prices; high cost or delays caused by domestic transportation; burdensome procedures at foreign borders; high cost or delays caused by international transportation; tariff barriers abroad; rules of origin requirements abroad; corruption at foreign borders.

These factors limit the development of export potential of Ukrainian enterprises. In order to minimize them, an effective state program for the support of Ukrainian exporters should be implemented.

5. Conclusion and Further Research

The ability to export goods company is seen as an important measure of competitive success in both domestic and foreign markets. This export potential is an economic category, which defines competitiveness on the international market. This category is determined from the positions of the various scientific and methodological approaches (resources, production and realizable, reproduction, system and potential). Determined that category studied is formed by a group of components, including: financial, manufacturing, marketing, organizational management, employment, innovation and information potentials. Effective use of the export potential of the company is the result of rational use of existing and prerequisite for obtaining high end results (profits) and customer satisfaction for quality products.

The conclusion of the study is as follows:

1. The export potential is one of the important components of the economic potential of the enterprise.
2. The export potential is inherent in the subjects of different hierarchical levels: the enterprise, industry, region, country. Accordingly, there is a close relationship between them. The export potential of the country consists of the export potential of the regions and the export potential of individual industries. They consist of the export potential of the enterprises that are the basis of this chain. Since the enterprises themselves carry out export activity, that is, they ensure implementation of the export potential.
3. Export potential is closely linked and depends on the competitiveness of products on the world market. It is important to take into account the trends of demand and supply of these products on the world market. Competitiveness of products determines a set of factors, among which, first of all, is the price, quality.
4. Export potential is a set of components that are in the process of continuous interaction and is a condition for the effective exit of enterprises into foreign markets or creating opportunities for such an exit. These components include: production, innovation, management, marketing and logistics potential.
5. The export potential has double significance. First of all, it depends on the capabilities and conditions of national or sectoral production and its competitiveness. Secondly, it depends on the capabilities and conditions of existing and potential foreign product markets. Export potential is shaped by the influence of internal and external factors.
6. The export potential in the current conditions of the development of globalization and the presence of problems of global character must be formed and implemented while maintaining the country's economic security.

Some differences from previous studies are in clearly categorizes the factors of influence on the export potential of the enterprise and generalizes the definition of „export potential“ of the enterprise. The assessment of the criterion for generalizing the definition are as follows: export potential as resources, export potential as production and sales, export potential as a reproduction of competitive advantages, export potential as a system of relations.

The research has certain limitations, since the positions relate only to the general provisions of the concept of the export potential of the enterprise. The article does not take into account the specific functioning of the export potential of enterprises created in depressed regions or regions of active development.

The results of the research can be applied by scientists and specialists in order to further improve the theory and practice of developing the export potential of enterprises.

Further research on those issues can be directed to development of practical recommendations for strengthening the export potential of Ukrainian enterprises that cooperate with European business partners.

References

- Avdeenko, V.N., Kotlov, V.A. (1989). *Production potential of industrial enterprises*. Moscow: Ekonomika.
- Azriyan, A.N. (1994). *Great economic dictionary*. Moscow: Legal culture.
- Bestuzheva, S.V. (2003). Criteria and principles of formation of an effective export potential of the enterprise. *Proceedings of 12th International Conference Achievements and prospects of development of management by pharmaceutical organizations in a market economy 2003*, pp. 50-52.
- Bernard, A.B., Jensen, J.B. (2006). Why some firms export. *Review of Economics and Statistics*, vol. 86, iss. 2, p. 561-569.
- Bitkowska, A. (2016). Knowledge management in enterprises - Polish experiences. In M. Okręglicka, I. Gorzeń-Mitka, A. Lemańska-Majdzik, M. Sipa, A. Skibiński (Eds.) *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management CITPM 2016*, pp. 46. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Branch, A.E. (1990). *Element of Export Marketing and Management*. Second edition. Charman and Hall.
- Chernysh, O.V., Pyrozhkova, A.D. (2015). *Conditions and factors of formation of the export potential of the enterprise* [online]. Available: http://ir.znau.edu.ua/bitstream/123456789/3838/3/Visnuk_GDTU_2015_4_74_162-165.pdf [2017, October 10].
- Dunska, A.R. (2013). The factors of the development of export potential of industrial enterprise. *Efficient Economy*, vol. 3, pp. 29-37.
- Episkina, O.V. (2007). Improvement of economic mechanisms of export orientation of the use of resource potential of agro-industrial enterprises. *Manuscript*, South Branch "The Crimean Agritechnological University" of National Agrarian University of the Cabinet of Ministers of Ukraine, Simferopol, p. 6.
- Ivanová, E., Kordoš, M. (2017). Innovation policy of smes in Slovakia in the context of European Union innovation policy. *Marketing and Management of Innovations*, vol. 3, pp. 213-225.
- Korombel, A. (2013). Barriers to Converting Enterprises Into Intelligent Organizations in the Polish Economic Practice. *Organizacja i Zarządzanie: kwartalnik naukowy*, vol. 3 (23), pp. 45-55.
- Law of Ukraine dated 16.04.1991 № 959-XII «On foreign economic activity».
- Levy, B., Berry, A., Nugent, J.B. (1999). *Fulfilling the Export Potential of Small and Medium Firms*. New York: Springer Science & Business Media.
- Leonidou, L.C., Katsikeas, C.S., Paliwadana, D., Spyropoulou, S. (2007). An analytical review of the factors stimulating smaller firms to export: Implications for policy makers. *International Marketing Review*, vol. 24, iss. 6, pp. 735-770.
- Lytvyn, O.E. (2016). Export potential and possibilities of ukrainian small and medium size enterprises in the european market. *Actual problems of international relations*, vol. 127, iss. 2, pp. 165-175.
- Ławińska, O. (2009). Gminne inwestycje infrastrukturalne jako czynnik rozwoju małych i średnich przedsiębiorstw. In M. Okręglicka, O. Ławińska (eds.) *Determinanty rozwoju małych i średnich przedsiębiorstw w Polsce*. Wydawnictwo Politechniki Częstochowskiej, pp. 31-47.
- Manoli, P. (2013). Political Economy aspects of Deep and Comprehensive Free Trade Agreements. *Eastern Journal of European Studies*, vol. 4, iss. 2, pp. 51-73.
- Matalka, S.M. (2011). *Management of the Efficiency of Foreign Economic Activity of Enterprises*. Monograph, Lugansk.
- Melnyk, T. (2008). *The export potential of ukraine: the methodology of assessment and analysis*, [online]. Available: http://iejjournal.com/journals_eng/8-9/2008_10_Melnyk.pdf [2017, October 10].
- Melnyk, L., Kubatko, O., Pysarenko, S. (2014). The impact of foreign direct investment on economic growth: case of post communism transition economies. *Problems and Perspectives in Management*, vol. 12, iss. 1, pp. 17-24.
- Pepa, T.V. (2001). Formation and use of the export potential of the food industry of Ukraine. *Synopsis*, Organization of productive forces and regional economy, Council on Studying Production Forces of Ukraine of the National Academy of Sciences of Ukraine, Kyiv, p. 6.
- Okhrimenko, O., Okhrimenko, A. (2015). The impact of the crisis on the national brand of Ukraine. *Eastern Journal of European Studies*, vol. 6, iss. 2, pp. 37-53.
- Shvettsova, M.B. (2010). Stimulation of the export of machine-building enterprises' products. *Proceedings of 5th International Conference, Marketing and logistics in the management system 2010*, P. 252. Lviv: Lviv Polytechnic.
- Soete, S., Hove, J. (2017). Dissecting the Trade Effects of Europe's Economic Integration Agreements. *Journal of Economic Integration*, vol. 32 iss.1, pp. 193-243.
- Stakhorsky, O.O. (2010). Influence of innovations on formation of export potential of agrarian enterprises. *Manuscript*, International University of the Business and Right, Kherson, p. 5.
- Stechenko, D.M. (2002). *Placement of the productive forces and regionalism*. Kyiv: Vikar.
- The Global Enabling Trade Report* (2016). [online]. Available: http://www3.weforum.org/docs/WEF_GETR_2016_report.pdf [2018, February 07].

Hasan Mansur^{1*}
Szent Istvan University
Hungary
Anita Tangl²
Szent Istvan University
Hungary

48. THE EFFECT OF CORPORATE GOVERNANCE ON EARNINGS MANAGEMENT – COMPARING JORDANIAN CONTEXT WITH OTHER CONTEXTS

Abstract: In the context of Jordan with a regulatory environment where listed companies need to avoid reporting losses to either, remain listed on the first market or to be able to transfer from the second market to the first market, this paper aims to investigate the impact of corporate governance on earnings management in Jordanian context, and compare it with other contexts. This paper is a descriptive research based on analysis of previous studies and current Jordanian regulations towards corporate governance and earnings management. It was found that managers engage more in earnings increasing from the perspective of external auditors in Jordanian context; Jordan security exchange commission should require firms to disclose detailed information regarding managers' incentives and remunerations. Moreover, the two Jordanian regulators (The Jordan security exchange commission and central bank of Jordan) should emphasize that Jordanian firms have the adoption of corporate governance - code of conduct, which could reduce the earning management practices.

Keywords: Corporate governance, Earnings management.

JEL Classification: M41, M48

1. Introduction

1.1. Preface

During the last twenty years, the world has faced a number of financial scandals which have led to bankruptcy for a high-profile companies like Enron, Parmalat and World-com the analyses of these financial scandals have documented the existence of earnings management and poor corporate governance mechanisms (Ahmed, 2013). In a direct response to the financial scandals, the Sarbanes-Oxley Act (SOX) in the US and best practices in corporate governance in countries like the UK and Australia were introduced to strengthen corporate governance regulations to enhance the quality of financial reporting by reducing earnings management practices (Barako, Hancock, Izan, 2006).

In Jordan, managers have strong incentives to engage in earnings management activities, particularly since the implementation of the 'Securities Law Number 76 for the year 2002' (Amman Stock Exchange, 2013), which imposes a unique capital market regulation on companies listed at the Amman Stock Exchange (ASE). ASE is organized into the first market and second market on which listed securities are traded. The first market is intended for the most actively traded stocks whereas, the second market is intended for less liquid stocks (ASE, 2013). This capital market regulations state that companies listed in ASE will be transferred from the first market to the second market if the company accounts show losses in the last three consecutive years. The capital market regulations also state that company's stocks which are traded on the second market may be transferred to the first market if the company generated net pre-tax profit for at least two fiscal years out of the last three years preceding the transfer (ASE, 2013).

¹ Hasan Mansur Ph.D. Candidate; 2100 Gödöllő, Páter Károly Utca 1, Hungary, has976@yahoo.com

² Assoc. Prof. Dr. Anita Tangl; 2100 Gödöllő, Páter Károly Utca 1, Hungary, tangl@vajna.hu

* Corresponding author

This paper is based on the proposition that the Jordanian companies have strong incentives to engage in earnings management activities to avoid reporting losses to either, remain listed on the first market or to transfer from the second market to the first market, as indicated that government regulations may unintentionally enhance managers to manipulate earnings to avoid reporting losses.

This paper is motivated by the growing concern about the importance of corporate governance mechanisms in mitigating earnings management practices. Academic research has revealed that good corporate governance could enhance the quality of financial reporting (Man, Wong, 2013). The Organization for Economic Co-operation and Development (OECD) principles state that good corporate governance could be used as ‘a benchmark by governments as they evaluate and improve their laws and regulations’ (OECD, 2004). Moreover, the Asian Financial Crisis which occurred between 1997-1998 increase the financial pressure on countries, especially in developing countries to review their own corporate governance practices as weaknesses in corporate governance which result in huge losses of large-sized corporations, is expected to have significant effects in developing countries like Jordan, which have low accounting transparency and weak investors’ rights (Ahmed, 2013). Furthermore, one of the main causes of the Global Financial Crisis which occurred between 2007-2008 is the weaknesses in corporate governance mechanisms, mainly the role of board of directors in safeguard the rights of shareholders.

The main attributes of corporate governance in Jordan were assessed in 2004 by the World Bank as part of its Reports on the Observance of Standards and Codes (ROSC). The ROSC recommended that public and private sectors must work together in order to develop a code of corporate governance to enhance the role of board of directors and to protect the rights of minority shareholders (McGee, 2010). The ROSC also recommended that the overlaps in regulatory jurisdiction should be reviewed to reduce regulatory duplication and burden on businesses (McGee, 2010). Accordingly, Jordan ‘has put in place the pillars of corporate governance by sponsoring a series of legislative, economic and financial reforms that intended to promote transparency, accountability and the rule of law in the economic life of the country’ (Bino, Tomar, 2012, p. 5). Therefore, in 2008 the Jordanian Securities Commission (JSC) issued mandatory corporate governance code of conduct aiming for listed companies to be implemented since January, 2009. The main purpose of the code is to establish a clear framework which regulates the relationships between listed companies, management and stakeholders. The code also defines the rights, duties and responsibilities of the managers in achieving objectives and safeguarding the rights of all stakeholders (JSC, 2009). More importantly, the code of conduct aims to enhance the quality of financial reporting of companies listed at ASE, as previous studies have provided evidence that Jordanian companies engage in earnings management practices (Abed, Al-Attar, Suwaidan, 2012).

This study is also motivated by the increasing percentage of foreign ownership in the ASE, especially after the liberalization of the trade regime in Jordan since 1996 (ASE, 2013). According to ASE (2013), the percentage of foreign ownership (out of the total market value) in listed companies increased from 45.5% in 2006 to 50% at the end of 2013. Therefore, Jordanian companies could provide a suitable environment in determining the effect of foreign ownership on earnings management where managers may manipulate earnings upward to make companies more attractive to investors, especially foreign investors (ASE, 2013). Furthermore, ownership in ASE is highly concentrated in institutional investors, and some companies are totally owned by institutional investors which mean that the conflict of interest (agency problem) not only exists between owners and managers, but also between majority shareholders and minority shareholders (Al-Najjar, 2010).

1.2. Methodology

In the context of Jordan with a regulatory environment where listed companies need to avoid reporting losses to either, remain listed on the first market or to be able to transfer from the second market to the first market, this paper aims to investigate the effect of corporate governance characteristics on earnings management in Jordanian context, and compare it with other contexts.

Accordingly, based on reviewing different local and foreign literatures paper is designed to answer the following questions:

1. Is there a relationship between corporate governance characteristics (board of directors, ownership structure, audit committee, and external auditors and legal protections) and earnings management practices?
2. What are the similarities and/or differences regarding the corporate governance characteristics on earnings management practices between Jordanian context and other contexts?

This paper will take into account the internal characteristics of corporate governance (board of directors, ownership structure, audit committee), and the external characteristics (external auditors and legal protection), to know if these characteristic have effect on earning management, and which one is more.

1.3. Overview on the Jordanian Economy Market Environment

Jordan is relatively a small country with a population of 8 million, and it has one of the most open political systems in the region Also, it has ‘political stability in a very volatile region, a liberal economy and relatively advanced stock market’. There is only one securities exchange in Jordan, the ASE which was established in 1999. According to JSC, ASE is considered one of the largest emerging markets in the Middle East, where the market value of stock increased from USD \$ 7 billion in 2002 to USD \$ 25 billion in 2013. During the last few years Jordan engaged in financial reforms to improve the economic environment. Additionally, it embarked with liberalization of the trade regime sufficiently since 1996 (Al-Akra, Ali, 2012).

The capital market regulations which organized the trading of companies’ stocks at ASE are different from other regulations in the world. For example, in the US, the capital market regulations state that company will be delisted from New York Stock Exchange (NYSE) if the following three requirements exist. First, if the number of total stockholders drops below 400. Second, if the company does not meet specific market capitalization requirements, which designed to insure that there is continued trading volume and interest sufficient to justify the costs to NYSE of listing a stock. Third, if the average closing price of the stock over a 30 consecutive days drops below \$1 (Macey, O’Hara, Pompilio, 2008).

In the UK, the capital market regulations state that companies listed in the main market (official list) are obliged to apply the combined code of corporate governance whereas, companies listed in the second market (alternative investment market) does not have to apply the code. Additionally, in the UK, companies listed in the second market are subject to lower tax rate (Vismara, Paleari, Ritter, 2012). While in China, the capital market regulations state that if the company reported net loss for three consecutive years , it will be subjected to special treatment, which means that company’ stocks can only be traded with a range of 5% price change limit in each trading day, as compared to 10% for normal stocks. After that, if company reports a loss for additional year it will be delisted from the stock exchange (Chen, Zhang, 2012). Regarding the capital market regulations of the neighboring countries, such as Kuwait, Qatar, Bahrain, and Saudi Arabia the stock market does not divided into the first and second markets, like Jordan.

In Jordan, the capital market regulations state that companies listed at ASE will be transferred from the first market to the second market if the company accounts show losses in the last three consecutive years (ASE, 2013). The regulations also state that company’s stocks which are traded on the second market may be transferred to the first market if the company generated net pre-tax profit for at least two fiscal years out of the last three years preceding the transfer (ASE, 2013). Therefore, these capital market regulations provide managers strong incentives to engage in earnings management to avoid reporting losses. Based on the capital market regulations of other countries, the Jordanian regulations represent a unique case, because the regulations for the transferring between the first and second markets do not exist in any country. Moreover, the listed companies at ASE, whether in the first and second markets are obliged to apply the corporate governance code of conduct, and there is no differences in tax rate for companies whether they are listed in the first or second markets.

The privatization and liberalization in Jordan have led companies listed at ASE to be openly invested by foreign investors. The participation of foreign investors leads to improve financial market. Foreign investors play an important role in improving the quality of financial reporting as well as improving corporate governance (Suwaidan, Abed, Al-Khoury, 2013). As a result of capital market liberalization, the percentage of foreign ownership in ASE reached to 50% at the end of December, 2013. More importantly, there are 78 nationalities around the world which own stocks at ADE (Securities Depository Centre 2013). This significant percentage of foreign ownership and the diversity of foreign owners make the Jordanian context a suitable context to examine the impact of foreign ownership on earnings management practices, especially when compare it with the neighboring countries, where ownership is highly concentrated in state and family ownership (ADE, 2013).

Furthermore, the Jordanian government embarked in corporate governance reform as a result of the recommendations of the World Bank. Therefore, in 2008 the JSC has issued the mandatory corporate governance code of conduct to be implemented from January, 2009. The corporate governance code of conduct for companies listed at ASE has some differences from other codes in the Western and the developed countries such as the US, UK and Australia (i.e. minimum and maximum number of directors setting on the board, minimum number of board meetings and minimum number of independent directors) (ASE, 2013).

There are additional features which distinguish the Jordanian context. Firstly, the listed companies at ASE used only cash compensation to reward directors and executives, which differ from the developed countries where compensation is a mix of cash, stock and stock option. Cash compensation includes salary, transportation, and housing allowances. Secondly, the royal family in Jordan does not participate in board of directors and more importantly, it does not own stocks in listed companies at ASE. Thirdly, according to the ‘Jordanian companies law # 22 of 1997’, the government members are prohibited to participate in any board of directors of any company listed at ASE. So, there is no political pressure from the government to direct and control board of directors’ decisions (ASE, 2013).

Regarding the Global Financial Crisis (GFC), the effect of GFC on Jordanian economy is weak because Jordanian economy depends on tourism, overseas Jordanian employees’ remittances and foreign grants. Furthermore, examined the impact of GFC on Jordanian companies by comparing companies’ performance before and after the crisis, and found that the net income of Jordanian companies does not affected by the GFC. The Central Bank of Jordan (CBJ) plays an important role during the GFC by imposed a strict loan classification and provided guidelines for companies (CBJ, 2016).

2. Literature Review

2.1. Earnings Management

Earnings management activities are used by managers to mislead stockholders even before bankruptcy of high-profile companies, such as Enron and World-com. Earnings management practices decrease stockholders interest in the long term because investors will be unable to predict future earnings because earnings include abnormal accruals which represent managers’ choices to manage earnings. Moreover, highlight that the critical issue affecting the credibility of financial information is the extents to which managers engage in earnings management practices by manipulating reported earnings numbers (Ali Shah, Butt, Hassan, 2009).

More recently, studies have conducted to explain how managers use earnings management to avoid reporting losses. For example, Cohen, Mashruwala and Zach (2010) examined whether managers engage in real earnings management to meet specific benchmarks. They used monthly advertising activities for the period 2001-2006, and provided evidence on the using of real earnings management to avoid reporting a quarterly loss and to keep the same level of earnings as the previous years. Moreover, executives trying to avoid losses by offering price discount to temporarily increase sales, engaging in over production to lower cost of goods sold (COGS), and reducing discretionary expenditures aggressively to improve margins’. Wang et al. (2013) examine the relationship between loss reserve manipulation and reported earnings by investigating all the UK non-life insurance firms. Wang et al (2013) conclude that firms’ managers adjust loss reserve to avoid small losses and insurers with big losses manipulate their loss reserve accrual to avoid triggering regulatory intervention.

2.2. Corporate Governance

Corporate governance principles have become one of the most important economic reforms that adopted by countries to reduce agency costs, to enhance the transparency of financial information, to attract foreign investment and to enhance the confidence in any national economy. There are many definitions of corporate governance, but for the purpose of this study, corporate governance can be defined as Procedures and processes according to which an organization is directed and controlled. The corporate governance structure specifies the distribution of rights and responsibilities among the different participants in the organization- such as the board, managers, shareholders and other stakeholders- and lays down the rules and procedures for decision-making (OECD, 2004).

The adoption of strong corporate governance mechanisms could reduce, but not eliminate, earnings management activities through reducing agency conflict of interest between managers and owners or between majority shareholders and minority shareholders. Moreover, earnings management practices which are using by managers to increase their interest or the interest of majority shareholders can be reduced by developing corporate governance regulations (Ahmed, 2013). Furthermore, the empirical association between discretionary write-offs and abnormal accruals is more pronounced in weakly governed firms, suggesting that a strong governance setting is likely to constrain management's discretionary behavior' and Several researchers have provided evidence that strong corporate governance mechanisms is one of the most important strategies that can be adopted by companies to control earnings management practices (Al-Zyoud, 2012).

Corporate governance mechanisms can be divided into two groups: internal mechanisms (i.e. board of directors, ownership structure, and audit committee); and external mechanisms (i.e. external auditors and legal protection). 'Internal and external mechanisms help to resolve two types of agency problems: the one between corporate owners and managers; and the one between controlling shareholders and minority shareholders (Man, Wong, 2013). Ali Shah, Butt and Hassan (2009) state that corporate governance could improve earnings quality through identifying to whom financial information should be addressed. The OECD (1999) states that due to the changing world, both governments and corporations have to adopt a good corporate governance system to meet new demand and allow markets to work efficiently. In Jordan, based on OECD principles of corporate governance and the recommendations of the World Bank on its report about governance practices, the JSC in 2008 issued the mandatory corporate governance code of conduct for companies listed at ASE. The code obligate companies to disclose information about: board of directors (i.e. number of directors setting on the board, number of board meetings, board ownership and board committees), general assembly meetings and transparency.

Board of directors is one of the most important corporate governance mechanisms, especially when monitoring top management, Board of directors can perform their responsibilities effectively, especially when independent directors included in the board (Chalevas, Tzovas, 2010). This view is supported by several researchers, with providing empirical evidence that earnings management practices was reduced when more independent directors participate on the boards. And additional evidence about the importance of outside directors is provided by, They found that higher participation of outside directors are associated with less income-increasing earnings management when pre-managed earnings less than last years reported earnings or less zero (Peasnell, Pope, Young, 2005). From another point of view, Park and Shin (2004) investigated the impact of board independence on earnings management. They revealed that managers engage in earnings increasing to avoid reporting losses.

Audit committee plays a key role in monitoring companies' management, reviewing the process of preparing financial statements and enhancing earnings quality, where Saleh, Iskandar and Rahmat (2007) examined the effectiveness of audit committee characteristics by using a sample of 561 companies in 2001 after the implementation of code of corporate governance. They found that audit committee could mitigate earnings management behavior only if all audit committee members were independent and had a frequently meeting.

Additionally, Ghosh et al. (2010) examined the effect of composition, size, activity, expertise, ownership and tenure of audit committee pre- and post- SOX. They found that financial expertise and ownership of audit committee members could not constrain earnings management. They concluded that the SOX regulations did not improve the role of board of directors and audit committee in mitigate earnings management practices.

To represent the role of auditors in the credible reporting of accruals, Inaam, Khmoussi and Fatma (2012) investigated the relationship between audit quality and earnings management of 29 companies listed at Tunis Stock Exchange for the period 2000-2010. They found that there is a negative relationship between accruals earnings management and auditor industry specialization.

In Jordan, Al-khabash and Al-Thuneibat (2008) examined earnings management activities from the perspective of external and internal auditors, and revealed that managers engage in earnings increasing and decreasing from the perspective of external auditors, whereas from the perspective of internal auditors, managers engage only in earnings increasing.

The issue of board of directors and CEO compensation and their effect on companies' earnings management, have to date, received less attention in the literature, especially after the mandatory implementation of corporate governance codes in many countries. For example, Kim, Roden and Cox (2013) investigated the effect of composition and compensation of board of directors on corporate fraud. Using a sample of 128 firms for the period 2003-2010, they found that cash salary paid to directors was more effective than stock options in presenting high quality of financial statements. From another point of view, Kang and Kim (2011) conclude that a higher compensation paid to board of directors led to more engage in real activity based- earnings management.

Moreover, Balsam (1998) examined the effect of discretionary accruals on CEO cash compensation. He concluded that there was a significant positive relationship between discretionary accruals and CEO cash compensation, especially when discretionary accruals were used to reduce the loss. Managers used discretionary accruals to manage earnings upward to increase company share price to sell their shares at the highest price. Additionally, Core, Holthausen and Larcker (1999) found that the CEO received more compensation if corporate governance system is weak.

Furthermore, Armstrong, Jagolinzer and Larcker (2010) did not find a positive relationship between CEO compensation and managers incentives to manipulate reported earnings. There are no previous studies regarding the relationship between CEO and directors' compensation and earnings management has been done in Jordan. In summary, the literature has produced discordant results on the relationship between CEO and directors' compensation and earnings management. So, the relationship between CEO and directors' compensation and earnings management needs further investigation especially, after the mandatory implementation of corporate governance codes.

To examine the relationship between managerial ownership and earnings management, Ali, Salleh and Hassan (2008) found that managerial ownership could reduce earnings management activities, especially in small firms rather than large firms. Additionally, Ben-Nasr, Boubakri and Cosset (2009) suggested that higher managerial ownership could reduce managers' incentives to engage in earnings management practices. Moreover, Borisova et al. (2012) based on a sample of 373 companies from 14 European countries found that government ownership increased specially, after the recent financial crises. Borisova et al. (2012) concluded that government ownership was positively related to corporate governance quality in common law countries, whereas the relation was negative in civil law countries.

In Jordan, AL-Fayoumi et al. (2010) conducted a study in the years 2001-2005 based on a sample of 39 companies, to investigate the effect of ownership structure on companies' earnings management. AL-Fayoumi et al. (2010) found a positive relationship between insider ownership (executives and directors) and discretionary accruals. In contrast, they found that there is no relationship between institutional and block holders ownership and earnings management.

3. Conclusion

It was concluded that:

- As managers engage more in earnings increasing from the perspective of external auditors in Jordanian context, Jordan security exchange commission should require firms to disclose detailed information regarding managers' incentives and remunerations.
- The importance role of external auditors to check the soundness of internal control system in Jordan firms regarding managers' incentives and rewards, which is considered one of corporate governance requirements in order to mitigate earning management practices.
- The two Jordanian regulators (The Jordan security exchange commission and central bank of Jordan) should emphasize that Jordanian firms have the adoption of corporate governance - code of conduct, which could reduce the earning management practices.
- Necessity of activation the Audit committees' role in Jordanian firms, in order to mitigate earnings management practices, through the independence of its members, and the emphasis that some of audit committee members have financial background.

References

- Abed, S., Al-Attar, A., Suwaidan, M. (2012). Corporate Governance and Earnings Management: Jordanian Evidence. *International Business Research*, vol. 5, iss. 1, pp. 216-225.
- Ahmed, S. (2013). Measuring quality of reported earnings' response to corporate governance reforms in Russia. *Journal of Accounting in Emerging Economies*, vol. 3, iss. 1, pp. 21-46.

- Al-Akra, M., Ali, M.J. (2012). The value relevance of corporate voluntary disclosure in the Middle-East–The case of Jordan. *Journal of Accounting and Public Policy*, vol. 31, pp. 533-549.
- Al-Fayoumi, N., Abuzayed, B., Alexander, D. (2010). Ownership structure and earnings management in emerging markets: The case of Jordan. *International Research Journal of Finance and Economics*, vol. 38, pp. 28-47.
- Ali Shah, S., Butt, S., Hassan, A. (2009). Corporate governance and earnings management an empirical evidence form Pakistani listed companies. *European Journal of Scientific Research*, vol. 26, iss. 4, pp. 624-638.
- Ali, S.M., Salleh, N.M., Hassan, M.S. (2008). Ownership structure and earnings management in Malaysian listed companies: the size effect, *Asian Journal of Business and Accounting*, vol. 1, iss. 2, pp. 89-116.
- Al-khabash, A.A, Al-Thuneibat, A.A. (2008). Earnings management practices from the perspective of external and internal auditors: evidence from Jordan. *Managerial Auditing Journal*, vol. 24, iss. 1, pp. 58-80.
- Al-Najjar, B. (2010). Corporate governance and institutional ownership: evidence from Jordan. *Corporate Governance*, vol. 10, iss. 2, pp. 176-190.
- Al-Zyoud, AA-N. (2012). The Effects of Chairman Independence and Ownership Structure on Earnings Management. *World Applied Sciences Journal*, vol. 17, no. 8, pp. 934-940.
- Armstrong, C.S., Jagolinzer, A.D., Larcker, D.F. (2010). Chief executive officer equity incentives and accounting irregularities. *Journal of Accounting Research*, vol. 48, iss. 2, pp. 225-271.
- ADE (2013). Securities Depository Centre, [online]. Available: <http://www.ade.com.jo>. [2017, September 20].
- ASE (2013). Amman Stock Exchange, [online]. Available: <http://www.ase.com.jo>. [2017, September 19].
- Balsam, S. (1998). Discretionary Accounting Choices and CEO Compensation. *Contemporary Accounting Research*, vol. 15, iss. 3, pp. 229-252.
- Barako, D.G., Hancock, P., Izan, H. (2006). Factors influencing voluntary corporate disclosure by Kenyan companies. *Corporate Governance: An International Review*, vol. 14, iss. 2, pp. 107-125.
- Ben-Nasr, H., Boubakri, N., Cosset, J-C. (2009). Ownership Structure and Earnings Quality: Evidence from Newly Privatized Firms. Working Paper.
- Bino, A., Tomar, S. (2012). Corporate governance and bank performance: evidence from Jordanian banking industry. *Jordan Journal of Business Administration*, vol. 8, iss. 2, pp. 123-141.
- Borisova, G., Brockman, P., Salas, J.M., Zagorchev, A. (2012). Government ownership and corporate governance: Evidence from the EU. *Journal of Banking & Finance*, vol. 36, iss. 11, pp. 2917-2934.
- Central Bank of Jordan (2016). [online]. Available: <http://www.cbj.gov.jo>. [2017, September 24].
- Chalevas, C., Tzovas, C. (2010). The effect of the mandatory adoption of corporate governance mechanisms on earnings manipulation, management effectiveness and firm financing: evidence from Greece. *Managerial Finance*, vol. 36, iss. 3, pp. 257-277.
- Chen, J.J., Zhang, H. (2012). The Impact of the Corporate Governance Code on Earnings Management–Evidence from Chinese Listed Companies, *European Financial Management*.
- Cohen, D., Mashruwala, R., Zach, T. (2010). The use of advertising activities to meet earnings benchmarks: Evidence from monthly data. *Review of Accounting Studies*, vol. 15, iss. 4, pp. 808-832.
- Ghosh, A., Marra, A., Moon, D. (2010). Corporate Boards, Audit Committees, and Earnings Management: Pre-and Post-SOX Evidence. *Journal of Business Finance & Accounting*, vol. 37, no. 9-10, pp. 1145-1176.
- Holthausen, R.W., Larcker, D.F., Sloan, R.G. (1995). Annual bonus schemes and the manipulation of earnings. *Journal of accounting and economics*, vol. 19, iss. 1, pp. 29-74.
- Inaam, Z., Khmoussi, H., Fatma, Z. (2012). Audit Quality and Earnings Management in the Tunisian Context. *International Journal of Accounting and Financial Reporting*, vol. 2, no. 2, pp. 17-33.
- JSC 2009, [online]. Available: <http://www.jsc.com.jo>. [2017, September 19].
- Kang, S-A., Kim, Y-S. (2011). Does Earnings Management Amplify The Association Between Corporate Governance and Firm Performance?: Evidence From Korea. *International Business & Economics Research Journal (IBER)*, vol. 10, no. 2, pp. 53-66.
- Kim, Roden, D.M., Cox, S.R. (2013). The Composition and Compensation of the Board of Directors as Predictors of Corporate Fraud. *Accounting and Finance Research*, vol. 2, no. 3, pp. 142-154.
- Macey, J., O'Hara, M., Pompilio, D. (2008). Down and out in the stock market: The law and economics of the delisting process. *Journal of law and economics*, vol. 51, iss. 4, pp. 683-713.
- Man, C-K., Wong, B. (2013). Corporate Governance and Earnings Management: A Survey of Literature. *Journal of Applied Business Research (JABR)*, vol. 29, iss. 2, pp. 391-418.

- McGee, R. (2010). *Corporate Governance in Transition and Developing Economies: A Case Study of Jordan*. Florida International University, Working Paper.
- Peasnell, K.V., Pope, P.F., Young, S. (2005). Board monitoring and earnings management: do outside directors influence abnormal accruals? *Journal of Business Finance & Accounting*, vol. 32, no. 7-8, pp. 1311-1346.
- Saleh, N.M., Iskandar, T.M., Rahmat, M.M. (2007). Audit committee characteristics and earnings management: evidence from Malaysia. *Asian Review of Accounting*, vol. 15, iss. 2, pp. 147-163.
- Suwaidan, M., Abed, S., Al-Khoury, A. (2013). Corporate Governance and Non-Jordanian Share Ownership: the Case of Amman Stock Exchange. *International Journal of Business & Management*, vol. 8, iss. 20, pp. 14-24.
- Vismara, S., Paleari, S., Ritter, J.R. (2012). Europe's second markets for small companies. *European Financial Management*, vol. 18, iss. 3, pp. 352-388.
- Wang, Ch-F., Shiu, Y-M., Adams, A., Ou, K-L. (2013). Loss Reserve Adjustment and its Determinants: Empirical Evidence from the United Kingdom General Insurance Industry. *Asian Economic and Financial Review*, vol. 3, iss. 2, pp. 160-177.

Magdalena Marczevska¹ *

University of Warsaw

Poland

Mariusz Kostrzewski²

Warsaw University of Technology

Poland

49. TRAINING ON SOFT SKILLS AND ENTREPRENEURSHIP AS A WAY TO BOOST YOUNG RESEARCHER'S INNOVATIVENESS

Abstract: The objective of this paper is to describe the importance of soft and entrepreneurial skills for young researchers of the XXI century. It aims to analyze and discuss the effects of soft skills and entrepreneurship training on young researcher's innovativeness. Main research questions are the following: (1) In which fields of young researcher's activities is their training on soft skills and entrepreneurship a way to boost innovativeness? (2) How the training on soft skills and entrepreneurship contributes to the growth of innovativeness of young researchers? (3) What are the new activities undertaken by young researchers who successfully completed the training? The article presents the findings of a case-study research of the TransFormation.doc program run by the Ministry of Science and Higher Education of Poland in 2015-2016. The qualitative study, mainly based on semi-structured interviews and documentation analysis, confirms that soft and entrepreneurial skills are becoming really important for young researchers. The results demonstrate that researchers after completing the training are more willing to work in interdisciplinary teams, undertake activities aimed at propagating their research results among wider audience, commercialize their research, engage in socially-focused projects, use innovative teaching methods, concentrate on research with higher commercial potential, use their network in order to solve new research problems, focus on challenge-based projects with broader societal implications. Conclusion of this paper may serve to show a still existing chasm between science and industry, which in the future should probably get smaller as researchers seem to focus on practically-oriented, interdisciplinary research.

Keywords: entrepreneurship, innovation, innovativeness, researchers, soft skills.

JEL Classification: I2, J2

1. Introduction

Soft and entrepreneurial skills are becoming increasingly important for human capital development and employment success due to workplace modernization related to challenges of new technology development (Balcar, 2014). In the XXI century authors build a growing evidence base showing that such skills compete with technical and academic skills in terms of employment opportunities, earnings and the quality of life (Lippman et al. 2015; Kautz et al., 2014; Holmberg-Wright, Hribar, 2016). Along with growing demand for life-long learning and knowledge sharing, soft skills such as social intelligence, communication and teamwork, gain importance. Due to continuing globalization a greater emphasis may be put towards peoples' flexibility, adaptability and set of skills that facilitate collaboration and multidisciplinary teamwork (OECD, 2011; Troudt et al., 2010). Having in mind issues outlined above, it seems to be important to gather evidence on how training on soft skills and entrepreneurship affects young researcher's innovativeness, which is the objective of the paper. As the partial goals of this research authors attempted to answer three following research questions: (1) In which fields of young researcher's activities is their training on soft skills and entrepreneurship a way to boost innovativeness? (2) How the training on soft skills and entrepreneurship contributes to the growth of innovativeness of young researchers? (3) What are the new activities undertaken by young researchers who successfully completed the training? Accordingly, this paper attempts to describe the importance of soft and entrepreneurial skills for young researchers of the XXI century.

¹ Magdalena Marczevska Ph.D.; Szturmowa 1/3, 02-678 Warszawa, Poland, marczevska.m.a@gmail.com

² Mariusz Kostrzewski Ph.D. Eng.; Koszykowa 75, 00-662 Warszawa, Poland, markos@wt.pw.edu.pl

* Corresponding author

The paper is organized as follows. Introductory section 1 covers wider context related to soft skills, entrepreneurship and innovativeness, as well as presents the general and partial aims of the paper. Section 2 provides an overview of literature, starting from innovation and innovativeness, followed by entrepreneurial and soft skills related to individual's and business performance. In section 3 the research method and research sample are described. Section 4 presents research results and finally, section 5 concludes with research results summary, research limitations and implications.

2. Literature Review

Innovativeness is the process which aims to generate and combine ideas based on the relationship between present efforts, past experiences, and willingness to solve future problems (Bartel, Garud, 2009). On the other hand, it drives to create something completely new or add value to existing equipment or services by changing the way they are perceived now (Dawe, Guthrie, 2004). With regards to innovation creation processes, lessons can be learned from one innovative activity and can often be applied to improve other activities (Lazonick, 2004). In most cases innovation is mentally categorized to technological aspects, improvements and discoveries and it results in improvement in life standards or businesses, entrepreneurial or organizational activities (Baskaran, Mehta, 2016). Innovation might mean something completely different in different countries and societies because it depends e.g. on the context, cultural identity, life standard, socioeconomic status, tradition etc. Innovation can be a new product, a new service, a new technology or a new business practice. According to Oslo Manual, the most popular typology of innovations includes: product innovations, process innovations, marketing innovations and organizational innovations (OECD, Eurostat, 2005).

In 2013, the European Commission presented a new innovation indicator for measuring the progress in gaining the goals of the Europe 2020 Strategy (European Commission, 2013; Janger et al., 2017) and to influence strongly the research and innovation policy in EU countries. Therefore, it is getting more and more important to train, educate and encourage young entrepreneurs and researchers to work on their innovation making abilities. The ability to innovate allows entrepreneurs and individuals to materialize ideas that add value to the company (Leite, Moraes, 2015). Many authors recognize the importance and potential of entrepreneurial and innovation-related skills (Sahut, Peris-Ortiz, 2014). They claim that innovation is often directly related to entrepreneurship. Authors such as Schumpeter (1988), Fillion (1999), Shane and Venkataraman (2000) define entrepreneurship as the process related to the development of something new (creative) and different (innovative) with regards to the previously existing process. Authors suggest that such process is usually aimed at generating wealth for the individuals and organizations, as well as aggregate value for society.

Innovative entrepreneur or researcher may be combined of personality that captures the commonly used big five dimensions such as: extraversion, agreeableness, conscientiousness, emotional stability and openness to experience (Almlund et al., 2011; John, Naumann, Soto, 2008). Unless a person is not characterized by them, he or she still can develop these dimensions by hard working, taking part in trainings, workshops and different kind of programs connected to soft skills optimization, such as e.g. massive open online courses (MOOCs) which are believed to have a disruptive impact on employees/researcher competencies development and innovation (Karnouskos, 2017; Meister, 2015; Savino, 2014). By soft skills phrase, it is understood here in between: responsibility, self-confidence, social and communication skills, flexibility, team-spiritedness, good work attitude, self-motivation, self-management, interpersonal skills, problem solving (Musa et al., 2011). And besides that other authors apply lifelong learning, entrepreneurship skills and moral and professional ethics among soft skills. Interesting statement is that soft skills are the skills that ensure reducing unemployment (Esa et al., 2013). Previous researchers noted that most engineering graduates have good technical skills in contrast to soft skills related to moral values and ethics, communication and technology skills, confidence level and also ability to adapt in the workplace (Beckton, 2009; McIntosh, 2008; Elsen et al., 2005; Leroux, Lafleur, 2006). Rapid change and increased competition require that researchers, entrepreneurs and their workers use their soft skills to adapt to new technologies and changing organizational structures (enGauge Report, 2003). The importance of soft and entrepreneurial skills is growing, along with the need to describe a set of skills characterizing successful researchers and innovators. Authors focused on such topic try to build relevant models describing relationships between different sets of skills. For example, Hendarman, Tjakraatmadja (2012) developed a conceptual semi-quantitative, semi-qualitative model of triple helix, which describes the relationship

among soft skills, hard skills, and innovativeness of knowledge. According to research conducted by Holmberg-Wright, Hribar (2016), entrepreneurs face problems related to business management caused by focusing primarily on their specialized fields of expertise, and failing to address their soft skills development. Authors claim that strong technological skills are indeed essential to start a business, but to become successful entrepreneur one should supplement these with flexibility, creativity, persistence and social skills, necessary to create great teams, manage teamwork and deal with customers and other stakeholders. Interestingly, soft skills are not developed in complete isolation from technical skills (Turner, 2004). Although, there is a need to train both types of competences separately, development of these two seem to interact and mutually drive. Soft skills, compared to other types of skills, develop slowly over time, due to a necessity to train them, not only learn their theoretical background and assumptions. A general set of soft skills of an entrepreneurial mindset include: persuasion, leadership, personal accountability, goal orientation, interpersonal skills (Bonnstetter, 2012).

Many policymakers consider entrepreneurship education as an options for the creation of more attractive skilled jobs and they do it as a strong potential to enable youth to gain skills and generate their own skilled jobs (Premand et al., 2016). Authors of this papers relate directly to the empirical evidence on the effectiveness of entrepreneurship education programs in shaping individual skills and facilitating entry into self-employment.

3. Research Method

The paper covers the topic of young researcher's innovativeness. It focuses on the role of training on soft skills and entrepreneurship in boosting their innovative performance. The research focuses on analysis and discussion regarding the effects of soft skills and entrepreneurship training on young researcher's innovativeness. Main research questions are the following:

- In which fields of young researcher's activities is their training on soft skills and entrepreneurship a way to boost innovativeness?
- How the training on soft skills and entrepreneurship contributes to the growth of innovativeness of young researchers?
- What are the new activities undertaken by young researchers who successfully completed the training?

The paper presents the findings of a case-study research of the TransFormation.doc program run by the Ministry of Science and Higher Education of Poland in 2015-2016, financed under the Operational Program Innovative Economy 2007-2013. The TransFormation.doc program was aimed at training 500 young researchers from different backgrounds in soft-skills and entrepreneurship. The trainings were funded by the Ministry and took place in leading academic institutions around the world, i.e. in Canada (Ivey Business School), Sweden (Lund University) and the Netherlands (Wageningen University). Selected candidates participated in two-week or three-week long course in the groups of around twenty people. Both of the courses were focused on soft and entrepreneurial skills development, but the longer course incorporated additionally a module named "train the trainer". The courses incorporated various teaching methods, including theoretical lectures, project work, study visits, group presentations, interactive exercises, expert speeches and hands-on-experience trainings.

The case study research was designed according to the approach proposed by Robert Yin (2014) and prepared based along the following stages: research planning, case-study design and preparation, data collection, data analysis, and results sharing. The data was collected based on the following source materials: documents, information available online, project evaluations of selected participants and interviews. The interviews were conducted mainly with participants. Some of them included also teachers from Lund University, as most of the participants went there for training.

Graphical illustration of the research approach and data gathered is presented in Figure 1.

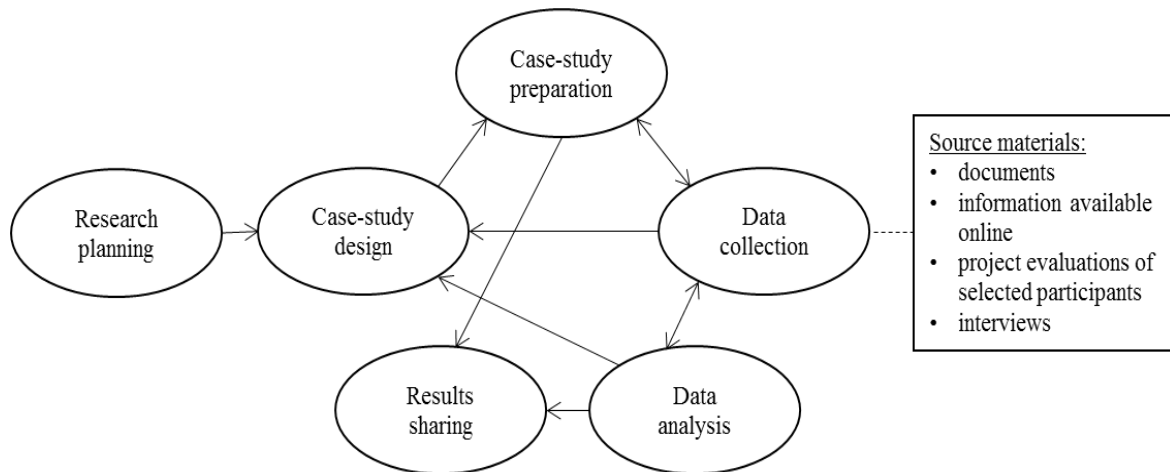


Figure 1. Graphical illustration of research approach and gathered data

Source: Own elaboration based on case-study research and Yin, 2014

The TransFormation.doc case-study has been selected purposefully, having in mind a specific research problem described in detail in the introductory part of this paper. Research results and conclusions were grounded in relevant empirical data and referred to appropriate theories presented in literature (Konecki, 2000).

4. Research Results

Training on soft skills and entrepreneurship was aimed at strengthening and developing skills, that could be grouped around the following topics:

- communication and interpersonal skills: intercultural communication, networking, teamwork skills,
- intellectual and intrapersonal competencies: creative thinking, critical thinking, career planning, emotional intelligence, stress resistance, internal control, ability to accept failures and deal with them, ability to adapt to changing conditions, perceptions of opportunities and their use,
- stimulating interdisciplinarity: working in interdisciplinary groups, implementing interdisciplinary projects,
- management of research projects: leadership skills, diversity management, group dynamics, time and risk management, problem solving skills.

An overall objective was to encourage international cooperation in order to increase the participation of Polish scientists in international research projects, and to support the creativity of young researchers and innovativeness of their actions. Most of researched participants agreed that the course was well developed, lectures, workshops, projects and study visits were appropriate to the topics listed above, groups of participants selected for courses were interdisciplinary and inspiring (each two or three week long was prepared for the group of 20 people), and teachers were willing to help individual participants to develop their skills.

The course seems to be very useful for the participants. First, gained knowledge and skills are useful in their didactic work. Majority of participants work at the universities and teach students on the daily basis. Many of them after the training decided to make their classes more interesting, by incorporating short soft skills trainings with practical tasks and workshops. Secondly, the theory that participants learned is widely distributed. Many of them conduct various trainings based on the materials they received during the TransFormation.doc course. In addition, for participants who work in the academia and in business, knowledge and skills in entrepreneurship are particularly useful in dealing with clients and other stakeholders. Thirdly, participants value the TransFormation.doc program because it allowed them to establish interdisciplinary, multinational networks. Contacts that participants have made through the course, both with other participants and with the staff of the Universities, enabled them to carry out interesting international or interdisciplinary projects and activities. Examples of such activities include:

- Joint publications;
- Joint conference presentations;

- Joint trainings and courses (e.g. a group of fifteen scholars from different parts of Poland, representing different fields of research, prepared an innovative soft skills and entrepreneurship training. The training is currently delivered for the second time under the Open University of the University of Warsaw. It covers eight broad thematic blocs and is based on workshops and project work.);
- Joint local initiatives (e.g. scholars from similar locations established their own local networks in the cities of Bialystok, Lodz, Poznan, Warsaw, Radom, Wroclaw and in the regions Silesia, Mazovia and Lubelskie. These networks were established to facilitate close cooperation and engage together in interesting academic initiatives);
- Joint teaching programs (e.g. a group of interdisciplinary researchers prepared joint, interdisciplinary teaching program focused on developing entrepreneurial and soft skills. They aimed at introducing this teaching program in different universities in Warsaw as it is designed to be complementary to existing teaching programs. Other researchers took part as leading facilitators in universities creativity boosters such as Rector's Team for Innovative Teaching Methods INFOX at Warsaw University of Technology and started to coordinate inter-university and international educational programs, Infox (2017). Souls and minds of its members are full of creative, innovative and visionary, yet half-baked ideas. And they would like to share mentioned ideas and exchange their points of view with people from around the world. The members of the Rector's Team for innovative forms of education are highly diverse and, at the same time, fully complementary. This contributes to their openness for world-wide cooperation. They believe in learning by doing that is why they implement problem-based learning methodology combined with design thinking and other methods of education. They want to have an impact on innovative education and are not afraid of new challenges. What is more, they co-organized a lot of workshops and events, e.g. Design Thinking Week 2015: 2017);
- Establishment of a platform facilitating joint collaboration;
- Running Facebook fan page to share news about interesting events and trainings;
- Creating Slack channel in order to share information about possible grant applications, scholarships and programs;
- Organizing meetings with representatives of science and business.

Moreover, participants declare that some of them applied for grants with other scholars met during the TransFormation.doc program, are in touch with international scholars and send each other papers and other work for reviewing, formed teams to commercialize their business ideas, established foundations aimed at research popularization. All participants admit, that the biggest value of the TransFormation.doc program, apart from interesting courses and trainings in soft skills and entrepreneurship, is an interdisciplinary network that creates opportunities for further career development.

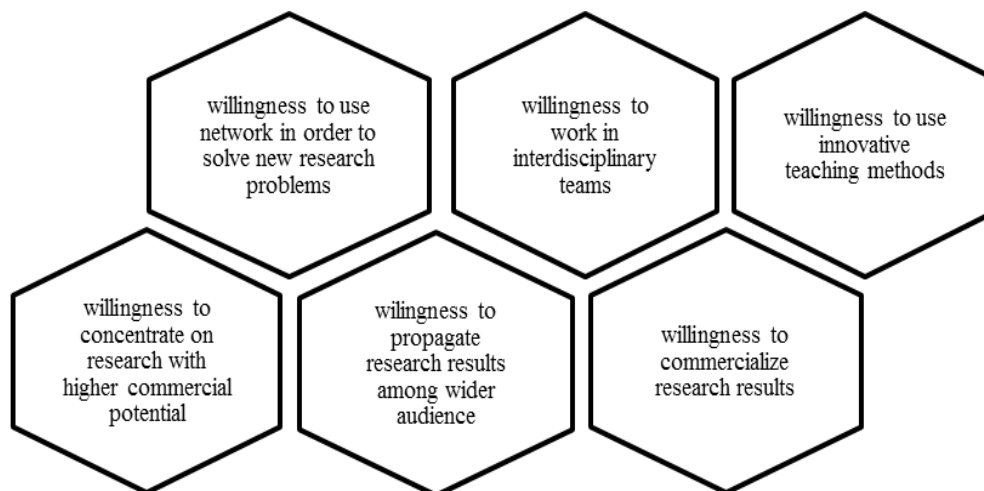


Figure 2. Innovative activities undertaken by young researchers as a result of soft skills and entrepreneurship training

Source: Own elaboration based on case-study research

Main outcomes of the TransFormation.doc program, describing innovative activities of young researchers are graphically presented in Figure 2. Figure 2. is also treated as the precise answer for research question (1).

Described research results contribute to body of knowledge by strengthening certain beliefs and previously developed conclusions. Many authors emphasize the importance of combine together soft skills, hard skills and innovativeness of knowledge (Hendarman, Tjakraatmadja, 2012; Holmberg-Wright, Hribar, 2016). The research presented in this article confirms importance of mentioned above. The best technology attractions will not bring any significant success without the well-combined triple: soft skills, hard skills and innovativeness of knowledge.

Both, participants and teachers representing host Universities, admit that soft and entrepreneurial skills are equally or even more important than technical and academic skills. Such results confirm the conclusions presented in the literature by other authors, like Balcar (2014), Holmberg-Wright and Hribar (2016) or Lippmann et al. (2015).

It is not yet fully proven which set of skills contribute to collaboration facilitation and multidisciplinary teamwork (Troutt, et al., 2010). The research results presented in this paper may serve as a starting point to develop a theory stating that soft and entrepreneurial skills facilitate interdisciplinary collaboration. Participants of TransFormation.doc after completing the training started to value more interdisciplinary networking and begun to create their own multidisciplinary teams.

The TransFormation.doc program, or other similar program in terms of scale and trained participants was not described in the literature so far. It should be emphasized that the research confirms that Polish scientists have the potential to meet the requirement of UE connected to a new innovation indicator for measuring the progress in gaining the goals of the Europe 2020 Strategy (European Commission, 2013; Janger et al., 2017) and to influence strongly the research and innovation policy in EU countries.

5. Conclusion

The case-study, mainly based on documentation analysis and interviews, confirms that soft and entrepreneurial skills are becoming more and more important for young researchers. The results demonstrate that researchers after completing the training are more willing to work in interdisciplinary teams, undertake activities aimed at propagating their research results among wider audience, commercialize their research, engage in socially-focused projects, use innovative teaching methods, concentrate on research with higher commercial potential, use their network in order to solve new research problems, focus on challenge-based projects with broader societal implications. The conclusions allow to indicate what are the innovative activities of young researchers that were undertaken as a result of a training completion.

Conclusions of this paper may serve to show the still existing chasm between science and industry, which may in the future due to initiatives like TransFormation.doc get smaller as researchers are more and more interested in practically-oriented research.

References

- Almlund, M., Duckworth, A.L., Heckman, J.J., Kautz, T. (2011). Personality Psychology and Economics. In S.M. Eric, A. Hanushek, W. Ludger (Eds.), *Handbook of the Economics of Education* (pp. 1-181). Amsterdam: Elsevier.
- Balcar, J. (2014). Soft Skills and their Wage Returns: Overview of Empirical Literature. *Review of Economic Perspectives*, vol. 14, iss. 1, pp. 3-15.
- Bartel, C.A., Garud, R. (2009). The Role of Narratives in Sustaining Organizational Innovation. *Organization Science*, vol. 20, iss. 1, pp. 107-117.
- Baskaran, S., Mehta, K. (2016). What is innovation anyway? Youth perspectives from resource- constrained environments. *Technovation*, vol. 52-53, pp. 4-17.
- Beckton, J. (2009). Educational Development Units: the challenge of quality enhancement in a changing environment. In L. Bell, H. Stevenson, M. Neary (Eds), *The Future of Higher Education* (pp. 57-68). New York: Continuum International Publishing Group.
- Bonnstetter, B.J. (2012). New Research: The Skills That Make an Entrepreneur, [online]. *Harvard Business Review*. Available: <https://hbr.org/2012/12/new-research-the-skills-that-m> [2017, November, 20].

- Dawe, S., Guthrie, H. (2004). *Vocational education and training and innovation- Research readings*. Adelaide: National Center for Vocational Education Research Ltd.
- Doig-Tierno, N., Alcázar, J., Ribeiro-Navarrete, S. (2015). Use of infrastructures to support innovative entrepreneurship and business growth. *Journal of Business Research*, vol. 68, pp. 2290-2294.
- Elsen, P., Jaginowski, J., Kleinert, R.A. (2005). *2005 Skill gap report*, [online]. Available: http://www.doleta.gov/wired/files/us_mfg_talent_management.pdf. [2017, November 28].
- enGauge Report (2003). *21st Century Skills: Literacy in the Digital Age*, [online]. Available: http://www.cwasd.k12.wi.us/highschl/newsfile1062_1.pdf. [2017, November 28].
- Esa, A., Selamat, A., Padila, S., Jamaludin, J. (2014). Applications of soft skills in engineering programme at Polytechnic Malaysia. *Procedia - Social and Behavioral Sciences*, vol. 140, pp. 115-120.
- European Commission (2013). *Measuring innovation output in Europe: towards a new indicator*, [online]. Available: https://ec.europa.eu/research/press/2013/pdf/indicator_of_innovation_output.pdf. [2017, November 28].
- Filion, L.J. (1999). Empreendedorismo: empreendedores e proprietários-gerentes de pequenos negócios. *Revista de Administração [RAUSP]*, vol. 34, iss. 2, pp. 5-28.
- Hendarman, A.F., Tjakraatmadja, J.H. (2012). Relationship among soft skills, hard skills, and innovativeness of knowledge workers in the knowledge economy era. *Procedia - Social and Behavioral Sciences*, vol. 52, pp. 35-44.
- Holmberg-Wright, K., Hribar, T. (2016). Soft Skills – The Missing Piece for Entrepreneurs to Grow a Business. *American Journal of Management*, vol. 16, iss. 1, pp. 11-18.
- Infox (2017). *Rector's Team website*, [online]. Available: <http://infox.pw.edu.pl/>. [2017, December 17].
- Janger, J., Schuberte, T., Andriesa, P., Rammerd, C., Hoskens, M. (2017). The EU 2020 Innovation Indicator: A Step Forward in Measuring Innovation Outputs and Outcomes? *Research Policy*, vol. 46, pp. 30-42.
- John, O.P., Naumann, L.P., Soto, C.J. (2008). Paradigm shift to the integrative Big-Five trait taxonomy: History, measurement, and conceptual issues. In O.P. John, R.W. Robins, L.A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 114–158). New York, NY: Guilford Press.
- Karnouskos, S. (2017). Massive open online courses (Moocs) as an enabler for competent employees and innovation in industry. *Computers in Industry*, vol. 91, pp. 1-10.
- Kautz, T.D., Heckman, J., Diris, R., ter Weel, B., Borghans, L. (2014). *Fostering and Measuring Skills: Improving Cognitive and Non-Cognitive Skills to Promote Lifetime Success*. Cambridge: National Bureau of Economic Research.
- Konecki, K. (2000). *Studia z metodologii badań jakościowych. Teoria ugruntowana*. Warszawa: Wydawnictwo Naukowe PWN.
- Lazonick, W. (2004). *Indigenous Innovation and Economic Development: China's Leap into the Information Age*. *Industry and Innovation*, vol. 11, iss. 4, pp. 273-297.
- Leite, Y.V.P., de Moraes, W.F.A.. (2015). *The ability to innovate in international entrepreneurship*. *Revista de Administração [RAUSP]*, vol. 50, iss. 4, pp. 447-459.
- Leroux, J.A., Lafleur, S. (2006). Employability Skills: the demands of the workplace. *The Vocational Aspect of Education*, vol. 47, iss. 2, pp. 189-196.
- Lippman, L.H., Ryberg, R., Carney, R., Moore, K.A. (2015). *Workforce connections. Key "soft skills" that foster youth workforce success: toward a consensus across fields*. Bethesda: Child Trends Publication.
- McIntosh, S. (2008). *Education and employment in OECD countries*. Paris: United Nations Educational, Scientific and Cultural Organization.
- Meister, J. (2015). *MOOCs Emerge As Disruptors To Corporate Learning*, [online]. Available: <http://www.forbes.com/sites/jeannemeister/2015/06/10/moocs-emerge-as-disruptors-to-corporate-learning>. [2017, November 28].
- Musa, F., Mufti, N., Latiff, R.A., Amin M.M. (2012). Project-based learning (Pjbl): inculcating soft skills in 21st century workplace. *Procedia – Social and Behavioral Sciences*, vol. 59, pp. 565-573.
- OECD, Eurostat. (2005). *Oslo Manual. Guidelines for Collecting and Interpreting Innovation Data, Third Edition*. Paris: OECD and Eurostat.
- OECD. (2011). *Skills for Innovation and Research*. Paris: OECD Publishing.
- Premand, P., Brodmann, S., Almeida, R., Grun, R., Barouni, M. (2016). Entrepreneurship education and entry into self-employment among university graduates, *World Development*, vol. 77, pp. 311-327.
- Sahut, J.-M., Peris-Ortiz, M. (2014). Small business, innovation, and entrepreneurship. *Small Business Economics*, vol. 42, iss. 4, pp. 663-668.

- Savino, D. (2014). The Impact of Moocs on Human Resource Training and Development, *Journal of Higher Education Theory and Practice*, vol. 14, iss. 3, pp. 59-64.
- Schumpeter, J.A. (1988). *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*. London: Transaction Publishers.
- Shane, S., Venkataraman, S. (2000). The Promise of Entrepreneurship as a Field of Research. *Academy of Management Review*, vol. 25, iss. 1, pp. 217-226.
- Troudt, E.E., Winkler, Ch., Babette, A.A., Schulman, S. (2010). The Engineering Virtual Enterprise: A Framework for Soft and Entrepreneurial Skills Education. *IMETI 2010 - 3rd International Multi-Conference on Engineering and Technological Innovation, Proceedings*, pp. 152-157.
- Turner, R. (2004). Towards a Structural Model Connecting Hard Skills, Soft Skills and Job Conditions and the IS Professional: The Student Perspective. *Issues in Informing Science & Information Technology*, vol. 1, pp. 977-991.
- Yin, R.K. (2014). *Case Study Research Design and Methods*. London: SAGE Publications.

50. STATISTICAL RESOURCES OF FOREIGN MIGRATION OF LABOUR FORCE IN THE SLOVAK REPUBLIC AND THEIR MANAGEMENT

Abstract: Foreign migration is becoming a society agenda and a challenge of the 21st century. The main objective of the presented paper is to identify the main statistical resources which evaluate the data on migration of labour force to foreign countries in the conditions of the Slovak labour market. The following tasks were defined to achieve the goal: to define key terms (providing of employment for a charge, agency for temporary employment, agency for supported employment, European services of employment, selective research of labour force) and to research the condition of Slovak labour force abroad from individual statistical sources. The purpose of this paper is to provide an overview of existing management measures as well. The importance of management measures has been repeatedly emphasised by all the institutions of the EU. This is an urgent need to evaluate migration management at a European and national level. We have used different research methods in the paper: theoretical general methods of scientific knowledge – analysis of available bibliographic references, synthesis at formulation of researched conclusion. This study is significant for the field of social policy – labour market policy and migration policy.

Keywords: labour force, labour market, migration, social policy, statistical resources.

JEL Classification: F22, J61

1. Introduction

Due to globalisation processes, the issue of labour migration is becoming more and more actual. Its influence can be seen in all spheres of social life of all parties (Tupá, 2016). Globalization processes characterized by the free movement of goods and capital are extended by the free movement of labour. Established development trend of international migration is based on globalization processes. Motives of migration from the beginning of mankind, not excluding the present, result from a desire to increase the quality of human life (Tupá, 2015; Štefančíková, Masárová, 2015). There are factors that need to be taken into consideration, such as for instance lack of vacancies, low income, bureaucratic hindrances, weak law enforcement, “slimmed down” social policy and other negative economic and social phenomena (Vojtovič, 2013). Migration requires systemic approach and qualified management. Slovak Republic must be ready and willing to participate in the harmonization of migration policies of individual states within the European Union. Well-thought-out, institutionalized and state-coordinated process is a prerequisite for successful handling of migration-related problems. As migration from the Slovak Republic has mainly temporary and circular character, it is crucial to implement the labour market policies, especially the creation of conditions for reintegration of returnees into the social security systems, health insurance systems and to the labour market. Foreign migration exists mainly because the labour market of Slovak Republic has the problem of creating job positions for the domestic population, which is forced to leave to work abroad. Labour migration at the global level, when the most capable people migrate to get the highest earnings, contributes to deepening of regional bipolarity of the world and emphasises the differences in wealth. With the volume of foreign migration, the nature of migration processes is changing significantly, new approaches, policies and migration management are being formulated, legal norms are being redefined and the number of institutions dealing with the foreign migration is growing.

The main objective of this submitted paper is to identify the main statistical resources which evaluate the data on migration of labour force to foreign countries in the conditions of the Slovak labour market. The purpose of this paper is to provide an overview of existing management measures as well.

¹ Ing. Tatiana Masárová Ph.D.; Študentská 3, 911 50 Trenčín, Slovakia, tatiana.masarova@tnuni.sk

* Corresponding author

2. Methodology of the Research

The aim of this submitted paper is based on analysis and synthesis of available bibliographic sources; in the paper, literature review method was employed. A literature review is a systematic search of published work to find out what is already known about the intended research topic. The purpose of a literature review is not only to identify and analyse all information written about a topic, but also to gain insight and understanding into the problem at hand. Literature review was conducted in August 2017. The selection criteria for this paper are all of the relevant statistical resources of foreign migration of labour force in the Slovak republic; the data were obtained using statistical resources (providing of employment for a charge, agency for temporary employment, agency for supported employment, European services of employment, selective research of labour force).

3. Literature Review

In accordance with the International Organization for Migration, migration is a movement of a person or a group of people from one geographical unit to another across an administrative or a political boundary in order to settle definitively or temporarily on a place different than the place of origin of the person (IOM, 2005). Migration is a form of a spatial mobility of the population, the essence of which is the movement of people across national borders with the intension to settle in other country for a certain period of time (Divinský, 2005).

The concept of migrant (synonym foreigner) is another frequent concept which we often encounter in regards to migration problems. A migrant is defined by the United Nations Organisation as a person who, for whatever reasons, changed his country of permanent or habitual residency and has moved from their home country to another country (MPSVR, 2009). A foreigner is anyone who is not a citizen of the Slovak Republic (Act No. 404/2011 Coll. on residence of foreigners, as amended). Third-country national is any foreigner who is not a citizen of the European Economic Area (MPSVR, 2009).

Providing of employment for a charge can be performed either by legal entity or physical entity. Intermediary can perform providing of employment for a charge only if he has completed at least the first degree of university education (ÚPSVR, 2016).

Temporary employment agency is a legal entity or physical entity which employs the citizen in the employment relationship for the purpose of his temporary assignment to a user employer in the Slovak Republic for the performance of work under his supervision and guidance or for the purpose of his dispatch (ÚPSVR, 2016).

Supported employment agency is a legal or physical entity which provides services to citizens with disabilities, to long-term unemployed citizens and to employers (ÚPSVR, 2016).

More comprehensive data on labour migration can be obtained from the *network of European Employment Services – EURES* in the Slovak Republic. EURES is a network of cooperating entities which aim to make the free movement of labour easier within the European Economic Area and Switzerland. EURES network also connects regional and national institutions which are dealing with the issues of employment.

The other source of information about citizens working abroad is the *Selective labour force survey*, which is carried out quarterly by the Statistical Office of the Slovak Republic. Migration abroad, which is regularly reported by the Statistical Office of the Slovak Republic, captures the movement of Slovak nationals and foreigners who have applied for the permanent residence, respectively they have signed off – it is a dynamic value (the flow of people). The difference between the number of immigrants and emigrants is a migration balance, net migration (ŠÚ SR, 2016).

Adepoju, Van Noorloos and Zoomers (2010) defining management of migration as “system of diversified governmental competencies and organized and humanitarian directing of process of foreign migration on territory of particular state. Primary objective of migration management is regulation of illegal migration in order of maximalization his positive effect and minimizing of negative impact for example spontaneousness, in organization and illegal character on domestic, regional and worldwide level (Kazlauskienė, Rinkevičius, 2006).

The European Commission recommends extensive management measures to control migration although there are justifiable doubts about the efficiency and effectiveness of these management

measures (Daugiliene, 2007; Carling, Hernández-Carretero, 2011). Some measures of migration management: strengthening the external borders, cooperation with third countries, fight against human trafficking, management illegal employment, regularisation of illegal immigrants, return home migrants, management information exchange (Vogel, Cyrus, 2008; ANAO, 2013).

4. Results

In our paper we consider the possible responsible subjects. In our case, legislative of foreign migration of labour force in the Slovak Republic should be managed by Ministry of Labour, Social Affairs and Family of Slovak Republic. Competences regarding the execution of mentioned measures should be transferred to offices of labour, social affairs and family. We have pointed out statistical office of the Slovak Republic, non-governmental organizations as other responsible institutions (Table 1).

Data about migration for work and about permanent emigration abroad is underestimated. Experts on foreign migration have to work with low-quality information; data on foreign migration is always estimation. Partial data on migration for work abroad can be obtained from various intermediary agencies. These are, for example, non-state employment service providers – agencies providing employment for a charge (which provided the highest number of employments), temporary employment agencies and supported employment agencies. Activities of mentioned agencies are in accordance with Act No. 5/2004 Coll. on employment services, as amended.

Table 1. Responsible institutions for statistical resources of foreign migration of labour force in the Slovak Republic

Value	Various intermediary agencies	Responsible institutions
Foreign migration of labour force	<ul style="list-style-type: none"> – Providing of employment for a charge – Temporary employment agency – Supported employment agency – Network of European Employment Services – Selective labour force survey 	<ul style="list-style-type: none"> – Ministry of Labour, Social Affairs and Family of the Slovak Republic – Office of Labour, Social Affairs and Family – Statistical Office of the Slovak republic – Non-governmental organizations. – Others

Source: Author

We have to accept migration and find suitable tools by migration policies. Development of migration show that country which act without international cooperation has limited options of migration management (Ellis, Roberts, 2016).

Providing of employment for a charge - intermediary, who provides employment for a charge, signs a written agreement with the citizen. This agreement includes name, address, identification number and type of the economic activity of the employer, length of employment, type of work, salary, other work conditions, method and conditions of health insurance and social insurance, extent of responsibility of the intermediary for non-compliance with terms of agreement. Intermediary is obliged to keep records of citizens who have been provided with the employment for a charge. Intermediary is obliged to provide the headquarters with data about the scale and structure of provided employments for a charge. Intermediary is obliged to provide the report on activities of the past calendar year by March 31st of the following calendar year. Intermediary is obliged to ensure the protection of personal data according to the specific regulation. Intermediary is also obliged to create conditions for checking the compliance with law legislation in the field of employment services. Until September 2016, approximately 1800 agencies providing employment for a charge was authorized to provide work abroad (ÚPSVR, 2016). Their duty is to keep records of provided employments. Agencies providing employment for a charge mediated most job positions into countries of European Union and European Economic Area. This was mostly to United Kingdom, followed by Czech Republic and Cyprus. These were mainly job positions for more than a half a year.

Temporary employment agency is not allowed to charge the temporary agency employee with the fee for the assignment to the user employer or for the establishing of the employment relation with the user employer after the termination of this assignment. For the assignment of temporary agency employee, temporary employment agency is allowed to charge the user employer with the fee at the agreed amount. Legal entity or physical entity can carry out the activity of temporary employment agency in case the entity is irreproachable, has completed the second degree education and is

authorized to do so. Irreproachability is proved by the printout from the criminal record not older than three months. The condition for issuing of the license to a legal person to carry out the activity of a temporary employment agency is also the ownership of equity in the amount of at least 30 000 €. As of 23.08.2016, there were 1 247 temporary employment agencies in the Slovak Republic. Agencies provide mainly short-term employment (up to 6 months). They mediate the work mainly to clients with no foreign language skills, mostly to Czech Republic. As of 16.05.2015, there were 65 supported employment agencies in the Slovak Republic. Even though the agencies focus on Slovak Republic, they also mediate the work to the countries of European Union and European Economic Area (ÚPSVR, 2016)

Supported employment agency is focused on making it easier to get a job, to keep a job, to making it easier to recruit a disabled person or a long-term unemployed citizen. Via supported employment agencies, Slovaks were employed mainly in Czech Republic. As of 16.05.2016, there were 65 supported employment agencies in the Slovak Republic (ÚPSVR, 2016)

The network of European Employment Services – EURES in the Slovak Republic - advisers are the driving force of the EURES network. They are experts on the labour market and on the law of the European Economic Area. EURES advisers provide three main services: offering of information, work counselling and help with the placement on the labour market. In addition to the job vacancy database, EURES advisers have information on living and working conditions in countries of European Union / European Economic Area, information on the situation on the individual labour markets, on registration procedures, on taxes, on social and health security, they know how to advise on creating CVs. In EURES statistics, we can only find people who were looking for the job via EURES, the statistics does not include estimates of illegally employed immigrants. EURES data on the number of people working abroad are relatively reliable and the mentioned source is considered to be more reliable than the Selective labour force survey

The other source of information about citizens working abroad is the *Selective labour force survey*. Within the European Union, this survey is conducted in a uniform methodology and therefore, results are comparable on the international level. Selective labour force survey has one main weakness: Many experts (Hajnovičová, 2003; Košta 2006; Divinský, 2007) agree that the absolute values reported in this survey should be increased by at least 25-30%. This proportion is apparently not captured in the Selective labour force survey (these are mostly emigrants who work abroad illegally or receive benefits in the Slovak Republic that they are not entitled to, for example unemployment benefit. According to the Selective labour force survey, increase in the number of people employed for under one year continued in the second quarter of 2016. This number increased year-by-year by 23 200 people (by 16, 3%) to 165 100 people (Table 2).

Table 2. Foreign migration of labour force

Year	Slovak citizens working abroad
2000	49 300
2010	127 400
2011	118 100
2012	113 700
2013	134 200
2014	136 200
2015	135 700
IIQ 2016	165 100

Source: Štatistický úrad Slovenskej Republiky, 2016

Among migrants, there were predominantly construction workers (47 900), health service workers and social care workers (39 600) and industry workers (32 700). The highest number of Slovak citizens worked in Austria (53 100) and in the Czech Republic (40 200). From the regional point of view, the highest number of people who found a job abroad was from the Region of Prešov (41 500) (ŠÚ SR, 2016). This region is significant by the highest unemployment rate and the high concentration of Romany ethnicity. We can assume that the highest share of Prešov Region in the foreign migration has several causes:

- in terms of periodic shift, it is no longer such a difference whether the people of Prešov Region work in Bratislava, Brno or Prague,
- in terms of longer separation, it is no longer important whether the target location will be Western Slovakia or Western Europe,
- another influence might be the higher concentration of Romany ethnicity which accumulates social-pathological events on a much larger scale and people try to escape from this environment.

The group of migrants working abroad is dominated by the young people under the age of 34 who have completed their training for the occupation and are in the age range when career, professional skills, starting a family and reproduction should be developed. The lack of opportunities for young people on the domestic labour market pushes them into the decision to look for the work abroad. The educational ratio of migrants working abroad has been shifting in recent years – apprentice schools and high schools are dominating while the share of people with university education drops (Kešelová, 2007). This means that the crisis on the labour markets of European Union and changes on the domestic labour market have brought changes in the profile of work migrants from the Slovak Republic. According to Kahanec (2016), the director of research at the Central European Labour Studies Institute, departure of migrants contributed significantly to the decrease of unemployment in Slovakia. Unemployed people migrated for work more often than employed people and the departure of labour force was more significant from the economically weaker regions of Slovakia.

5. Conclusion

Work is a key concept in the employment relationship, whether performed legally under an employment contract, agreement on work performed outside employment relationship, or performed illegally (Pšenková, Gullerová, 2016). Expert and scientific community, general public, politicians, state institutions and mass media currently often work with or present information on migration of labour force that is many times more guesses assumptions or myths. Currently, only an idea of the overall scope of migratory flows to Western European countries can be made of the fragmented mosaic made up of national statistics, surveys and evaluations conducted in both countries of destination and Slovakia. An exact evaluation of migratory flows of labour force abroad, their scope and intensity in time and space, impact on employment in both home and destination countries, skills and practices acquired abroad and subsequently used at home in terms of gains and losses for economy, society, and emigrants themselves is not available for the time being; thus not part of any measures and policies of Slovak government, local government authorities; as well as scientific and expert publications and research (Vojtovič, Krajňáková, Tupá, 2016; Vojtovič, Tupá, 2016).

Migration is process involving different elements of management at various stages. Citizens of the Slovak Republic are mainly employed in the countries of the European Union. The amount of Slovak citizens working outside of the European Union is lower. Obtaining the reliable data on migration for work abroad is complicated. Many citizens of the Slovak Republic find the work abroad individually and they are not registered in the Slovak Republic. Slovak citizens usually do not fulfil the duty of reporting the departure to foreign country without changing their permanent residence. Actually, many people leave to live abroad without cancelling their permanent residence. Only a minimum number of people moving from the Slovak Republic sign off from their permanent residence, even though it is required by the law. This obligation is stated in the Act No. 253/1998 Coll. on reporting of the residence of Slovak Republic citizens and the registry of the Slovak Republic residents, as amended. Paragraph 6, section 1, 2, 3 states: “Citizen, who prepares to departure to foreign country with the purpose of permanent living abroad, is obligated to report the termination of permanent residence at the registration bureau which keeps the data about the permanent residence; citizen has to specify the state and the place where he intends to stay, start date of the residency in the foreign country, which is also the termination date of the permanent residence. Termination of the permanent residence can be also reported via representative office of the Slovak Republic or via authorized representative in the Slovak Republic. Ministry specifies the template of the report card of the permanent residence.”

Thus, the main advantage of the paper lies in detailing all the statistical resources which evaluate the data on migration of labour force to foreign countries. The paper has some limitations of the current study. Research concerned the state of knowledge migration of labour force to foreign

countries in the conditions of the Slovak labour market. This theme of research is worth of continuing in aim to make comparisons between Slovak and European labour market. This study is significant for the field of social policy – labour market policy and migration policy (possible applications).

Acknowledgements

This paper was created in the frame of the project „Bilancia ekonomických strát a prínosov z migrácie pracovnej sily“ and supported by Grant Agency VEGA Ministry of education, science, research and sport of the Slovak republic [No 1/0679/17].

References

- Act No. 253/1998 Coll. on reporting of the residence of Slovak Republic citizens and the registry of the Slovak Republic residents, as amended.
- Act No. 5/2004 Coll. on employment services, as amended.
- Act No. 404/2011 Coll. on residence of foreigners, as amended.
- Adepoju, A., Van Noorloos, F., Zoomers, A. (2010). Europe's Migration Agreements with Migrant-Sending Countries in the Global South: A Critical Review. *Journal of International Migration*, vol. 48, iss. 3, pp. 42-75.
- Australian National Audit Office ANAO (2013). *Individual management services provided to people in immigration detention*, Canberra.
- Carling, J., Hernández-Carretero, M. (2011). Protecting Europe and protecting migrants? Strategies for managing unauthorised migration from Africa. *British Journal of Politics and International Relations*, vol.13, pp. 42-58
- Daugeliene, R. (2007). The position of knowledge workers in knowledge-based economy: migration aspect. *European Integration Studies*, vol. 1, pp. 103-112.
- Divinský, B. (2005). *Zahraničná migrácia v Slovenskej republike. Stav, trendy, spoločenské súvislosti*. Bratislava: Friedrich Ebert Stiftung.
- Divinský, B. (2007). *Labour market – migration nexus in Slovakia: time to act in a comprehensive way*. Bratislava: International Organisation for Migration.
- Ellis, P., Roberts, M. (2016). *Leveraging Urbanization in South Asia: Managing Spatial Transformation for Prosperity and Livability*. Washington, D.C.: World Bank Group.
- Hajnovičová, V. (2003). *Vývoj zamestnanosti v SR a odhad nedeklarovanej práce*. Bratislava: Prognostický ústav Slovenskej akadémie vied.
- International Organization for Migration. (2005). *World Migration 2005: Costs and Benefits of International Migration*. Ženeva: Medzinárodná organizácia pre migráciu.
- Kahanec, M. (2016). *Keby migranti brali prácu a znižovali platy, tak v Amerike by mali záporné mzdy*, [online]. Available: <http://www.celsi.sk/> [2017 August 06]
- Kazlauskienė, A., Rinkevičius, L. (2006). The Role of Social Capital in the Highly-Skilled Migration from Lithuania. *Engineering Economics*, vol. 4, pp. 69-75.
- Kešlová, D. (2007). *Migračný potenciál obyvateľstva SR: Sprístupnenie trhov práce vo vybraných krajinách EÚ a vývojové trendy na trhu práce v SR*. Bratislava: Inštitút pre výskum práce a rodiny.
- Košta, J. (2006). *Medzinárodná migrácia v Európskej únii*. Bratislava: Ekonomický ústav Slovenskej akadémie vied.
- Masárová, T., Štefančíková, A. (2015). Integration of migrants on the labour market in the Slovak republic in the context of regional disparities. *Znalosti pro tržní praxi 2015*, pp.598-607. Olomouc: Societas Scientiarum Olomucensis II.
- Ministerstvo práce, sociálnych vecí a rodiny (2009). *Koncepcia integrácie cudzincov v SR*, [online]. Available: <http://www.employment.gov.sk/> [2017, August 29].
- Pšenková, J., Gullerová, M. (2016). Illegal work and illegal employment in the european context. *Knowledge for Market Use 2016*, pp. 388-392. Olomouc: Univerzita Palackého v Olomouci.
- Pšenková, J., Gullerová, M. (2016). Supervising the compliance with legislation on illegal work and illegal employment in Slovakia. *Conference on social sciences and arts SGEM 2016*, pp. 799-806. Sofia: STEP92 Technology Ltd.
- Štatistický úrad Slovenskej republiky. (2016). *Štatistická správa o základných vývojových tendenciách v hospodárstve SR*, [online]. Available: <http://www.statistics.sk/> [2017, September 02].
- Štefančíková, A., Masárová, T. (2015). Labour migration of educated women and its rendering invisible. *Znalosti pro tržní praxi 2015*, pp. 952-958. Olomouc: Societas Scientiarum Olomucensis II.

Tupá, M. (2015). *Problémy a trendy v migrácii pracovnej sily*. Trenčín: Trenčianska univerzita Alexandra Dubčeka v Trenčíne.

Tupá, M. (2016). Impacts of labour migration on development and amount of salary. *Conference on social sciences and arts SGEM 2016*, pp.321-328. Sofia: STEP92 Technology Ltd. (Web of Science database).

Tupá, M. (2016). Consequences of labour migration and migration management for example of Slovak Republic. *Contemporary issues in theory and practice of management 2016*, pp.445-450. Czestochowa: Wydawnictwo Wydziału Zarządzania Politechniki Czestochowskiej. (Web of Science database).

Úrad práce, sociálnych vecí a rodiny (2016). *Sprostredkovanie zamestnania za úhradu*, [online]. Available: <http://www.upsvar.sk/> [2017, August 13].

Úrad práce, sociálnych vecí a rodiny (2016). *Agentúry podporovaného zamestnávania*, [online]. Available: <http://www.upsvar.sk/> [2017, August 13].

Úrad práce, sociálnych vecí a rodiny (2016). *Agentúry dočasného zamestnávania*, [online]. Available: <http://www.upsvar.sk/> [2017, August 13].

Vogel, D., Cyrus, N. (2008). Irregular Migration in Europe – Douts about the Effectiveness of Control Strategies. *Policy brief*, No. 9 [online]. Available: <http://focus-migration.hwwi.de/index.php?id=2874&L=1>. [2017, August 25].

Vojtovič, S. (2013). The impact of emigration on unemployment in Slovakia. *Inzinerine ekonomika*, vol. 24, iss. 3, pp. 207-216.

Vojtovič, S., Krajňáková, E., Tupá, M. (2016). Calculation of economic losses and gains caused by labour force emigration. *Actual Problems of Economics*, vol. 177, iss. 3, pp. 276-283.

Vojtovič, S., Tupá, M. (2016). Evaluation of economic benefits from migrated labour force. *Conference on social sciences and arts SGEM 2016*, pp.229-236. Sofia: STEP92 Technology Ltd.

51. FORMULATION AND APPLICATION OF AN ALTERNATIVE INCLUSIVE GROWTH INDEX: THE CASE OF POLAND AND SOUTH AFRICA

Abstract: Most economies within developing and in some cases developed countries have experienced lower growth in employment compared to that of economic growth, as well as low levels of labour absorption. In light of this the study has the aim to formulate an alternative inclusive growth index and to apply it in a high income developed country (Poland) and compare it to a middle income developing country (South Africa). Both countries are economic leaders in its respective regions. The research methodology included the development of an inclusive growth index consisting of variables such as employment, economic growth per capita, poverty, income inequality, infrastructure, education, health and dependency ratio over the last 21 years (1996 to 2016). Results indicated that the Polish Inclusive Growth Index was higher than the South African index indicating that growth in Poland has been more inclusive than in South Africa over the last 21 years, although South Africa had achieved higher average annual growth in the index. The index, as developed in this research, could be used to compare countries and even regions and also assist in economic development policy formulation. Government should intervene by means of improved policy creation and implementation to ensure the total population have access and participate in economic and social opportunities. High levels of inequality leads to low economic growth and government intervention is a requirement with a redistributive strategy. Public management principles of good governance, with strong institutions is needed to achieve inclusive growth.

Keywords: development planning, economic development, inclusive growth, index, Poland, South Africa.

JEL Classification: F43, 011

1. Introduction

Good governance is an important best practice principle within the broad study field of public management. According to the WEF (2013) in their report “Future of Government”, government plays a key management role in the facilitation of inclusive growth. The concept of inclusive growth has been at the forefront of research over the last decade, linked to concepts such as economic development and “jobless growth” within the broader research field of Development Economics. The importance of the concept is captured by Fourie (2014) who states the concept may be able to resolve the debate between economic growth and redistribution. In addition George, McGahan, Prabhu (2012) state that inclusive growth should be the overarching goal of development policy. The World Economic Forum (WEF) held its 27th World Economic Forum on Africa conference in South Africa in May 2017, which was themed “*Achieving Inclusive Growth through Responsive and Responsible Leadership*” (WEF, 2017). The WEF stated that developing countries and especially Africa must strive for inclusive economic growth which allows the total population with similar opportunities to prosper. This statement by the WEF was confirmed by the South African Minister of Finance, “*The best way to secure a sustainable and prosperous future for Africa is to build an economic transformation centered on inclusive growth and equality of opportunity for everyone*” (African News Agency, 2017). Inclusive growth is the preferred concept in terms of Development Economics and is achieving global traction (African Union, 2014).

Globally there seems to be confusion in defining the concept of inclusive growth and the purpose of this study is to clearly define and differentiate the concept from other similar concepts and also to formulate and apply an inclusive growth index. The index is applied in South Africa (a developing country) and compared to Poland (a developed country). Both countries are economic leaders in their respective regions. A number of global indexes exist which attempt to determine the level and

¹ Daniel Francois Meyer Ph.D. Development and Management; Hendrick van Eck Boulevard, Vanderbijlpark, South Africa, Daniel.meyer@nwu.ac.za

* Corresponding author

progress of inclusive growth in a country. For example the “Mapping of Inclusive Growth” by the International Policy Centre for Inclusive Growth which uses variables such as poverty, inequality and employment (Ramos, Ranieri, Lammens, 2013); “Measurement of Inclusive Growth” by the IMF utilizing variables such as economic growth per capita and equity growth (Anand, Mishra, Peiris, 2013); the “Inclusive Growth and Development Report” by the WEF which has a range of variables such as GDP per capita, employment, life expectancy, poverty, income inequality and dependency ratios (WEF, 2017); and lastly the “Inclusive Growth Indicators” by the Asian Development Bank with variables including economic growth, employment, infrastructure, poverty, inequality, health and education (McKinley, 2010). The indexes used different variables and this study takes the best practice principles and variables and formulates and subsequently an alternative index for the measurement of inclusive growth.

Table 1 is an executive summary of the country comparison between Poland and South Africa. Both countries experienced radical change over the last two decades. In South Africa the white minority government with its policy of apartheid was only removed in 1994, while Poland had a new beginning when the country became an EU member in May 2004, five years after joining the North Atlantic Treaty Organization (NATO) and 15 years after the end of communist rule (NationMaster, 2017).

Table 1. Country comparison: Poland versus South Africa

Indicator	Poland	South Africa
Country classification (UN)	High-income, developed country, EU member.	Upper middle income, developing country, Member of African Union.
Arable land per capita	0.29 ha	0.24 ha
Crime level index (0 to 100)	33.3	86.0
GDP per capita	\$12 700	\$ 7 500
% of people below poverty line	16.8	53.8
Land area (sq km)	304 459 sq km	1.2 million sq km
Population (growth in brackets)	38.4 million (-0.1%)	53.0 million (1.0%)
Median population age	40.3	26.8
Unemployment index	9.0	26.7

Source: NationMaster, 2017; United Nations, 2017; World Bank, 2017

The main objective of this paper was to formulate and apply an alternative inclusive growth index in a developed and developing country and to compare results.

2. Literature Review

In order to understand the complicated concept of inclusive growth, it is necessary to define the concept and other similar but different concepts, also to list a theoretical foundation and lastly to analyse existing efforts to classify and quantify inclusive growth. Concepts such as inclusive growth, economic development and jobless growth are defined. Inclusive growth is defined by Ramos, Ranieri and Lammens (2013) as an economic process with the equitable distribution of all the benefits as well as the active participation by the total population. Inclusive growth is therefore more focussed on the “consequences of economic growth than with levels of growth” and includes aspects such as participation through employment; and benefit-sharing by means of poverty reduction and improved income equality (Ramos, Ranieri, Lammens, 2013; Ngepah, 2017). Employment creation is an important component of inclusive growth as jobs are the cornerstone of economic and social development (World Bank, 2013). Fourie (2014) defines the concept as economic growth which includes equity as well as the overall well-being of the total population and most definitions include aspects such as income, poverty, employment and distribution (Klasen, 2010). Finally, Vellala, Madala and Chhattopadhyay (2014) state that inclusive growth is equal to broad based growth where the poor section of the population benefits through economic opportunities and participation in economic processes. Taking into account the discussion on the definitions, inclusive growth could therefore be summarised as an economic process whereby the economy strives for growth and at the same time redistribution is facilitated by means of policy implementation (Stuart, 2011). Inclusive growth should also result in improved participation and benefit-sharing through the gains of economic growth. The question could then be asked how does inclusive growth differ from the concept of economic development?

Economic development is a broad concept and has been defined many times in the past. Fourie, Burger (2009), define economic development as an integrated process which extends the choices of

residents in a country leading to an overall improvement of standard of living. It is a process which includes much more than increase and distribution of income, or just an increase in economic growth. It also facilitates skills development, and allows access to employment opportunities. Todaro, Smith (2015) define economic development as “*expansion of the productivity potential and ability of the local economy in the long run, improvement of the quality of life and increased levels of employment, thus leading to short term GDP growth as a result of sustainable inclusive economic growth*”. The concept includes key aspects such as economic growth (Ezeala-Harrison, 1996), structural socio-economic transformation (Lindbeck, 1992), improvement of standard of living and quality of life, and skills development, leading to employment opportunities (Fourie, Burger, 2009). Although the two concepts of inclusive growth and economic development are similar and in some cases used synonymously, they do differ to a certain extent. The main difference is that economic development is a broader term which comprises inclusive growth. Economic development also includes radical structural change and transformation.

Lastly, linked to inclusive growth is the concept of jobless growth. Jobless growth is a global phenomenon where economic growth happens without the creation of additional employment (Matthews, 2012). Jobless growth is therefore on the opposite side of the scale if compared to inclusive growth and could be termed as “exclusive growth”.

Within the research field of Development Economics, the theoretical foundation has been developed since the 1950s with the work of Kuznet (1955) and Solow (1956) and newer models by Porter (1985) and Romer (1992). All of these theories attempt to explain the ongoing changing relationship between economic growth, inequality and poverty and how governments can impact on this relationship through development planning interventions. Since the beginning of the 2000s, the focus of Development Economics has moved to inclusive growth through the implementation of the Millennium Development Goals (UN, 2000) and the recently launched Sustainable Development Goals (Sachs, 2012). Various authors and organizations in the field of development economics have attempted to define and quantify inclusive growth. Table 2 is a summary of the most important contributions regarding the various indexes that have been formulated. All four indexes have different processes and use different indicators to measure inclusive growth. Some attempt has been made to allocate weights to indicators for example by McKinley (2010). Indicators that have been included in most indexes are GDP growth per capita, poverty ratio, inequality, and employment to population ratio (EPR).

Table 2. Summary of inclusive growth indexes

Initiator of index	Concept/process	Key indicators - variables	Critique
International Policy Centre for Inclusive Growth, “Mapping inclusive growth”, (Ramos Ranieri, Lammens, 2013).	Based on the concepts of participation and benefit-sharing. Global index including 43 countries.	Poverty headcount ratio; Inequality (Gini Coefficient); EPR.	No combine index provided. Limited indicators. Indicators are weighted equally.
IMF, “Inclusive growth measurement and determinants”, (Anand, Mishra, Peiris, 2013).	A unified index by means of a time series regression.	Economic growth (GDP growth); income distribution.	Only applied to developing countries included. Limited indicators. Indicators are weighted equally.
WEF, “Inclusive growth report”, (2017).	Global application of the index.	GDP per capita, employment, productivity, health, income, poverty, inequality, savings, debt, dependency ratio, carbon intensity.	All indicators allocated equal weights.
Asian Development Bank, “Inclusive growth criteria and indicators”. (McKinley, 2010).	Composite country level index. Weights allocated to groupings of variables.	GDP growth, employment, infrastructure, poverty, inequality, health, education, services, social protection.	Some of the indicators difficult to quantify. Indicators are weighted individually.

Source: Own compilation

3. Methodology

The methodology of this study is in support of the functionalist paradigm and has a quantitative research design with two components. Firstly, an analysis of the literature is focusing on current issues and indexes for inclusive growth with the aim to clearly define the concept. Secondly, an alternative inclusive growth index is formulated and applied to Poland and South Africa. Previously used indexes are analysed and an amended index is developed and applied in the study. In the development of an

inclusive growth index, best practice principles from existing and similar indexes are used to create an alternative index. The literature review includes four existing indexes which were analysed and forms the basis for this index. In achieving the aim of the study, a comprehensive inclusive growth index was developed. The indicators included in the index consists of the following: employment to population ratio; GDP per capita; poverty; income inequality measured by means of the Gini Coefficient; education; health; infrastructure; and the dependency ratio. Data for both countries were obtained from the World Bank database (World Bank, 2017). The time frame of analysis is from 1996 to 2016, allowing for 21 years of assessment. Table 3 summarises the indicators included in the index. All negative indicators (such as the Gini-coefficient) were reversed scored or inverted to represent a positive score.

Table 3. Summary of indicators of inclusive growth index

Component/ Indicator	Description	Weight allocation
Employment to population ratio (EPR)	The indicator measures employment environment improvements in relation to population changes. As a ratio, the raw data is from 0 – 100. The higher the ratio, the higher the contribution to inclusive growth. A ratio below 60 indicates a malfunctioning labour market (ILO, 2011).	25.0
GDP per capita annual growth (GDPC)	This indicator measures economic growth and labour productivity (McKinley, 2010). The higher the growth, the higher the contribution to inclusive growth.	15.0
Poverty (POV)	The indicator used is the ratio of people above the poverty line based on \$2 per day income. The higher the ratio, the higher the contribution to inclusive growth.	15.0
Income equality (GINI)	The indicator is measured by the Gini Coefficient. The raw data is inverted (100 minus the original value) to indicate an increasing value as improved equality. The higher the ratio, the higher the contribution to inclusive growth.	10.0
Infrastructure (INFRA)	The indicator is represented by access to electricity and users with access to internet as percentage of the population. The final indication is an equal combination of the two indicators as a ratio. The higher the ratio, the higher the contribution to inclusive growth.	10.0
Education (EDU)	The indicator is represented by the percentage of total government budget spend on education as percentage of GDP. The higher the ratio, the higher the contribution to inclusive growth.	10.0
Health (HEALTH)	The indicator is represented by the percentage of total government budget spend on health as percentage of GDP. The higher the ratio, the higher the contribution to inclusive growth.	10.0
Dependency ratio (DEPEN)	The indicator is measured by the number of dependents as percentage of the working population. The raw data is inverted as the percentage of the population that is not dependent to indicate a higher value as a decrease in dependency. The higher the ratio, the higher the contribution to inclusive growth.	5.0

Source: Own compilation

The index is of significance as data are available for most countries over a period of time, allowing for diagnostic analysis of problematic components and to assess progress (improvements or stagnation) over time. The results of the index could also be used for policy formulation purposes (McKinley, 2010). A weighting system was added to the index, based on previous work by McKinley (2010). In this study a two-step weighting system is used. Firstly, all indicators were allocated equal weights. There are eight indicators and in the first instance, all indicators are allocated a 12.5 weight, adding up to a total index of 100 (the index composite scores is from 0 to 100). In the second step, indicators were allocated weights as indicated in Table 3. In this weighting system, the most important indicator is employment to population ratio (EPR) with a weight of 25, followed by poverty levels and GDP per capita with a weight of 15 each. The results of the equally weighted and the individually weighted indexes are also compared for each country. The final result of the index is a score between 0 - 100. Previous work by Ramos Ranieri and Lammens (2013) and McKinley (2010) have added a classification system to their indexes. Based on guidance from these indexes, the following amended classification system is provided in Table 4.

Table 4. Inclusive growth index: Classification system

Index Score	Classification and description
0 - 20	Very low levels of inclusive growth, unacceptable index.
21 – 40	Low levels of inclusive growth, unsatisfactory index.

41 – 60	Medium levels of inclusive growth, acceptable index.
61 – 80	High levels of inclusive growth, satisfactory index.
81 – 100	Very high levels of inclusive growth, superior index.

Source: Own compilation

The alternative inclusive growth index is different if compared to other indexes in terms of the extent of indicators included, the weighting of indicators as well as the process in aggregating and calculation.

4. Results and Discussion

The results of the comparative indexes are presented in Table 5 (South Africa) and Table 6 (Poland). If the overall index of South Africa is compared to that of Poland, major differences have been identified. In terms of index classification, South Africa achieved an index of 31 in 2016 from 24 in 1996 in both the equally and individually weighted indexes. This relates to an "unsatisfactory low level" of inclusive growth. At the current rate of inclusive growth improvements, South Africa could achieve a satisfactory index in two to four decades. The index has however improved from 24 in 1996 indicating an annual average improvement of 1.4 percent over the last 21 years. However of concern is the stagnation in the index since 2013 to 2016. The country has made positive improvements regarding eradication of poverty, the dependency ratio, provision of infrastructure, and spending on education and health. Ramos Ranieri and Lammens (2013) found that most countries achieved a reduction in poverty rates from 1996 to 2006. However, the country has moved backwards in terms of employment provision with job losses and a declining EPR, low and even negative GDP growth per capita and declining income equality. Ramos, Ranieri and Lammens (2013) found that few countries manage to reduce income inequality significantly over time. It was found that South Africa is facing increased inequality also lead to a rise in unemployment and a deteriorating EPR. Stuart (2011) also states that high levels of inequality has a negative impact on economic growth and the potential to create employment opportunities. Stuart (2011) further states that continued poverty reduction is not possible without sustained economic growth. South Africa has experienced this phenomenon in recent years with low growth leading to an increase in the poverty rate.

Table 5. South Africa: Inclusive growth index

Time series	EPR	GDPG	POV	GINI	INFRA	EDU	HEALTH	DEPEN	Equal weighted score	Weighted score
1996	44.1	2.4	35.7	39	29.0	5.6	8.5	34.8	24.89	26.69
1997	43.2	0.9	33.8	37	34.0	5.6	8.6	35.9	24.88	26.32
1998	42.3	-0.1	33.5	36	34.0	5.7	8.5	37.1	24.63	25.86
1999	42.2	0.9	33.2	35	36.5	5.9	8.5	38.4	25.08	26.18
2000	41.6	2.6	33.8	34	38.0	5.4	8.1	39.6	25.39	26.39
2001	41.9	1.8	34.6	34	38.5	5.2	8.3	40.4	25.59	26.56
2002	41.4	2.4	34.7	34	41.9	5.0	8.1	41.2	26.09	26.88
2003	39.8	1.7	35.1	34	43.0	4.9	8.3	42.1	26.11	26.60
2004	39.6	3.3	38.6	35	44.7	5.1	7.9	43.0	27.15	27.61
2005	40.9	3.9	41.5	35	44.3	5.1	7.8	43.7	27.78	28.44
2006	42.2	4.2	43.1	35	44.2	5.1	7.6	44.2	28.20	29.05
2007	41.5	4.0	44.1	35	45.1	5.0	7.5	44.7	28.36	29.09
2008	42.4	1.8	42.8	36	45.2	4.9	7.7	45.1	28.24	28.93
2009	40.4	-2.0	43.1	36	46.4	5.2	8.4	45.5	27.88	28.14
2010	38.6	1.6	44.9	36	53.5	5.7	8.5	45.9	29.34	29.29
2011	38.6	1.8	46.0	37	59.4	6.0	8.6	46.3	30.46	30.24
2012	38.9	0.7	46.4	36	63.2	6.4	8.8	46.6	30.88	30.56
2013	39.6	0.9	46.9	37	65.9	6.0	8.8	46.9	31.50	31.19
2014	39.6	0.1	46.6	37	67.5	6.0	8.8	47.2	31.60	31.20
2015	39.7	-0.3	47.0	37	69.5	6.1	8.7	47.5	31.90	31.44
2016	39.5	-1.3	46.2	37	71.0	6.0	8.6	47.6	31.83	31.25
Average % growth	-0.52	1.49	1.47	-0.26	7.24	0.36	0.06	1.84	1.40	0.85

Source: World Bank, 2017

In comparison, the Polish inclusive growth index achieved a score of 45 which is classified as an "acceptable and medium level" of inclusive growth. The index has shown slow but steady improvement since 1996, but at lower growth of only 0.59 percent if compared to the South African index. The Polish index has also been stagnating since 2008. The country has achieved positive improvements regarding employment with an improving EPR, strong GDP per capita growth,

improvements in infrastructure, and the dependency ratio. Ramos, Ranieri and Lammens (2013) found that Poland had a deteriorating EPR from 1996 to 2006, but this situation has been turned around since then. Problematic areas of concern are an increase poverty, a mostly stagnating income equality index, and a decline in expenditure on education. Ramos, Ranieri and Lammens (2013) found that South Africa had an inclusive growth index of 0.74 and Poland an index of 0.33 (The index ranges between 0.0 and 1.0 with 0.0 indicating perfect inclusive growth). The WEF (2017) allocated a score of 30.9 to South Africa and a score of 45.7 to Poland.

Table 6. Poland: Inclusive growth Index

Time series	EPR	GDPC	POV	GINI	INFRA	EDU	HEALTH	DEPEN	Equal weighted score	Weighted score
1996	50.7	5.9	86.4	67.3	50.7	6.3	5.8	49.2	40.29	41.99
1997	50.9	6.4	86.2	67.4	51.0	5.9	5.5	50.3	40.45	42.11
1998	51.1	4.6	85.8	67.7	52.1	4.9	5.9	51.5	40.45	41.97
1999	48.8	4.7	85.4	67.4	52.8	4.6	5.7	52.7	40.26	41.40
2000	46.8	5.6	85.2	67.0	53.7	4.9	5.5	53.8	40.31	41.12
2001	45.5	1.3	84.4	67.2	54.9	5.3	5.9	54.8	39.91	40.30
2002	43.9	2.1	83.4	66.0	60.6	5.4	6.3	55.6	40.41	40.41
2003	43.9	3.6	82.0	65.1	62.5	5.3	6.2	56.3	40.61	40.54
2004	44.1	5.2	79.5	64.6	66.3	5.4	6.2	57.1	41.05	40.84
2005	44.9	3.5	80.9	65.5	69.4	5.4	6.2	57.8	41.70	41.43
2006	46.6	6.2	82.7	65.3	72.3	5.2	6.2	58.4	42.86	42.81
2007	48.7	7.1	82.1	66.5	74.3	4.9	6.3	59.1	43.63	43.71
2008	50.7	4.2	82.9	66.3	76.6	5.0	6.9	59.5	44.01	44.19
2009	50.7	2.7	82.1	66.4	79.5	4.9	7.1	59.8	44.15	44.18
2010	50.6	3.9	82.3	66.8	81.2	5.0	6.9	59.8	44.56	44.56
2011	50.7	4.9	82.9	67.2	80.9	4.8	6.7	59.3	44.68	44.77
2012	50.8	1.6	82.7	67.6	81.2	4.8	6.6	58.7	44.25	44.30
2013	50.7	1.5	83.0	67.5	81.4	4.9	6.4	58.1	44.19	44.28
2014	51.8	3.4	83.2	67.9	83.3	4.9	6.4	57.2	44.76	45.05
2015	52.6	3.9	83.5	68.0	83.9	4.8	6.3	56.1	44.89	45.37
2016	53.2	2.8	83.2	68.1	86.7	4.9	6.2	55.1	45.03	45.55
Average % growth	0.25	4.05	-0.19	0.05	3.55	-0.22	0.34	0.60	0.59	0.42

Source: World Bank, 2017

Both countries, but especially South Africa requires government interventions to address the market failures and problematic issues as listed. In South Africa, the National Development Plan (Republic of South Africa, 2012) identified unemployment, poverty and inequality as the three main problems. Structural unemployment is experienced and the vicious cycle of poverty needs to be addressed. The majority of the population are still excluded from the benefits of economic growth with more than 50 percent of people living in poverty. In Poland, the Ministry of Economic Development released a development plan in 2016 known as “*Action plan for responsible development*”. This plan has its focus on economic growth with growth in employment and income, increased domestic investment, incentives for small business development and innovation through an enabling environment, good governance, industrialization through cluster development, development of a Polish brand with an export focus, and social welfare development in rural areas.

According to Stuart (2011), requirements for inclusive growth include a redistributive agenda for example cash transfers and a progressive tax system; macro-economic policy for example moderate levels of inflation and debt with continued spending on pro-poor components; and incentives for pro-poor investment in labour-intensive sectors and small business development (Stefko, Steffek, 2017). Meyer (2014) opines that the development of small businesses is of high importance for the development of any country’s economic well-being and this opinion is supported by Durda, Krajcik (2016). The WEF (2017) states that integrated inclusive growth strategies should have two components namely a pro-labour and a pro-business side with strong institutions. Vellala, Madala, Chhattopadhyay (2014), provides the following conclusions regarding inclusive growth strategies: rapid economic growth is required to create employment opportunities and leading to inclusive growth. Economic growth also needs to be pro-poor; poverty reduction leads to improved income inequality and policies need to ensure access to economic and social opportunities. Human development is required to improved inclusive growth; basic needs must be provided including safe

water, electricity, housing and transport; and lastly good governance with effective policy implementation.

Lastly, the results obtained by means of the alternative index compared well with findings by for example the WEF (2017), where South Africa scored 30.9 compared to a score of 31.25 in this index, while for Poland WEF allocated a score of 45.7 compared to 45.55. This alternative index contributed to the body of knowledge by using alternative indicators and also added a weighting system to the index.

5. Conclusion

The objective of this study was to formulate and apply an alternative inclusive growth index in a developed and developing country and to compare results. Results from the study include clarity on the definition of inclusive growth and the compilation of a comprehensive index to measure inclusive growth. The index includes a total of eight indicators which contributes to inclusive growth. The alternative index added indicators and also allocated specific weights to individual indicators. The overall result of the alternative index was that Poland as a developed country, has a significantly higher index of 45 if compared to South Africa which is a developing country with an index of 31 in 2016. South Africa however, has a higher average growth in the index over the last 21 years if compared to Poland. The major problematic indicators in South Africa as identified through the index are, low levels and growth in employment to population growth (EPR), economic growth per capita and income inequality. The country however, has made good progress in poverty reduction although levels of poverty are still high. Poland has done well in terms of employment and economic growth but has seen an increase in poverty. Limitations of the study are a lack of global time series data and alternative indicators could also be included in the index. Future research include more comparisons and specifically regional comparisons, testing and inclusion of other indicators in the index and econometric analysis of time series data.

The implications of this research is that the concept of inclusive growth is clearly defined and countries and even regions could be analysed regarding inclusive growth and be compared in terms of the eight variables included in the index. The results of the index provide researchers and economic development practitioners with a strategic analysis of strengths and weaknesses of regions for policy and strategy development and management. Finally, the following policy recommendations are listed for improved inclusive growth on a global scale: government should intervene by means of policy to ensure the total population have access and participate in economic and social opportunities; the creation of employment opportunities with sustainable economic growth are requirements for inclusive growth; high levels of inequality leads to low economic growth and government intervention is a requirement with a redistributive strategy; public management based on good governance principles with strong institutions and strict macro-economic policy implementation is needed to achieve inclusive growth; incentives for pro-poor investment in labour-intensive sectors such as tourism and agriculture and small business development are required; lastly ready for work skills development programmes should be implemented.

References

- African News Agency. (2017). *WEF Africa 2017: Leadership and inclusive growth to take centre stage*, [online]. Available: <https://citizen.co.za/business/1499345/wef-africa-2017-leadership-inclusive-growth-take-centre-stage/> [25 November 2017].
- African Union. (2014). *Industrialization for inclusive and transformative development in Africa*, [online]. Available: <https://www.au.int/web/sites/default/files/newsevents/workingdocuments.pdf>. [15 November 2017].
- Anand, R., Mishra, S., Peiris, S.J. (2013). *Inclusive growth: Measurement and determinants*. IMF Working paper. WP/13/135.
- Durda, L., Krajcik, V. (2016). The role of networking in the foundation and development of start-up technology companies. *Polish Journal of Management Studies*, vol. 14, iss. 2, pp. 28-39.
- Ezeala-Harrison, F. (1996). *Economic development: Theory and policy applications*. New York: Greenwood Publishing.
- Fourie, F. (2014). *How inclusive is economic growth in South Africa?* Econ3x3, [online]. Available: <http://www.econ3x3.org/article/how-inclusive-economic-growth-south-africa>. [10 November 2017]
- Fourie, F.C., Burger, P. (2009). *How to think and reason in Macroeconomics*. 3rd Edition. Cape Town: Juta.
- George, G., McGahan, A. M., Prabhu, J. (2012). Innovation for Inclusive Growth: Towards a Theoretical Framework and a Research Agenda. *Journal of Management Studies*, vol. 49, pp. 661-683.
- ILO. (2011). *Towards decent work in sub-Saharan Africa monitoring MDG employment indicators*. Geneva: ILO.

- Klasen, S. (2010). *Measuring and monitoring inclusive growth*. Asian Development Bank, [online]. Available: <https://www.adb.org/sites/default/files/publication/28492/adb-wp12-measuring-inclusive-growth.pdf>. [27 December 2017].
- Kuznet, S. (1955). Economic growth and inequality. *American Economic Review*, vol. XLV, iss. 1, pp. 1-28.
- Lindbeck, A. (1992). *Nobel Lectures, 1996 to 1980*. Singapore. World Scientific Publishing Company, [online]. Available: http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1971/kuznets-lecture.html. [23 February 2017].
- Matthews, C. (2012). *We have suffered a jobless recovery: Is a recovery without growth next?* Time Business, [online]. Available: <http://business.time.com>. [12 November 2017].
- McKinley, T. (2010). *Inclusive Growth Criteria and Indicators: An inclusive growth index for diagnosis of country progress*. Asian Development Bank, [online]. Available: <https://www.adb.org/sites/default/files.pdf>. [27 December 2017].
- Meyer, N. (2014). Creating an entrepreneurial culture among students through entrepreneurship development programmes (EDP). *Mediterranean Journal of Social Sciences*, vol. 5, iss. 13, pp. 281-288.
- Meyer, N. (2015). Poor people's perceptions of government support for entrepreneurship and small business promotion in a developing country. *Journal of Economics and Behavioral Studies*, vol. 7, iss 6, pp. 6-12.
- Ministry of Economic Development (Poland). (2016). *Action plan for responsible development of Poland*, [online]. Available: https://www.mr.gov.pl/media/14909/ResponsibleDevelopmentPlan_pressrelease.pdf. [30 November 2017].
- NationMaster. (2017). *Country profiles*, [online]. Available: <http://www.nationmaster.com/countryinfo/profiles/Poland/People>. [2 November 2017].
- Ngepah, N. (2017). A review of theories and evidence of inclusive growth: An economic perspective for Africa. *Current Opinion in Environmental Sustainability*, vol. 24, pp. 52-57.
- Porter, M.E. (1985). *Competitive advantage: Creating and sustaining superior performance*. New York: Free Press.
- Ramos, R.A, Ranieri, R., Lammens, J. (2013). *Mapping inclusive growth*. International Policy Centre for Inclusive Growth, [online]. Available: <https://www.econstor.eu/obitstream/10419/71778/1/73672866X.pdf>. [27 December 2017].
- Republic of South Africa. (2012). National Development Plan. The Presidency. Pretoria: Government Printer.
- Romer, P. M. (1992). Two strategies for economic development: using ideas and producing ideas. *The World Bank Economic Review*, vol. 6, iss. 1, pp. 63-91.
- Sachs, J.D. (2012). From millennium development goals to sustainable development goals. *The Lancet*, vol. 379, iss. 9832, pp. 2206-2211.
- Solow, M.R. (1956). A contribution to the theory of Economic Growth. *The Quarterly Journal of Economics*. vol. 70, iss. 1, pp. 65-94.
- Stefko, R., Steffek, V. (2017). A study of creative industry entrepreneurship incubation. *Polish Journal of Management Studies*. Vol. 15, iss. 2, pp. 250-261.
- Stuart, E. (2011). Making Growth Inclusive: Some lessons from countries and the literature. *Oxfam Policy and Practice: Private Sector*, vol. 8, iss. 1, pp. 89-131.
- Todaro, M. P., Smith, S.C. (2015). *Economic Development*. 12th Edition. London: Pearson Education Limited.
- United Nations. (2000). *Millennium Development Goals*, [online]. Available: <http://www.un.org/millenniumgoals/>. [15 November 2017].
- United Nations. (2017). *Country classifications*, [online]. Available: http://www.un.org/en/development/country_classification.pdf. [23 November 2017].
- Vellala, P.S., Madala, M., Chhattopadhyay, U. (2014). A theoretical model for inclusive economic growth in Indian context. *International Journal of Humanities and Social Sciences*, vol. 4, iss. 13, pp. 229-235.
- WEF. (2013). *Future of Government*, [online]. Available: <https://www.weforum.org/reports/future-government>. [27 December 2017].
- WEF. (2017). *The Inclusive Growth and Development report, 2017*. Geneva, [online]. Available: <https://www.weforum.org/reports/the-inclusive-growth-and-development-report-2017>. [12 November 2017].
- WEF. (2017). *World Economic Forum on Africa*, [online]. Available: <https://www.weforum.org/events/world-economic-forum-on-africa-2017/speakers>. [16 November 2017].
- World Bank. (2013). *World Development Report, 2013*. Washington, DC.

52. NON-ECONOMIC INDEXES AND ECONOMIC GROWTH: A COMPARATIVE ECONOMETRIC ANALYSIS OF POLAND AND SOUTH AFRICA

Abstract: On a global scale, a large number of comparative indexes exist to determine socio-economic well-being and prosperity. Although the indexes have different focus areas, all of these indexes have similar aims, namely the comparison of countries and to identify problematic developmental areas that needs to be addressed. The purpose of this study was to determine the relationship between some of the non-economic indexes and the Human Development Index (HDI) with economic growth. The research methodology consists of an Autoregressive Distributed Lag (ARDL) model to determine the relationships over the last two decades (1996 to 2016). The analysis includes Poland (developed country) and South Africa (developing country) to determine if the results differ between a developed and a developing country. Economic growth (as gross domestic product (GDP)) was used as the dependent variable, while HDI and three non-economic indexes (Global Corruption Index, Government Effectiveness Index and the Global Political Stability Index) were used as independent variables. The main results show that long and short-run relationships were found between the variables for both countries and that global indexes could generally be used to predict economic growth in both developed and developing countries. Implications of the research are that global indexes have some value for the predication of economic growth and could also be used in policy transformation and proper management, through good governance, for implementation actions.

Keywords: economic development, economic growth, global indexes, management, Poland, South Africa.

JEL Classification: O10, O57

1. Introduction

Over many years, economic growth has been analysed and its relationship with other economic variables such as capital investment, inflation, interest rates and even economic sectors have been the focus of research (Dinu, 2015; Pitoňáková, Zhurauliou, 2015). These studies are mostly focused on the Keynesian theory of economic growth and aggregate demand (Solow, 1956) and in more recent years on endogenous growth (Porter, 1985; Romer, 1992; Krugman, 1998). In this paper a different approach is followed. The objective of this study is firstly to analyse the relationship between economic growth and development, where growth is measured by gross domestic product (GDP) and development is measured by the Human Development Index (HDI). But more importantly and as a second objective, is the analysis of the relationship between economic growth and non-economic global indexes such as the Global Corruption Index (GCI) (data from Transparency International, 2016), Government Effectiveness Index (GEI) (data from the World Bank Worldwide Governance indicators, 2017), and the Global Political Stability Index (GPSI) (data from the Global Economy, 2017). These indexes are all non-economic indexes on a global scale with time series data. A few studies have been conducted using non-economic variables for example by Petrakos, Arvanitidis, Pavleas (2007) and Amate-Fortes, Guarnido-Rueda and Molina-Morales (2017). The gap in the research is that the above-listed global indexes of corruption, effective government and political stability have not been used as determinants of economic growth in a dynamic econometric model.

Research questions include: what is the relationship between HDI and economic growth? But more importantly, what is the relationship between economic growth and corruption, effective governance and political stability? The study uses econometric time series data and methods to determine the relationships and causality between variables used in the study. The study is comparative in nature and compares Poland, which is a developed country and an economic leader in Eastern Europe, with a developing country, South Africa which is also a leading economy in the Southern African region.

¹ Daniel Francois Meyer Ph.D. Development and Management; Hendrick van Eck Boulevard, Vanderbijlpark, South Africa, Daniel.meyer@nwu.ac.za.

* Corresponding author

The implications of the study is to test the significance or not of global non-economic indexes and also confirm or reject any relationship between economic growth, HDI, corruption, good governance management and political stability.

2. Country Profiles

Poland's economy has over the last decade shown strong growth with good and effective macro-economic policy. The Polish economy was one of only a few economies that experienced growth during the 2008/2009 global financial crises and the economy is the 6th largest in the EU region. Structural reforms were required during the transition from communist rule to democratic governance. Structural change in the early 1990s allowed Poland to transform its economy into a leading economy in Eastern Europe. In 1999, Poland joined NATO and the EU in 2004. Economic transformation action included trade liberalization, business development incentives, reduction of regulations and substantial investments in critical economic sectors such as infrastructure, defense, and energy. The Polish government is currently extending its expenditure on social welfare services such as cash transfers for poor families and this process has placed pressure on government expenditure and debt. Governance issues such as political influence on the judiciary and existence of corruption are problems that need to be addressed. Aspects for continued growth include the removal of backlogs in infrastructure (roads, rail and energy), and relaxation of strict labour regulations, and solutions to migration of young people to other EU member states (The Heritage Foundation, 2017; CIA, 2017).

South Africa's economy has been negatively affected by political instability and infighting over the last few years. A number of political and corruption scandals have impacted on the government which has led to low growth and down-grades by risk ratings agencies. Within this unstable political, policy uncertainty and governance environment, private-sector growth remains subdued resulting in low growth rates of less than 1 percent. Other negative impacts on the economy includes macro-economic instability, increasing government debt, state-owned enterprises that are ineffective, placing huge pressure on fiscal policy which is already under pressure due to a large government sector. Since the first multi-racial elections in 1994, following the end of apartheid, the country has not been able to eradicate the legacy of the past era regarding aspects such as high levels of unemployment, lowly skilled labour force, poverty alleviation, inequality, spatial imbalances, and quality education. South Africa is Africa's second-largest economy, but high levels of corruption exists and prevention is inadequate. The country faces serious structural economic challenges such as the labour market with a lack of skills and labour strike action, declining innovation and competitiveness which effects economic growth (The Heritage Foundation, 2017; CIA, 2017). Table 1 presents a summary of the main indicators for the two countries in comparison.

Table 1. Country comparison: Poland versus South Africa

Indicator	Poland	South Africa
Country classification (UN, 2017)	High-income, developed country	Upper middle income, developing country
Crime level index (0 to 100)	33.3	86.0
GDP per capita	\$12 700	\$ 7 500
% of people below poverty line	16.8	53.8
Gini Index (a value closer to 0 indicates income equality)	31.9	63.0
HDI (values between 0 and 1)	0.860	0.667
Population (growth in brackets)	38.4 million (-0.1%)	53.0 million (1.0%)
Median population age	40.3	26.8
Unemployment index	9.0%	26.7%
Youth unemployment	19.9%	50.0%
Economic Freedom index (values between 0 and 100)	68.3 (45)*	62.3 (81)*
Misery index (aggregate value of unemployment and inflation)	5.6 (63)*	32.2(2)*
Global innovation index (values between 0 and 100)	42.0 (38)*	35.8 (57)*
Global competitiveness index (values between 0 and 10)	4.56 (36)*	4.47 (49)*
Happy planet index (values between 0 and 100)	27.3 (62)*	15.9 (128)*
Life expectancy	76.9	56.3
Global entrepreneurship index (values between 0 and 100)	50.4	32.9
Global corruption index (values between 0 and 10 with a higher value indicating lower levels of corruption)	6.3	4.1
Global efficient government index (values between 0 and 100)	87.8	64.7
Global political stability index (values between -2.5 and 2.5)	0.88	-0.25

Note: * Indicates global ranking in brackets where applicable.

Source: CIA, 2017; NationMaster, 2017; United Nations, 2017; World Bank, 2016

3. Literature Review

The literature review consists of an analysis of empirical results from previous studies reviewing the relationships between the variables included in this study. Firstly, the relationship between economic growth and HDI is assessed. Suri et al. (2011) analysed the relationship by means of panel data regression in developing countries and found that human development is a critical input in economic growth, but there is a two-way relationship between the variables. Their result points to the importance of endogenous growth for economic development, as long-run growth without accompanying human development increases, may not result in the achievement of objectives of economic development. Economic growth allows for improved human development (Strauss, Thomas, 1995), while rising human development leads to improvements in the economic growth environment (Schultz, 2005).

Institutional development is a critical factor for prosperity and alleviation of poverty (Acemoglu, Robinson, 2013). Institutional aspects are important predictors of growth especially democracy, good governance and political stability (Amate-Fortes, Guarnido-Rueda, Molina-Morales, 2017). Acemoglu and Robinson (2013), state that democracy has a positive impact on economic growth due to increases in investment, increased education and a reduction in social unrest. However, Sen (1999) states that democracy and economic growth have no relationship. Drury, Kriekhaus and Lusztig (2006) summarizes the relationships well by stating that corruption has a more significant impact on growth in non-democratic countries than in full democracies. Democracy has an indirect impact on economic growth, while corruption has a direct impact, with democracy able to remove corruption effectively. Within the good governance paradigm, the phenomenon of corruption is an important factor. Corruption is defined as any action to abuse public office for private gain and include bribery, nepotism, and theft of public resources (Drury, Kriekhaus, Lusztig, 2006). Corruption has a negative impact on economic growth as it discourages investment (Del Monte, Pagagni, 2001; Aidt, 2009). It also has a direct and negative impact on government effectiveness in expenditure and income (Mauro, 1997), and it has a limiting impact on small business development and innovation which is needed for economic growth (Varsakelis, 2006; Meyer, Meyer, Molefe, 2016). Aidt (2009) found that economic growth can reduce corrupt activities with more resources for corruption control.

Additionally, as part of good governance, political instability in a country has an impact on the economy. Alesina et al. (1996) define political instability as “the propensity of a government to collapse”, they found that countries with high levels of instability have significantly lower levels of economic growth. Political instability has a negative impact on economic growth and serves as a push-factor in attracting investment which is needed for growth (Barro, 1991; Fosu, 2001). Other major impacts of political instability is policy uncertainty (Rodrik, 1991) and promotes opportunities for corruption (Shleifer, Vishny, 1993). Low levels of democracy, existence of corruption and political instability lead to decreased government efficiency and eventually poor economic performance and low growth (Rose-Ackerman, Palifka, 2016). Kurtz and Schrank (2007) state that effective government through quality public administration can lead to economic growth and that economic growth and development promotes improvements in government. Cooray (2009) analysed the role of effective government in economic growth and found that the quality of governance is important for economic growth. The ongoing improvement of the capacity of government to deliver good governance is an important factor for sustained economic growth. Abizadeh and Yousefi (1998) however, caution that an over-sized government sector, as found in many developing countries, can negatively affect economic growth as a result of ineffective systems, and high costs of the beurocracy. Government should be limited to only an optimal size in support of the economy.

4. Methodology

The empirical section of the study is based on a quantitative process. The study compares two countries namely Poland (developed country) and South Africa (developing country) regarding economic growth and its relationship with global non-economic indexes. The study uses annual data from 1996 to 2016 to analyse the relationship between economic growth represented by total gross domestic product (GDP) (data from the World Bank, 2017), Human Development Index (HDI) (data from UN, 2017), Global Corruption Index (GCI) (data from Transparency International, 2016), Government Effectiveness Index (GEI) (data from the World Bank Worldwide Governance indicators, 2017), and the Global Political Stability Index (GPSI) (data from the Global Economy, 2017).

Economic growth (GDP) is regarded as the dependent variable, while the other variables are considered independent variables. HDI as an index consists of three indicators namely life expectancy, education levels and gross national income (GNI) (UNDP, 2016). The Global Corruption Index (GCI) is an index as compiled from annual global surveys on perceptions of corruption in the private sector (The Heritage Foundation, 2016). The Government Effectiveness Index (GEI) is an annual index compiled by the World Bank (2017) and assesses perceptions of the quality of public services and implementation of policy in a country. The Global Political Stability Index (GPSI) (The Global Economy, 2017) is a composite measure as it is based on several other indexes from multiple sources including the Economist Intelligence Unit, the World Economic Forum, and the Political Risk Services, among others. The underlying indexes reflect the likelihood of a disorderly transfer of government power, armed conflict, violent demonstrations, social unrest, international tensions, terrorism, as well as ethnic, religious or regional conflicts. The various non-economic indexes were selected to determine the relationship between growth and HDI but also to determine the relationship between growth and corruption, governance and political stability. All data were converted to natural logarithms.

An Autoregressive Distributed Lag model (ARDL) developed by Pesaran and Shin, (1996) and revised by Pesaran, Shin and Smith (2001) was adopted to analyse the long-run relationship amongst variables. The ARDL model has a number of advantages in the analysis of time series data. Firstly, the model is flexible regarding the cointegration order of variables, as it can be used whether variables are integrated at levels I (0) or first order I (1) or a mixture of the two. Secondly, this model can be used with different numbers of the optimum lags used simultaneously. Thirdly, the model is stable even with a low number of observations in the time series data. The following model was formulated to determine the relationship between economic growth and various indexes:

$$\Delta LGDP_t = \alpha_0 + \sum_{j=1}^k \beta_j \Delta LGDP_{t-j} + \sum_{j=1}^k \gamma_j \Delta LHDI_{t-j} + \sum_{j=1}^k \delta_j \Delta LGCI_{t-j} + \sum_{j=1}^k \tau_j \Delta LGEI_{t-j} + \sum_{j=1}^k \vartheta_j \Delta LGPSI_{t-j} + \varphi_1 LGDP_{t-1} + \varphi_2 LHDI_{t-1} + \varphi_3 LGCI_{t-1} + \varphi_4 LGEI_{t-1} + \varphi_5 LGPSI_{t-1} + u_t \quad (1)$$

Where $\Delta LGDP_t$ denotes the change in the natural logarithm of economic growth at time t ; $\Delta LHDI_t$ denotes change in the natural logarithm of Human Development Index at time t ; $\Delta LGCI_t$ symbolises change in natural logarithm of Global Corruption Index at time t ; $\Delta LGEI_t$ symbolises change in the natural logarithm of Global Effectiveness Index at time t ; whilst $\Delta LGPSI_t$ symbolises change in the natural logarithm of Global Political Stability Index at time t . The α_0 denotes the intercept, k represents the number of lags used, β_j , γ_j , δ_j , τ_j and ϑ_j represent the short-run dynamic, while φ_1 , φ_2 , φ_3 , φ_4 and φ_5 denote the long-run relationship. From Equation (1), the following null and alternative hypotheses were formulated to determine whether variables co-integrated or not:

- For no co-integration, the null hypothesis (H0): $\varphi_1 = \varphi_2 = \varphi_3 = \varphi_4 = \varphi_5 = 0$
- For cointegration, the alternative hypothesis (H1): $\varphi_1 \neq \varphi_2 \neq \varphi_3 \neq \varphi_4 \neq \varphi_5 \neq 0$

With the model formulated, the first step is to test for long-run relationships between variables. For this purpose, the bound test, known as the Wald F-test in the ARDL model, was employed to test the hypotheses. The test aimed to compare the estimates of the F-value and the critical value from the Pesaran, Shin and Smith (2001) table. If the estimated F-value is greater than the critical value, the null hypothesis is rejected, suggesting that in the long-run, the variables co-integrate. In other words, a long-run relationship exists amongst variables. However, if the calculated F-value is lower than the critical value, the null hypothesis is not rejected indicating no long-run relationship among variables. In the absence of further information, the results are inconclusive if the calculated F-value lies between the lower and upper critical values (Dube, Zhou, 2013).

The next step in the process is that of the estimation of the error correction model (ECM) which depends on the outcome of the cointegration test in step one. Without a long-run relationship among variables, there is no error correction. If variables in Equation 1 co-integrate, the following is the equation for the error correction:

$$\Delta LGDP_t = \alpha_0 + \sum_{j=1}^k \beta_j \Delta LGDP_{t-j} + \sum_{j=1}^k \gamma_j \Delta LHDI_{t-j} + \sum_{j=1}^k \delta_j \Delta LGCI_{t-j} + \sum_{j=1}^k \tau_j \Delta LGEI_{t-j} + \sum_{j=1}^k \vartheta_j \Delta LGPSI_{t-j} + \delta ECT_{t-1} + u_t \quad (2)$$

Where ECT denotes the error correction term and is the coefficient of the error term δ measuring the speed of adjustment towards the long-run equilibrium. The correlation analysis was performed to

establish relationships between variables. Based on its accuracy, regardless of the size of employed data, Schwarz's Bayesian information criterion was chosen to determine the maximum number of lags to be used by the study (Brooks, 2014). Additionally, a number of diagnostic tests, i.e. serial correlation, heteroscedasticity, normality and stability, were performed.

5. Results and Discussion

5.1. Unit Root Tests

Unit root tests are important econometric tests in the process of selection of the specific model. The tests were conducted by using the Augmented Dickey-Fuller (ADF) test. The results of the test are presented in Table 2. The results show that all variables passed the unit root test at either levels I(0) or at 1st difference I(1). Therefore the ARDL model could be estimated as it was designed in the case where there is a mix of variables.

Table 2. Unit root tests

Variables	Poland		South Africa		Result
	ADF levels I (0)	ADF 1 st difference I (1)	ADF levels I (0)	ADF 1 st difference I (1)	
LGDP	0.3062	0.0462*	0.6460	0.0480*	I (1)
LHDI	0.0232*	0.0277*	0.0015*	0.0026*	I (0)
LGCI	0.3084	0.0459*	0.0059	0.0003*	I (1)
LGEI	0.2454	0.0346*	0.1629	0.0038*	I (1)
LGPSI	0.2179	0.0107*	0.8890	0.0018*	I (1)

*denotes the rejection of the null hypothesis of unit root at the 5% level of significance.

Source: Own research

5.2. Lag Length Selection and Model Selection

Lag length selection is important to avoid spurious rejection or acceptance of estimated results as well as the power of rejection of hypothesis. The lag length for the model for both countries were determined and all selection criteria suggest a lag of 1. The best ARDL model for Poland was (1,1,0,0,1) and for South Africa is was (1,0,1,0,0) and these models were applied in the estimation.

5.3. Long-run Cointegration Results (Bound Testing)

The long-run relationships between variables was estimated using the Bound test of cointegration. According to Pesaran, Shin and Smith (2001), the estimated F-statistic should be compared with the lower and upper bound value at the significance level. For Poland the F-statistic was 5.765 with the upper bound value at 5 percent significance at 3.49. For South Africa the F-statistic was 16.935 with an upper bound value of 3.51. It can therefore be concluded that the F-statistic for both countries are above the upper bound value, hence the null hypothesis is rejected. The study concluded that there exists a long-run relationship between the variables for both countries. Equation 3 and 4 presents the long-run relationships for Poland and South Africa respectively.

$$\text{Poland equation: } \text{LGDP} = 72.19 + 3.382\text{LHDI} - 0.242\text{LGCI} + 1.356\text{LGEI} + 0.053\text{LGPSI} \quad (3)$$

$$\text{South Africa equation: } \text{LGDP} = 16.54 + 2.583\text{LHDI} - 1.180\text{LGCI} + 0.082\text{LGEI} + 0.099\text{LGPSI} \quad (4)$$

The result show that for Poland there is a positive long-run relationship between LGDP, LHDI, LGEI and LGPSI. If the value of the LGCI is inverted (a higher score equals to lower levels of corruption), LGCI also has a positive relation with LGDP. South Africa is showing similar results in Equation (4) with the same relationships between the variables. Previous studies by Suri et al. (2011) and Schultz (2005) also showed the important relationship between economic growth and HDI. In terms of corruption this result of a positive relationship between lower levels of corruption and economic growth is similar to findings by Aidt (2009) and Drury, Kriekhaus and Lusztig (2006). For both countries, LHDI has the highest coefficient of all independent variables indicating a high impact on economic growth.

5.4. Short-run Relationships and Error Correction Model (ECM) Results

The error correction term (ECT) provides the speed of the short-term adjustments and to determine the time it takes for changes in the system to return to long-run equilibrium. The short-run empirical results are indicated in Table 3. For both countries, the error correction term (ECT) is negative and significant indicating a long-run causality running from the independent variables to the dependent variable and that all variables are cointegrated. This means that it will take approximately 2.76 (1/0.362) periods (years) for changes in the independent variables to affect economic growth for Poland and 5.95 (1/0.168) periods for South Africa. Furthermore, for Poland, government effectiveness (LGEI) is significant at a 5 percent level and corruption (LGCI) is significant at only a 10 percent level of significance. These results are similar to findings by Amate-Fortes, Guarnido-Rueda and Molina-Morales (2017) and Cooray (2009). In the South African case, it is only political stability (GPSI) that is significant at the 5 percent significance level.

Table 3. Short-run relationship and error-correction results

Variable	Poland				South Africa			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Stat	Prob.
D(LHDI)	0.566	0.704	0.804	0.426	0.077	0.312	0.249	0.807
D(LGCI)	-0.075	0.042	-1.793	0.098**	-0.027	0.048	-0.558	0.586
D(LGEI)	4.039	0.718	5.620	0.001*	0.101	0.132	0.767	0.456
D(LGPSI)	0.003	0.004	0.616	0.548	0.005	0.001	2.425	0.031*
Coint Eq (-1)	-0.362	0.044	-8.125	0.001*	-0.168	0.007	-9.715	0.001*

Note: *rejection of null hypothesis at 5% level of significance and ** at 10% level of significance

Source: own research

5.5. Granger Causality Tests

Table 4 provides a summary of the Granger Causality results for all variables and for both countries indicating the short-run causal relationship between variables. The results indicate mostly differences between the two countries regarding causality and direction of causality. For example in South Africa there is a bi-directional relationship between LHDI and LGDP (similar results found by Suri et al., 2011) as well as between LGEI and LGDP (similar results found by Kurtz, Schank, 2007). In Poland it was found that the causality runs only from LGDP to LHDI and LGEI. In the relationship between LGCI and LGDP, Poland has a bi-directional relationship (similar results by Drury, Kriekhaus, Lusztig, 2006), while in South Africa there is only limited causality running from LGDP to LGCI. Other relationships are indicated in the table and of note is that LGCI cause LGEI in South Africa with similar results by Mauro (1997).

Table 4. Pairwise Granger causality results

Null hypothesis	Poland		South Africa	
	Chi-Sq	Prob.	Chi-Sq	Prob.
LHDI does not Granger cause LGDP	0.477	0.499	8.190	0.011*
LGDP does not Granger cause LHDI	12.401	0.003*	53.112	0.000*
LGCI does not Granger cause LGDP	4.509	0.034*	2.072	0.168
LGDP does not Granger cause LGCI	30.941	0.001*	3.624	0.074**
LGEI does not Granger cause LGDP	0.623	0.441	4.644	0.045*
LGDP does not Granger cause LGEI	4.369	0.052**	10.209	0.005*
LGDP does not Granger cause LGPSI	2.644	0.123	3.277	0.087**
LGCI does not Granger cause LHDI	9.468	0.007*	6.375	0.022*
LHDI does not Granger cause LGCI	17.482	0.001*	1.773	0.206
LGEI does not Granger cause LHDI	16.815	0.001*	37.159	0.000*
LHDI does not Granger cause LGEI	8.249	0.004*	0.009	0.923
LGPSI does not Granger cause LHDI	1.352	0.261	7.644	0.013*
LGEI does not Granger cause LGCI	8.530	0.005*	2.082	0.167
LGCI does not Granger cause LGEI	0.038	0.842	4.936	0.026*
LGCI does not Granger cause LGPSI	6.482	0.021*	1.172	0.294
LGEI does not Granger cause LGPSI	7.829	0.012*	7.145	0.016*

Note: *rejection of null hypothesis at 5% level of significance and ** at 10% level of significance

Source: Own research

5.6. Residual Diagnostic and Stability Tests

Residual diagnostic tests were performed to confirm the correctness and stability of the results. The Breusch-Godfrey LM Test was performed to test for serial correlation, the Breusch-Pagan-Godfrey Test was estimated to test for heteroscedasticity amongst the variables and the Jarque-Bera Test was performed to test for normal distribution. For both countries the results revealed the series as used that the residuals are not auto-correlated, the series was homoscedastic and also normally distributed. Lastly, the CUSUM test was applied to assess parameter stability and test results indicates stability for the model of both countries. This indicates that the findings are trustworthy.

6. Conclusion

This paper examined the relationships between economic growth and HDI as well as with non-economic indexes such as corruption, effective governance and political stability for both Poland and South Africa. The study revealed that a long-run relationship exists for both countries between the variables with economic growth used as the dependent variable in the model with HDI having the highest coefficients of all the independent variables. The speed at which the independent variables impact on economic growth differs between the two countries. In Poland it takes 2.76 years while in South Africa the speed of adjustment takes 5.95 years. In Poland on the short-run government effectiveness is a significant predictor for economic growth, while in South Africa political stability is a significant predictor. In Poland economic growth causes HDI, effective government and improved corruption levels (bi-direction between economic growth and improved levels of corruption). In South Africa however, there are bi-directional causality between economic growth and both HDI and effective government, while economic growth cause improved corruption levels and political stability.

The limitation of the study is that only a few global indexes have extended time series data which affects the econometric model and options for the selection of variables. The results of the study are interesting in that the non-economic global indexes with time series of at least 20 years proved to be useful as predictors of economic growth and had long and short-run relationships. The implications of the study is that these indexes could be used for policy development for improved management in both developed and developing countries. Future research will also focus on other indexes and a focus on economic development as dependent variable. Lastly, based on the results of the relationships between the various variables used in this study, the most important policy proposal is that economic development policy focus should be on improved HDI and sustained economic growth as this will impact positively on good governance and public management which include lower levels of corruption, more effective government and improved political stability.

References

- Abizadeh, S., Yousefi, M. (1998). An empirical analysis of South Korea's economic development and public expenditures growth. *The Journal of Socio-Economics*, vol. 27, iss. 6, pp. 687-700.
- Acemoglu, D., Robinson, J.A. (2013). *Why nations fail*. London: Profile Books.
- Aidt, T.S. (2009). Corruption, institutions, and economic development. *Oxford Review of Economic Policy*, vol. 25, iss. 2, pp. 271-291.
- Alesina, A., Özler, S., Roubini, N., Swagel, P. (1996). Political instability and economic growth. *Journal of Economic growth*, vol. 1, iss. 2, pp. 189-211.
- Amate-Fortes, I., Guarnido-Rueda, A., Molina-Morales, A. (2017). Economic and Social Determinants of Human Development: A New Perspective. *Social Indicators Research*, vol. 133, iss. 2, pp. 561-577.
- Barro, R.J. (1991). Economic growth in a cross section of countries. *Quarterly Journal of Economics*, vol. 106, iss. 2, pp. 407-443.
- Brooks, C. (2014). *Introductory econometrics for finance*. 3rd ed. London: Cambridge University Press.
- Central Intelligence Agency (CIA). (2017). *The World Fact Book, Country Profiles*. [online]. Available: <https://www.cia.gov/library/publications/the-world-factbook/geos/sf.html>. [2017, November 10].
- Cooray, A. (2009). Government expenditure, governance and economic growth. *Comparative Economic Studies*, vol. 51, iss. 3, pp. 401-418.
- Del Monte, A., Pagagni, E. (2001). Public expenditure, corruption and economic growth: The case of Italy. *European Journal of Political Economy*, vol. 17, iss. 1, pp 1-16.
- Dinu, A.M. (2015). Informatic models used in economic analysis of correlation between GDP and FDI. *Polish Journal of Management Studies*, vol. 11, iss. 2, pp. 7-16.

- Dube, S., Zhou, Y. (2013). South Africa's short term and long term interest rates: A threshold cointegration analysis. *Business and Economic Research*, vol. 3, iss. 1, pp. 187-211.
- Drury, A.C., Kriekhaus, J., Lusztig, M. (2006). Corruption, democracy, and economic growth. *International Political Science Review*, vol. 27, iss. 2, pp. 121-136.
- Fosu, A.K. (2001). Political instability and economic growth in developing economies. *Economic Letters*, vol. 70, iss. 2, pp. 289-294.
- Krugman, P. (1998). What's new about the new economic geography? *Oxford Review of Economic Policy*, vol. 14, iss. 2, pp. 7-17.
- Kurtz, M.J., Schrank, A. (2007). Growth and governance: Models, measures, and mechanisms. *Journal of Politics*, vol. 69, iss. 2, pp. 538-554.
- Mauro, P. (1997). Why worry about corruption? *Economic Issues* no 6. Washington, DC: International Monetary Fund.
- Meyer, N., Meyer, D.F., Molefe, K.N. (2016). Barriers to small informal business development and entrepreneurship: The case of the Emfuleni Region. *Polish Journal of Management Studies*, vol. 13, iss. 1, pp. 121-133.
- NationMaster. (2017). *Country profiles*. [online]. Available: <http://www.nationmaster.com/country-info/profiles>. [2017, November 2].
- Pesaran, M.H., Shin, Y. (1996). Cointegration and speed of convergence to equilibrium. *Journal of Econometrics*, vol. 71, iss. 1, pp. 117-143.
- Pesaran, M.H., Shin, Y., Smith, R.J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, vol. 16, iss. 3, pp. 289-326.
- Petrakos, G., Arvanitidis, P., Pavleas, S. (2007). Determinants of economic growth: the experts' view. In *2nd Workshop of DYNREG in Athens*, vol. 2, iss. 1, pp. 9-10.
- Pitoňáková, R., Zhurauliou, A. (2015). Macroeconomic management and its impact on current account (case of Slovakia and Poland). *Polish Journal of Management Studies*, vol. 11, iss. 1, pp. 124-135.
- Porter, M.E. (1985). *Competitive advantage: Creating and sustaining superior performance*. New York: Free Press.
- Rodrik, D. (1991). Policy uncertainty and private investment in developing countries. *Journal of Development Economics*, vol. 36, iss. 1, pp. 229-242.
- Romer, P.M. (1992). Two strategies for economic development: using ideas and producing ideas. *The World Bank Economic Review*, vol. 6, iss. 1, pp. 63-91.
- Rose-Ackerman, S., Palifka, B.J. (2016). *Corruption and government: Causes, consequences, and reform*. London: Cambridge University Press.
- Schultz, T.P. (2005). *Productive benefits of health: Evidence from low-income countries*. Yale University Economic Growth Centre. Centre discussion paper no 903. [online]. Available: <http://www.econ.yale.edu/~pschultz/cdp903.pdf>. [2017, November 2].
- Sen, A.K. (1999). *Development as freedom*. New York: Oxford University Press.
- Shleifer, A., Vishny, R. (1993). Corruption. *Quarterly Journal of Economics*, vol. 108, iss. 3, pp. 599-617.
- Solow, M.R. (1956). A contribution to the theory of Economic Growth. *The Quarterly Journal of Economics*, vol. 70, iss. 1, pp. 65-94.
- Strauss, J., Thomas, D. (1995). Human resources: Empirical modeling of household and family decisions. *Handbook of Development Economics*, vol. 3, pp. 1883-2023.
- Suri, T., Boozer, M.A., Ranis, G., Stewart, F. (2011). Paths to success: The relationship between human development and economic growth. *World Development*, vol. 39, iss. 4, pp. 506-522.
- The Global Economy. (2017). *Political stability- Country Rankings*. [online]. Available: <http://www.theglobaleconomy.com/rankings/>. [2017, November 10].
- The Heritage Foundation. (2017). *Country Rankings*. [online]. Available: <http://www.heritage.org/index/ranking>. [2017, November 10].
- Transparency International. (2016). *The 2016 Corruption perceptions index*. [online]. Available: <https://www.transparency.org/cpi2014>. [2017, November 1].
- United Nations. (2017). *Country classifications*. [online]. Available: http://www.un.org/en/development/country_classification.pdf. [23 November 2017].
- United Nations Development Programme (UNDP). (2016). *Human Development Index (HDI)*. [online]. Available: <http://hdr.undp.org/en/content/human-development-index-hdi>. [2017, November 6].
- Varsakelis, N.C. (2006). Education, political institutions and innovative activity: A cross-country empirical investigation. *Research Policy*, vol. 35, pp. 1083-1090.
- World Bank. (2016). World Bank Open Data. [online]. Available: <https://data.worldbank.org/>. [23 October 2017].
- World Bank. (2017). *Worldwide Governance Indicators*. [online]. Available: <http://info.worldbank.org/governance/wgi/index.aspx#reports> [2017, November 3].

53. MODERN APPROACH IN FORMING CLASS MANAGEMENT SKILLS OF ACADEMIC HUMAN RESOURCES

Abstract: The skills training and development in the field of classroom's management it is a process which takes place throughout the academic human resources career. The current study focuses toward the problem of the classroom competences' management during initial training of the academic human resources from a multidisciplinary perspective requires the subject's approach not only from the initial specialized training perspective but also from the trained or developed managerial skills perspective within the initial training. The current scientific approach had as main objectives the evaluation of the degree of the classroom management development competencies at the students and the evaluation of the initial training program for the didactic career - from the management of the class' competences perspective - of the academic human resource. The survey method based on the questionnaire was used to achieve the objectives. The tools used were: The Query for Assessing the Competencies of Classroom Management of the Academic Human Resources in Training (Students) and the Inventory of Curriculum Documents. The conclusions of the diagnostic analysis of the curriculum documents were on one hand positive, namely: all disciplines of psycho-pedagogical training (Psychology of Education, Major's Pedagogy and Didactics) also aim at specific knowledge of the management of the students' class. The negative aspects regarding the managerial training refer to the fact that there are not enough seminars approaching the themes regarding the class management field, which means that the skills are rather theoretical; the development of these managerial skills is rather sporadic and disorganized.

Keywords: academic human resource, classroom management, manager, skills.

JEL Classification: I21, M12, M54

1. Introduction

In order to improve the quality of the academic human resources' training, it is necessary to emphasize and develop the classroom's management skills for the future teachers in order to carry out an effective functional didactic act, a request stated by the European Union's strategy of the academic human resources career professionalization (Adamson, Covic, Lincoln, 2004; Berliner, 2004).

A good classroom manager must be able to accomplish profound changes in the students' culture, climate and instruction in order to substantiate all the didactic activities based on democratic principles, to introduce new training strategies that encourage collaboration, tolerance, confidence building and improving the student's performance (Cristea, 2008)

The goal of the efficient classroom management is to teach pro-social behaviors, efficient approaches of the class' educational issues, and to prevent disruptive behavior. Classroom management consists of practices and procedures that the academic human resource applies in order to keep the students organized, orderly, focused, attentive, active and productive from an academic point of view (Oliver, Wehby, Reschly, 2011; Dančišinová, Benková, Daňková, 2017). The four categories of class management that critical literature identifies as critical are: the rules and the procedures, proactive management, well-designed and delivered training, and the management of disruptive behavior.

The success in the classroom depends on the ability of the academic human resource to maintain an environment that encourages and supports learning. However, a well-managed class is characterized by positive, trustworthy relationships between the academic human resource and pupils and between students but doubled by a systematic encouragement of desirable behaviors - proactive approach of discipline (Mihaescu, 2009).

¹ Assist. Prof. Mihaescu Diana Ph.D., Bd. Victoriei 10, Sibiu, Romania, diana.mihaescu@ulbsibiu.ro

* Corresponding author

2. Statement of the Problem – Classroom’s Management Skills

Performance in education it is strongly determined by the competence and quality of academic human resources. Due to this fact, the competence it is an individual feature to mobilize and determine in an effective manner the use of a set of knowledge, abilities and behavioral attitudes in a complex, multifactorial and multidimensional organizational context (Voiculescu, 2013).

As Weinert (2001) states, the skills can be defined as cognitive abilities and skills which individuals possess or are able to obtain which allow them to solve specific problems. Competencies encompass volitional, motivational and social dispositions and abilities which allow responsible and successful problem solution application in variable situations.

The definition and the analysis of the key competencies’ specific allow us to state the following:

- skills are defined through a knowledge system – abilities – attitudes,
- have an implicit transdisciplinary character,
- the key competences represent the learning outcomes of educational system,
- they must be the base of permanent education.

One of the core competences of the academic human resource is the managerial competence. In class, the teacher does not only achieve the teach-learning-evaluation activity but also relates with the students, influencing their learning behavior, intervenes in directing their general evolution (Mihaescu, 2009). Thus he adds new behaviors to the class activity, fulfilling specific management functions: planning, decision, organization, motivation, leadership, evaluation, and counseling.

Classroom management competencies focuses on prevention and intervention strategies based on proves used by the academic human resource in order to build an environment that supports and facilitates student learning while improving the educational process as a whole. These classroom management skills include: maximizing teaching process through the directed activities by the academic human resource and minimizing physical distractions in the classroom; exposing, teaching, monitoring, enhancing expectations and ensuring assessment and feedback; direct student’s involvement and providing opportunities to communicate; using strategies to strengthen positive behaviors and redirect problem behaviors (Wubbels, 2011).

In this context, classroom management skills have an integral part of the knowledge on the teacher, which can be classified by various fields of knowledge (Leinhardt, McCarthy Young, Merriman, 1995; Okreglicka et al., 2017) and include a wide variety of theoretical backgrounds (Emmer, Evertson, Worsham, 2003; Evertson, Weinstein, 2006; Simonsen et al., 2008) which cannot be approached only form one perspective of solving the disciplinary problems. (Evertson, Weinstein, 2006). Although effective classroom management requires a degree of flexibility, at the same time, the academic human resource must be consistent in their expectations and actions so that the students understand that the rules will be applied. Otherwise, there is a risk of creating conditions for a dysfunctional classroom where students may become unmotivated, disrespectful or out of control (Barbetta, Norona, Bicard, 2005; Ostrosky et al., 2008). In this context, the academic human resource has mechanisms of praise and encouraging pupils to positively influence their behavior.

The theoretical approaches have led us to the conclusion that the academic human resource has specific management skills and that it should be regarded as a manager of the class of students and also prepared for this purpose. From this perspective, the classroom managerial skills of the academic human resources focuses on the following aspects: decision-making skills, activity planning skills, organizational skills and assessment and regulation skills.

3. Academic Human Resource’s Managerial Roles

The academic human resource is the one that brings together all material and human resources and puts them in a particular configuration according to the class’ level which they lead. In other words, it is the student class’ manager. Whatever the side of the student’s class we will look at, the role of the teacher is prominent, and the concrete application of this role depends on his personality and the educational situations he faces and has to deal.

The classroom management skills of the academic human resource are highlighted by the ability to carry out their specific activities to the adopted standards by the school organization (Mihaescu, 2012). The specific activities carried out by the academic human resource originate in the management’s

classic functions, formulated by Henri Fayol in 1946: forecasting, organization, command – coordination and control (Figure 1).

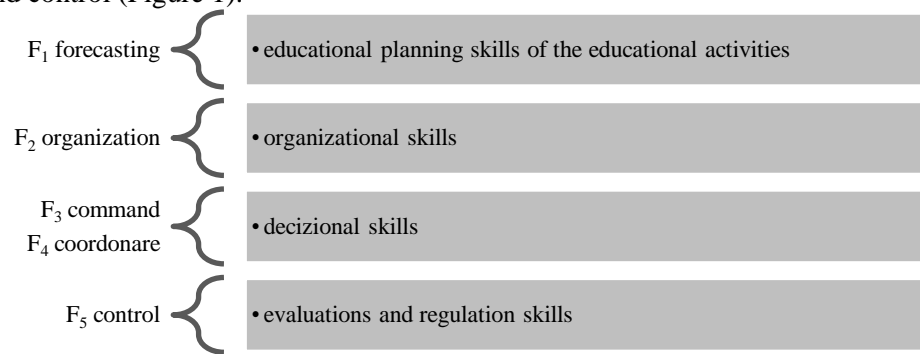


Figure 1. Classroom's management skills in relation to management functions

Source: Own research

The essence of the managerial roles of the academic human resource in classroom activity is the orientation and management of the human and material resources available to the class and the instructional-educational process at a given moment, towards achieving the objectives, in maximum efficiency conditions.

Synthetically, the roles assumed and exerted by the academic human resources are:

- Inter-personal roles: of representation (social symbolic or formal obligations); of a leader (coordinates, controls, instructs and motivates students); of connection (builds and maintains contacts and contacts with the organizations, groups and individuals outside of the class organization and even outside the school organization).
- Informational roles: of monitoring (gathers information to identify issues and opportunities, trends and ideas to understand what is happening inside and outside the classroom); of dissemination (sends information to the students, received from inside and outside the school organization to which it belongs); of communication.
- Decision-making roles: strategist (initiates and supports, plans and controls the changes within the class, in order to develop the educational process); proposes and decides on the particular problems that arise in class life; proposes solutions and decides when the students are found in a crisis situation; allocation of resources: (establishes the nature of the activities, schedules the duration of the activities, allocates the material resources, authorizes the planned activities), of negotiation.

Therefore, the human academic resource assumes a multitude of roles and the exertion of the roles depend on their personality.

The goal of the efficient classroom management is to teach pro-social behaviors, efficient approaches of the class' educational issues, and to prevent disruptive behavior. Classroom management consists of practices and procedures that the academic human resource applies in order to keep the students organized, orderly, focused, attentive, active and productive from an academic point of view (Oliver, Wehby, Reschly, 2011). The four categories of class management that critical literature identifies as critical are: the rules and the procedures, proactive management, well-designed and delivered training, and the management of disruptive behavior (Korpershoek et al., 2016).

The success in the classroom depends on the ability of the academic human resource to maintain an environment that encourages and supports learning. However, a well-managed class is characterized by positive, trustworthy relationships between the academic human resource and pupils and between students but doubled by a systematic encouragement of desirable behaviors (proactive approach of discipline) (Andrei, 2015).

4. The Research Approach

Current research is a descriptive longitudinal study that captures elements of skills in classroom management of the academic human resources in training.

The study's objectives are:

- Assessing the degree of classroom management skills development of the students involved in the study through the Class Management Skills Assessment Questionnaire;

- Diagnostic analysis of the curriculum documents, the Pedagogical Module disciplines from the perspective of assuming the objectives of developing / training the classroom management skills.

Sample. At the research 161 students of the Faculty of Letters, the Faculty of Social Sciences and Humanities and the Faculty of Sciences from Lucian Blaga University of Sibiu participated attending the Pedagogical Module, from the senior years. 51% of the students were female. The mean age was 23.50 years (SD = 1.18, Range = 21-27 years); class sizes ranged from 10 to 29 students (M = 23.1, SD = 4.34). However, in order to reduce the possibility that the results to be influenced by structural factors and the sample's characteristics, we combined probabilistic sampling with rational sampling using the following population stratification criteria: age of subjects; the situation of learning level (the results/ grades at the subjects: Psychology of Education, Pedagogy I and II, Methodology and Pedagogical Practice) and the attended study program.

Methods and tools. The survey method based on the questionnaire was used to achieve the objectives. The tools used were: The Query for Assessing the Competencies of Classroom Management of the Academic Human Resources in Training (Students) and the Inventory of Curriculum Documents. The questionnaire contains 30 items, the intensity of each item is valued on a 5-step scale from 1- on a very low scale to 5 on a very large scale. The internal consistency of the questionnaire assessed by Cronbach's Alpha was acceptable to were good $\alpha = 0.896$.

The Inventory of Curriculum Documents comprises the analysis of the four types of classroom management competences (competencies of planning the educational activity, organizational skills, decision-making skills, assessment and regulation skills) through 20 items, the intensity of each item being assessed on a scale with 5 steps from 1 to a very low extent to 5 to a very large extent). The internal consistency of the Inventory assessed by Cronbach's Alpha was acceptable to good $\alpha = 0.786$.

5. Results

The conclusions of the diagnostic analysis of the curriculum documents were on one hand *positive*, namely: all disciplines of psycho-pedagogical training (Psychology of Education, Major's Pedagogy and Didactics) also aim at specific knowledge of the management of the students' class. *The negative* aspects regarding the managerial training refer to the fact that there are not enough seminars approaching the themes regarding the class management field, which means that the skills are rather theoretical; the development of these managerial skills is rather sporadic and disorganized.

Regarding the relationship between classroom management skills and the student's academic performance, there is an average correlation, $r = 0.448$, statistically significant ($p < 0.01$) between the score of the management skills inventory and their school performance, assessed by academic performance inventory (Table 1).

Table 1. Correlations between classroom management skills and academic performance

		Academic Performance	Evaluation result Psychology of Education	Evaluation result Pedagogy	Evaluation result Module
Classroom management skills	Pearson Corelation	0.448**	0.340**	0.182	0.055
	Sig. (2-tailed)	0.000	0.009	0.164	0.673
	N	161	158	160	161

** The correlation is significant at a threshold of 0.01 (2-tailed).

Source: Own research

If we place in a relations the classroom management skills of the academic human resources in training and the evaluation results to the Psychology of Education, we can observe that there is a statistically significant relationship between the two variables, $r = 0.340$ at a significance threshold of less than 0.01. The evaluation result in Pedagogy and of all subjects in the Module in relation to classroom management competencies does not indicate a statistically significant correlation ($p = 0.164$, $p = 0.673$). The form of the relationship between the two variables tends to non-linearity, and the direction of the relationship is positive. The relationship intensity is medium.

Also, the management skills of the class correlates positively with the managerial roles of the academic resource $r = 0.413$ at $p < 0.01$. (Figure 2). The form of the relationship between the two

variables tends to linearity, and the direction of the relationship is positive. The intensity of the relationship is an average one.

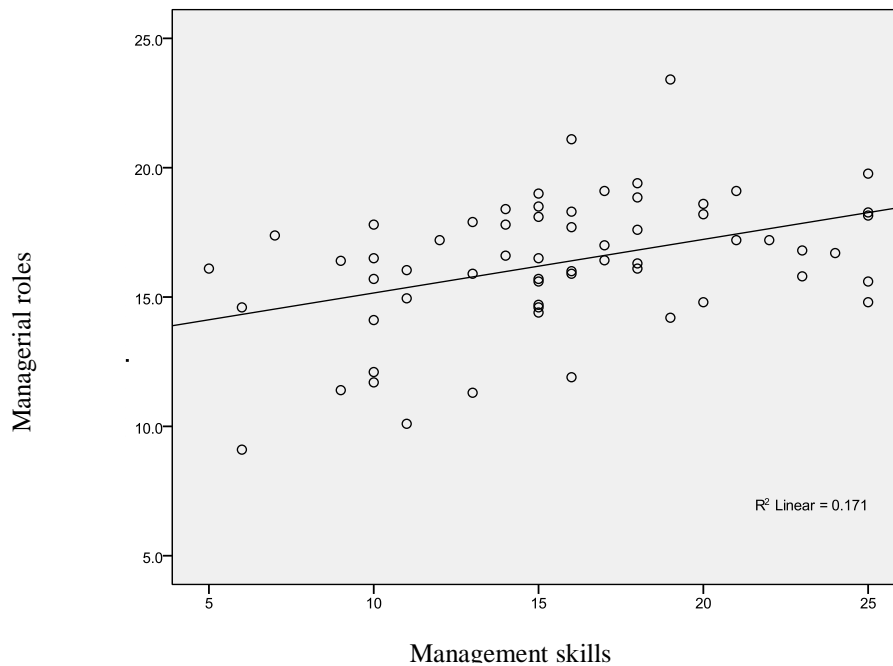


Figure 2. Correlation between managerial roles and managerial skills of academic human resources

Source: Own research

There are average correlations ($r = 0.448$, $r = 0.413$) between the managerial roles of the academic human resource participating in the study and their academic performance and also the class management skills. The determination coefficient has a value of 0.201 for academic performance and 0.171 for classroom management competencies, which shows that there is a linear, direct and average link between the managerial roles and the two dependent variables. Thus, we can say that the managerial roles of the academic human resource determine their academic performance in a proportion of 20.1% and the management skills of the class in a proportion of 17.1%.

Table 2. Predictions of the managerial roles over the academic performance and classroom management competencies

Variable	R	R ²	R ² Adjusted	Standard estimated error	F	Sig.
Academic performance	0.448 ^a	0.201	0.187	0.4602	14.818	0.000 ^a
Classroom management skills	0.413 ^a	0.171	0.157	4.729	12.138	0.001 ^a

a. Predictors: (Constant), managerial roles
 b. Dependent Variable: academic performance, classroom management skills

Source: Own research

Test F takes the value of 14,818 and 12,138, at a significance threshold lower than 0.01, which means that the independent variable, that is, the managerial roles, explains the variance of the dependent variables, in this case the performance and the skills, and vice versa. The linear relation between the variables it is statistically significant (Table 2).

In conclusion, the managerial roles of the academic human resource are influenced by academic performance and influence the classroom management skills.

6. Conclusion

Identifying and developing human resource management skills based on practical knowledge are challenging for training the future academic human resources (Grama, 2010; Roache, Lewis, 2011).

Developing the classroom management skills in the academic human resource during the initial training has proven to be a real necessity for performing at a higher quality level the teaching

profession, being also one of the European Union's strategy's priorities the professionalization of the teaching career (McCormack, 2011, Aliakbari, Bozorgmanesh, 2015; Wrigley, Straker, 2017).

The classroom management skills are so complex that a research can only brighten up only few aspects and not even those in all their complexity. The „profession's” subtleties can not be transformed into measurable variables and they remain as a task of self-training and self-improvement which are determined by each educator. The research was designed as a knowledge resource of several dimensions which should be exploited by improving the initial training program for the teaching career in order to increase the classroom management skills of the academic human resource.

The taxonomy resulting from the investigation it is structured around the core functions of the learning process - teaching-learning-evaluation - and proposes a set of sumative-integrative managerial skills for each type of classroom management skills. For example, in order to be able to make annual / semester planning, it is necessary to analyze the curriculum, to decide over the presented information, to predict the difficulties and risks, to adapt to the target group, etc.

The study highlights some of the most important limitations and dysfunctions of the current initial training model, which are not specific only for the organization where the subjects came from, but can be extrapolated to the entire Romanian educational system.

As a follow up of this research, we intend to extend the research by developing a curricular model focused on the competences development in the classroom management by initiating a project of formative program adaptation so that it can be part of the academic human resource continuous training program.

Thus, at the level of the Teaching Staff Training Departments, it is necessary to increase the collaboration between the teaching staff teaching psycho-pedagogical subjects towards the development of the competences necessary for the teaching profession, as well as the collaboration improvement with the practice mentors, in order to connect this training to the real needs of classroom work, focusing over the practical applications.

In conclusion, the study emphasized that the training of the future academic human resources in the spirit of training and development of classroom competencies could significantly improve the educational process. Thus, it is outlined a new framework for analyzing the problem of initial training of the academic human resources: the specificity of the teaching activity in the contemporary society's context.

Acknowledgements

Project financed by Lucian Blaga University of Sibiu research grants LBUS-IRG-2016-02.

References

- Adamson, B.J., Covic, T., Lincoln, M. (2004). Teaching time and organizational management skills to first year health science students: Does training make a difference? *Journal of Further and Higher Education*, vol. 28, iss. 3, pp. 261-276.
- Aliakbari, M., Bozorgmanesh, B. (2015). *Assertive classroom management strategies and students' performance: The case of EFL classroom*, Cogent Education, iss. 1, vol. 2, [online]. [Available]: <http://www.tandfonline.com/doi/full/10.1080/2331186X.2015.1012899>. [2017, November 2].
- Andrei, O. (2015). Motivated Students Could Be The Future Successful Manager, *Revista Economică*, vol. 67, pp. 2.
- Barbetta, P.M., Norona, K.L., Bicard, D.F. (2005). Classroom behavior management: A dozen common mistakes and what to do instead. Preventing School Failure. *Alternative Education for Children and Youth*, vol. 49, iss. 3, pp. 11-19.
- Berliner, D.C. (2004). Expert teachers: their characteristics, development and accomplishments. In R. Batllori i Obiols, A.E. Gomez Martinez, M. Oller i Freixa, J. Pages i Blanch (Eds.), *De la teoria..a l'aula: Formacio del professorat ensenyament de las ciències socials*, Barcelona: Universitat Autònoma de Barcelona, pp. 13-28.
- Cristea, G. (2008). *Managementul lectiei*, Bucuresti: EDP.
- Dančišinová, L., Benková, E., Daňková, Z. (2017). Presentation skills as important managerial competences in the context of professional communication. *Polish Journal of Management Studies*, vol. 15, iss. 2, pp. 37-46.
- Emmer, E.T., Evertson, C.M., Worsham, M.E. (2003). *Classroom management for secondary teachers*. Boston: Allyn and Bacon.
- Evertson, C.M., Weinstein, C.S. (2006). Classroom management as a field of inquiry. In C.M. Evertson, C.S. Weinstein (Eds.), *Handbook of classroom management. Research, practice and contemporary issues*, (pp. 3-15.) Mahwah, New York: Lawrence Erlbaum Associates.

- Grama, B. (2010). The impact of changing about the organisational behaviour, *ISI Thomson Proceeding of the 18th International Economic IECS*, pp. 174-177, Sibiu, Romania.
- Korpershoek Hanke, Harms Truus, de Boer Hester, van Kuijk Mechteld, Doolaard Simone. (2016). A Meta-Analysis of the Effects of Classroom Management Strategies and Classroom Management Programs on Students' Academic, Behavioral, Emotional, and Motivational Outcomes, *Review of Educational Research*, vol. 86, iss. 3, pp. 643-680.
- Leinhardt, G., McCarthy Young, K., Merriman, J. (1995). Integrating professional knowledge: the theory of practice and the practice of theory. *Learning and Instruction*, vol. 5, pp. 401-408
- McCormack, A. (2011), Classroom Management Problems, Strategies and Influences in Physical Education, *European Physical Education Review*, vol. 3, iss. 2, pp. 102-115.
- Mihaescu, D. (2012). The School Manager - Deciding Factor In The School'S Organization, *Revista Economica*, Editura Continent, CNCSIS: cod 472, 5 (supplement)/2012, pp. 203-208.
- Mihaescu, L. (2009). Modeling managerial activity an actual challenge or a need? *Revista Economica*, vol. 1, iss. 44, pp.75-82.
- Mihaescu, L. (2009). The Future Color of the Future, *Revista Economica*, vol. 6 (48), pp. 5-8.
- Okřęglicka, M., Havierniková, K., Mynarzová, M., Lemańska-Majdzik, A. (2017). Entrepreneurial intention creation of students in Poland, Slovakia and Czechia. *Polish Journal of Management Studies*, vol. 15, iss. 2, pp. 162-172.
- Oliver, R.M., Wehby, J.H., Reschly, D.J. (2011). *Teacher classroom management practices: effects on disruptive or aggressive student behavior*. Campbell Systematic Reviews, [online]. Available: https://www.campbellcollaboration.org/media/k2/attachments/Oliver_Classroom_Management_Review.pdf. [2017, November 10].
- Ostrosky, M.M., Jung, E.Y., Hemmeter, M.L., Thomas, D. (2008). *Helping children understand routines and classroom schedules* (What Works Brief Series, No. 3), [online]. Available: <http://csefel.vanderbilt.edu/kits/wwbtk3.pdf> [2017, November 10].
- Roache, J., Lewis, R. (2011) Teachers' Views on the Impact of Classroom Management on Student Responsibility, *Australian Journal of Education*, vol. 55, iss. 2, pp 132-146.
- Simonsen, B., Fairbanks, S., Briesch, A., Myers, D., Sugai, G. (2008). Evidence-based practices in classroom management: considerations for research to practice. *Education and Treatment of Children*, vol. 31, iss. 3, pp. 351-380.
- Voiculescu, F. (2013), *Paradigma abordarii prin competente*, Ed. Universitatea "1 Decembrie 1918" Alba Iulia, Alba Iulia.
- Weinert, F.E. (2001). Vergleichende Leistungsmessung in Schulen e eine umstrittene Selbstverständlichkeit. In F.E. Weinert (Ed.), *Leistungsmessung in Schulen*, Weinheim: Beltz. pp. 17-32.
- Wrigley, C., Straker, K. (2017). Design Thinking pedagogy: the Educational Design Ladder, *Innovations in Education and Teaching International*, vol. 54, iss. 4, pp. 374-385.
- Wubbels, T. (2011). An international perspective on classroom management: What should prospective teachers learn? *Teaching Education (Special Issue: Classroom Management in Teacher Education)*, vol. 22, iss. 2, pp. 111-131.

Liviu Mihaescu¹ *

Lucian Blaga University of Sibiu
Romania

Diana Mihaescu²

Lucian Blaga University of Sibiu
Romania

54. COMPARATIVE ANALYSIS OF MANAGERS PROFILE IN NATIONAL AND FOREIGN COMPANIES FROM ROMANIA

Abstract: Today throughout the world, management, although unanimously recognized as indispensable, has become controversial. The manager, given the increasingly important role that knowledge will play, should have to become a leader more and more, a “resource”, a “counselor”, a “trainer” of the subordinate collaborators. In a pluralistic society, managers from all organizations need to invest, choose and achieve acceptable compromises, harmonizing the resources available with the goals expressed in the form of results. The main purpose of this study was an exploratory one, to investigate the management and leadership of foreign and national companies, the current trends of the Romanian managers thinking and behavior from the psycho-sociological perspective and to highlight their potential resources and limitations. The study investigate the trends in the thinking and behavior of managers in Romania and show up some differences between them in national and foreign companies. The aim is changing managerial thinking, skills and acting patterns for Romanian managers to improve their own efficiency.

Keywords: leadership, management, manager behavior, manager thinking.

JEL Classification: M12, M14, M16, M21

1. Introduction

In recent years, a clear differentiation has emerged in the literature in terms of management and leadership concepts. Although it has been very much spoken in terms of leadership, John Kotter has emphasized that leadership completes management, but does not replace it (John Kotter, 2008). Management focuses on delivering results, managing budgets, processes, planning, organizing and control, while leadership focuses toward bringing people together in a common vision, change, motivation, development (Stancioiu, Militaru, 1999, pp. 24-30). Management maximizes results and leadership maximizes people's motivation and satisfaction (Grabara, Bajdor, Mihaescu, 2015; Stancioiu, Militaru, 1999, pp. 24-30), their development, emotional alignment. In this context, we are interested in analyzing the behavior patterns of the managers in national Romanian enterprises and foreign managers who both activate in Romania, associated with the managerial and leadership roles (Boia, 2012, pp. 18-20).

At the beginning of the 20th century, management emerged as a science, and in the 1980s we witnessed the expansion of participatory management, implementation of performance management systems (Dobrin et al., 2012) and management through objectives. After the 1990s, a new form of management emerged: intuitive management, joining the rigor of scientific management, the emotional, intuitive side.

The essence of leadership is creating consensus, directing employees through psychosocial processes – communication and influence – to achieve the activities (Tannenbaum, Weschler, Massarik, 1961; Ekpe, 2017; Baron, Agustina, 2017; Vlacsekova, Mura, 2017). Initially, it was thought to be all about the personality of the leader (charisma), as manager, his characteristics, his personal qualities – the theory of great people, founded on a social philosophy, the elitist (see Machiavelli, 2003). In the late 1980s, grew the new charismatic leadership (Conger, Rabindra, 1988).

¹ Prof. Mihaescu Liviu Ph.D.; Cl. Victoriei 10, Sibiu, Romania, liviu@ulbsibiu.ro

² Assist. Prof. Mihaescu Diana Ph.D.; Cl. Victoriei 10, Sibiu, Romania, diana.mihaescu@ulbsibiu.ro

* Corresponding authors

Charisma is no longer seen as an attribute, but as a social relationship as an assignment. Another model in the same sense is transactional leadership (Hollander, Offermann, 1990). According to transactional leadership, leadership is a transaction (a mutual influence), a social exchange between leader and subordinates (Borza et al., 2009), which implies influence and counterinfluence. At the end of the twentieth century appears the model of transformational leadership, centered on transformation, on individual consideration and intellectual stimulation (Everett, Ronald, 2001, pp. 80-86).

As it emerges, from the review of the evolution of managerial and leadership theories, management seeks to complement its scientific instruments with others that value the emotional side, and leadership emphasizes the person as a distinct entity and transformation, in the sense of intellectual stimulation for achieving managerial efficiency (Fried, Heinemeier, 2011; Mihaescu, 2009).

Today, in a highly competitive and dynamic world, leadership is increasingly needed for all managers. That is why it is important to know what are the perspectives of the Romanian managers on leadership, the roles of manager as leader, as “servant leader” (Greenleaf, 2003) who have the difficult task of overcoming the recession and ensuring a sustainable development.

We are interested in exploring Romanian managers' perceptions regarding the performance (productivity, profit), employees, and also their own strengths and weaknesses (Burdus, 2017, pp. 32-39).

The paper is structured as follows: the first part is dedicated to the presentation of the methodology, the second part presents the results, and finally some conclusions are formulated.

2. Research Methodology

We conducted a study in 83 companies (52 foreign and 31 national companies) with 135 managers - respondents, trying to investigate the thinking and behavior patterns (Bacanu, 1999, pp. 100-114), cultural and educational trends and their impact on management decisions and actions (Dima, Mihaescu, Gheorghe, 2008). We used the sampling method combined with the simple random sampling method.

The main hypothesis of the study was about the predominantly emotional, intuitive orientation of the Romanian managers and, implicitly, the lack of coherent thinking in the long run. The study intended to highlight these differences between management and leadership, in foreign and national companies. Also we aim to identify the perceptions of Romanian managers in foreign and national companies about their own capabilities, resources and weaknesses, the expectations from subordinates and superiors, the perspective they have as managers on performance on short, medium or long term for achieving high performance (see Fraticiu, Mihaescu, Andanut, 2015; Adizes, 2004).

We have used the investigation as a process (Terry, 2001), and the investigative questionnaire was composed of three parts. In the present study we will focus only on the first part that addresses open questions about: strong points and weaknesses of the Romanian manager, the expectations of the manager superior, subordinate expectations, ideal manager profile, manager values and length of weekly working time. The questionnaire was administered individually. The rest of them will be investigated in a further study which will involve other testing hypothesis.

3. Research Results on Managerial Thinking

The role of management is to achieve maximum results in limited resource management. But what are the results of managers in Romanian companies? Two years ago, the average profit in private companies in Romania was 3.4%, and in 2017 it fell by 1.8%. Average productivity per employee was under €60000, which means 47.6% of the EU average. Foreign-owned companies recorded average productivity per employee between €120,000 and €180,000. Why are these huge differences?

Romanian managers must answer these questions. Management in Romanian companies needs to find solutions as quickly as possible to improve the financial health of companies to ensure the survival and future development of the business.

Today, in Romania, the expectations from managers are extremely high. There is talk everywhere, including in the political environment, about private management as a rescue solution, not taking into account the results of the Romanian private environment so far, which questions the efficiency of governments.

I believe in the viability of a Romanian management designed in a dynamic training perspective, which shows significant differences between multinational and national companies.

The research highlighted the following hierarchies of the expectations of the Romanian managers from the superior managers: integrity, communication and support, as can be seen in Figure 1. It is worth noting that the expectations of hierarchy was made according to frequencies recorded in questionnaires.

It is noted that under the conditions of a free choice, international managers have the highest expectations of integrity and their relationship with senior managers. Positioning integrity first may mean a lack of value for Romanian managers in many companies. The expectation of communication and cooperation expressed by 54% of managers in national companies is a good indicator of what is happening today, as the existence of deficiencies in the relationship between top management and middle management.

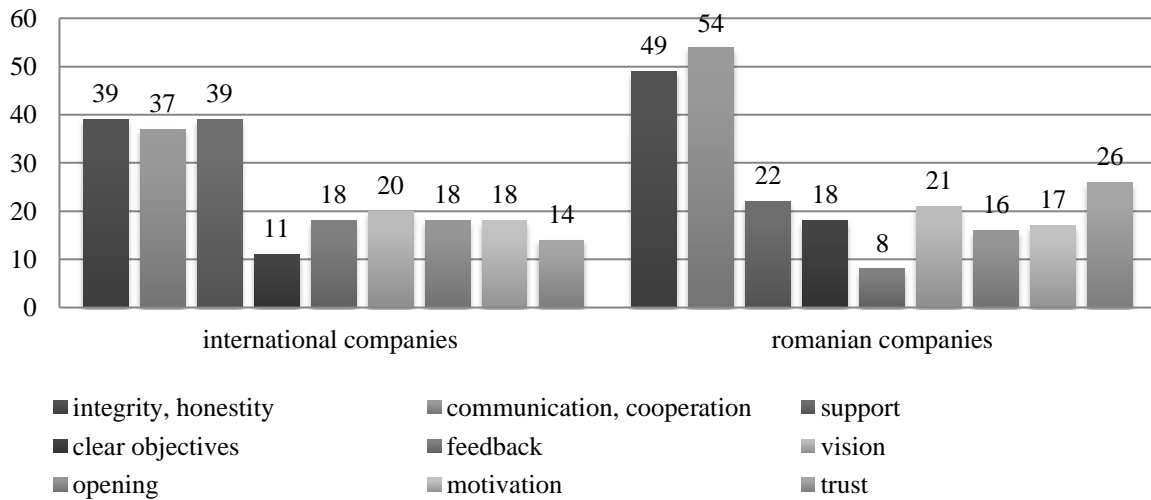


Figure 1. Managerial expectation in Romania

Source: Own research

Viewed as a whole, most of the Romanian managers expectations refer to the leadership side. The leadership need being felt by most of the Romanian managers participating in the study which is also reflected by their projection on the profile of the ideal manager (see Figure 2).

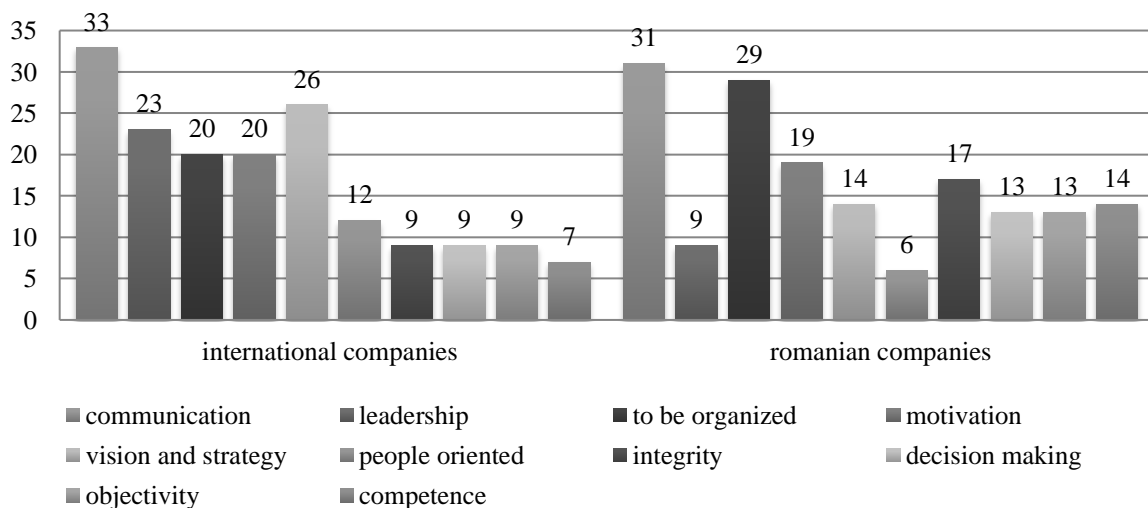


Figure 2. The ideal manager profile

Source: Own research

The biggest differences between Romanian managers in multinational and national companies are about vision and strategy, leadership and organization. In fact the 29% of the managers from the national companies design the organizing function in the second place for the ideal management

hierarchy which may indicate the priority action of improvement of the Romanian national companies. The importance of vision and strategy and leadership is much more aware at multinational companies' managers. These results confirm that multinationals with "imported" well-organized processes are looking to focus more on developing strategies to bring value to business and people's management.

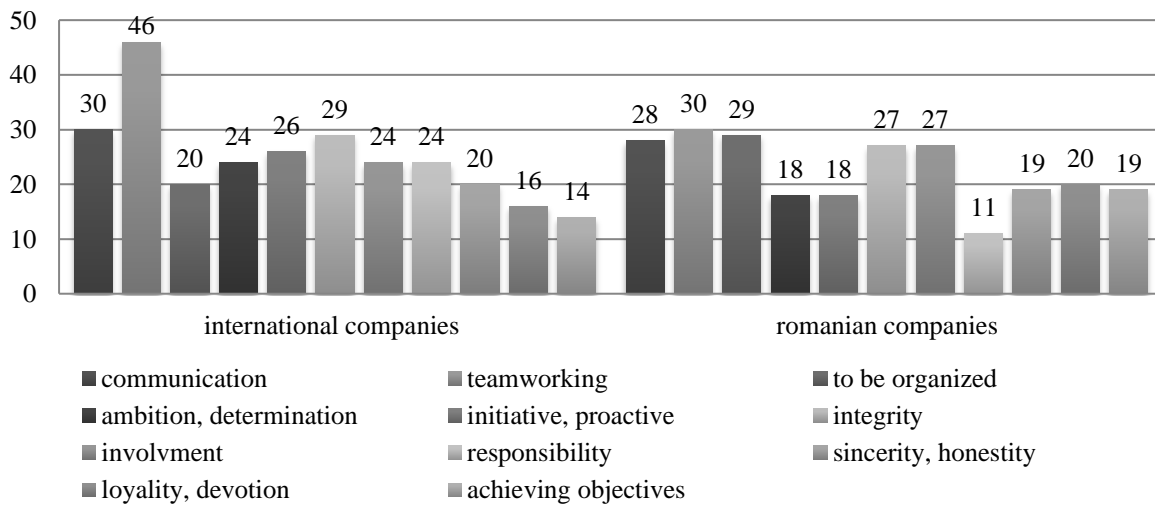


Figure 3. Managerial expectations of subordinates

Source: Own research

The expectations of Romanian managers seen in the mirror from superiors and subordinates highlight reveals at least two tendencies that are becoming more and more clear. The first refers to attributes related to the leadership area, with the need to develop leadership skills. The second tendency expresses the lack of coherent thinking in terms of results and is revealed by the expectations of the last place both from the top and the subordinates regarding the setting and realization of the objectives.

Another aspect investigated in this study refers to weekly working time.

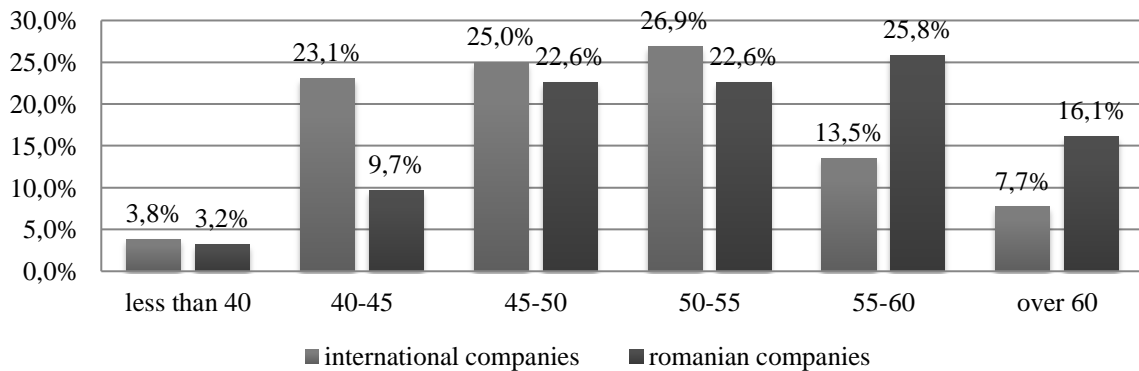


Figure 4. Managers' percent working time/week

Source: Own research

As shown in Figure 4, the 31 Romanian managers spend an average of about 25% over the normal work schedule. This aspect can be interpreted by involving the majority of Romanian managers participating in the study. Also, in national companies, 64.5% of managers claim to spend more than 50 hours a week at the office. Interpretation of this choice can be, on the one hand, the Romanian manager's focus on problem solving, and on the other hand, the short-term focus on the present and less on the development of sustainable long-term performance, not strategy oriented.

The philosophy of results is the very essence of managerial thinking. Nothing is sustained in the long run without results. The role of the manager is to set objectives in terms of results, to adapt the management tools to the results, and the most important and difficult aspect of managerial thinking, to

achieve a prioritization and good balance between short and long term results. We are talking here about the ethics and ecology of the results, about sustainable results. This is the strategic direction and the main landmark for the Romanian manager needs in his future development.

The analysis of the national and multinational companies participating in the study reveals the following two differences: the greater emphasis of multinational companies' managers on profitability and long-term development of leadership skills.

In the table below we have data regarding the employee average productivity and the average profit rate of companies participating in this study for 2017.

Table 1. Individual average productivity and Profit Rate

	Managers	Avg. productivity	Avg. rate of profit %
International company	52	€ 179 000	9.8
National company	31	€ 188 000	4.5

Source: Own research

As the data in Table 1 shows, Romanian national companies have learned the productivity lesson and now need to pay more attention to profit and long-term development.

4. Conclusions Regarding Comparative Analysis of Results Between Managers in National and Foreign Companies

4.1. Problems Facing Romanian Managers

The main problems identified are: lack of specialized human resources, the lack of a strong brand, a balanced cash flow management, limited access to finance and consultancy are the biggest problems for Romanian managers.

We appreciate that the biggest problems for Romanian managers is the lack of specialized human resources, the lack of a strong brand that provides notoriety and a guarantee of quality, the lack of balanced cash flow management and strategic partners, such as and limited access to finance and consultancy solutions that large foreign companies have at both group and local level.

Under these real market conditions, the "recipe" generally proposed is rather a spending cut, according to the European crisis approach. The days of the autocratic leadership system have come to a halt, and the top performers are using different approaches altogether.

At the moment, the business environment is financially stressed globally, in the context of tensions in national and international markets, so that business people should drive their business more efficiently, increase productivity and control all flows carefully, as access to finance could be made more difficult.

Companies need to understand better their competitors, build a strong customer relationship, and deliver value-added sales, these factors are key to business success. The managers in Romania and their employees are afraid to assume risks, so creativity is inhibited.

It is up to leaders and managers to encourage employees to take risks in their work. If management changes its business philosophy in the shortest time, people in the company will react and things will start to change, coming in short time with beneficial results for the business.

The government support programs for start-up entries, as well as networks created by "business angels" are needed to provide substantial funds for those who are at the beginning of a business venture, so Romanian authorities need accord importance of supporting Romanian managers, entrepreneurs, especially young people, through funding programs.

Start-ups can be successful if they bring an innovation of at least 10% to the products and services they offer to the market compared to existing ones. On the other hand, they face more difficulties to survive, including access to finance or staff costs.

4.2. National and Foreign Managers' Differences Revealed

The main features of the Romanian managers' profile as outlined in this study are: the tendency towards intuitive, inspirational and emotional management; focusing strongly on the present, and gaining satisfaction and immediate results, engaging and dedicating into action through the effort of overtime. On the opposite side, the potential limitations of the Romanian managers are: inconsistency

and a lack of coherence of thinking in terms of results, strong focus on issues and present to the detriment of sustained performance, long term and low leadership and mistrust in motivation, employee involvement.

Concerning the analysis of the differences between the national and foreign companies in the study, we can assert the much stronger orientation of foreign companies on profitability and long-term. Thus, Romanian managers in foreign companies value the leadership and strategic thinking to a greater extent, while the managers of the national companies are more oriented towards the classical managerial functions.

We consider that education and management are the only key factors in future sustainable economic growth. The results of this study confirm the very important role of managerial and leadership development programs' in most multinationals.

The role of current management is diverse and complex, and managerial performance involves multilateral development. Along with rigorous management tools, leadership is increasingly needed. The Romanian manager needs to develop his leadership skills and a sustainable long-term strategy in which profit has a central role.

Some of our initial assumptions established at the beginning of the study are now revealed by the analysis of the questionnaires results. There are some significant differences between Romanian managers in foreign companies and those in national companies. Unfortunately, in this analysis, the Romanian manager of the national companies emerges, as we expected, with an unfavorable picture:

- The first difference relates to the type of management. Leadership in national companies has a tendency to use intuitive, inspirational, experience-driven management, unlike foreign managers who are more rigorous and apply more scientific management tools;
- Another difference refers to the performance approach. Foreign managers are geared towards strengthening and developing performance over the long term, while managers in national companies are more focused on present and problem solving - unfortunately, faces with many, many problems;
- Motivation is a lack for both foreign and national managers. Unfortunately, managers from local companies are also disadvantaged - 70% of them do not know how to motivate;
- One of the clear conclusions of this study is that, in Romania, managers who are part of foreign companies are significantly more consistent in managerial thinking than most managers in national companies. They also prove more congruence between how they are projected (how to see) and how they are in reality. Approximately 80% of the leadership of national companies is described as results-based, but in reality it is not;
- People who hold leading positions in national companies believe that the ideal manager must be a model of integrity and must excel in organizing, unlike foreign managers who project a leadership model with vision, strategy and leadership. This is confirmed by our hypothesis that, in national companies, inequities and lack of organization are as a chronic diseases that stifle performance and profitability;
- The differences between foreign companies Romanian managers and local companies do not stop there, but on the contrary they are found in the way they look at their subordinates. Managers in national companies accuse more than their fellow from multinationals the lack of involvement and the lack of responsibility to their subordinates.

I think the most serious problem in local Romanian companies is the lack of a steady and predictable behavior. Let's not forget that the prediction of the results of a business begins with the prediction of its management.

4.3. What to do?

All these differences between Romanian managers in foreign and Romanian managers in national companies correlate with the financial indicators of their companies, with significant percentage differences in the rate of profit and average productivity. The result is as follows: both profit rate and productivity in foreign companies is on average 2 times, sometimes even 3 times higher than in Romanian companies.

It is very urgent for managers in national companies to find milestones, to use valid managerial models and managerial tools in a coherent way, to achieve objectives thru delegation, motivation (see

Isac, 2016) etc. In other words, it is time to move from empiric management to predictable scientific management.

The top managers of organizations need to be able to integrate into the decision-making process that always ensures the right balance, the interests of the supplier of products and services and the beneficiary thus proving to be really constructive.

In order to be able to respond to these requirements, the manager, the businessman, needs to insulate in depth, know and apply its analytical methods, to be leader, to be model, to be an effective manager. The educational system should provide accurate support for achieving these goals. Only in this way can the managers or the future ones get significant results and contribute to the development of the organization he is leading.

References

- Adizes, I. (2004). *The Ideal Executive*. Santa Barbara, CA: The Adizes Institute Publishing.
- Bacanu, B. (1999). *Strategia organizatiei in abordari practice*. Braşov: Editura Infomarket, pp. 100-114.
- Baron, I.S., Agustina, H. (2017). The effectiveness of leadership management training. *Polish Journal of Management Studies*, vol. 16, iss. 2, pp. 7-16.
- Boia, L. (2012). *De ce este Romania altfel?* Bucuresti: Editura Humanitas, pp.18-20.
- Borza, A, Nistor, R., Mitra, C., Bordean, O. (2009). Social enterprise and competitiveness. *Management & Marketing*, vol. 4, iss. 3, pp. 19-34.
- Burdus, E. (2017). *Management comparat international*. Bucuresti: Editura Pro Universitaria, pp. 32-39.
- Conger, J.A., Kanungo, R.N. (1988). The Empowerment Process: Integrating Theory and Practice. *The Academy of Management Review*, vol. 13, iss. 3, pp. 471-482.
- Dima, I.C., Mihaescu, D., Gheorghe I. (2008). Consideration about labor market in Romania. In R. Lescroart, A. Pachura, M. Kozak, (Eds.) *Change and Risk in Knowledge Based Economy*. Arlon: Blaise Pascal, pp. 253-257.
- Dobrin, C.O., Popescu, G.N., Popescu, V.A., Popescu, C.R. (2012). The concept of performance in business organizations - case study on the employee performance in Romanian business organizations. In *Proceedings of the 6th International Management Conference "Approaches In Organisational Management"* 15-16 November 2012, Editura ASE, Bucharest, Romania, pp. 310-316.
- Ekpe, I. (2017). Factors impacting on youth's leadership participation in Malaysia: Social media, social groups or government policies. *Polish Journal of Management Studies*, vol. 16, no. 1, pp. 21-31.
- Everett, A., Ronald, J.E. (2001). *Managementul productiei si al operatiunilor*. Bucuresti: Editura Teora, pp. 80-86.
- Faoro, B. (1999). *Romanul si felul lui de a fi*, (pp. 21-25). Sibiu: Casa de Presa si Editura Tribuna.
- Fraticiu, L., Mihaescu, D., Andanut, M. (2015). Culture-Civilization-Organizational Culture and Managerial Performance. *Procedia Economics and Finance*, vol. 27, pp. 69-72.
- Fried, J., Heinemeier, D.H. (2011). *Rework*, Bucuresti: Editura Publica, pp. 157-160.
- Grabara, J., Bajdor, P., Mihaescu, L. (2015). Steps of sustainable development implementation into enterprise activities. *Management of Sustainable Development*, vol. 7, iss. 1, pp. 45-49.
- Greenleaf, R.K. (2003). *The Servant-Leader Within: a Transformative Path*, New York: Paulist Press.
- Hollander, E.P., Offermann, L.R. (1990). Power and leadership in organizations: Relationships in transition. *American Psychologist*, vol. 45, iss. 2, pp. 179-189.
- Isac, F.L. (2016). Culture influences and work motivation. *Journal of Economic and Business Research*, vol. XXII, no. 1, pp.116-118.
- Kotter, J. (2008). *Ce fac liderii cu adevarat*. Bucuresti: Meteor Press.
- Machiavelli, N. (2003). *Principele*, Bucuresti: Editura Antet.
- Mihaescu, L. (2009). Modeling managerial activity an actual challenge or a need? *Revista Economica*, vol. 1 iss. 44, pp. 75-82.
- Stancioiu, I., Militaru Gh., (1999). *Management. Elemente fundamentale*. Sibiu: Editura Teora, pp. 24-30.
- Tannenbaum, R., Weschler, I.R., Massarik, F. (1961). *Leadership and organization: A behavioral science approach*, McGraw-Hill series in management, New York: McGraw-Hill Book Co.
- Vlacsekova, D., Mura, L. (2017). Effect of motivational tools on employee satisfaction in small and medium enterprises. *Oeconomia Copernicana*, vol. 8, iss. 1, pp. 111-130.

55. SOURCES OF PERSONNEL RISK IN THE OPINIONS OF POLISH MANAGERS. A DIAGNOSTIC TOOL

Abstract: The growth of the meaning of human resources and human capital as business' success factor justifies exploring the subject of personnel risk. This risk arises from unpredictable behaviours of employees as well as from the way of people management in an organisation. A following research problem was defined: Which sources of personnel risk are considered by participating managers as the most important in respect to being a danger to the function and development of Polish enterprises? The aim of the article is to identify the most important sources of personnel risk in the opinion of Polish managers. Another aim is to confirm the diagnostic value of questionnaire that is a tool developed by author and based on Delphi method. 75 representatives have participated in the study. They are senior management staff of enterprises and students of the Executive MBA at the Institute of Economics of Polish Academy of Sciences in Warsaw. The respondents are people with different levels of education, however, each of them has a management experience (average - 5 years). Men constituted 57.3% of the study group. Three types of personnel risk sources were identified: personal risk resulting from faulty personnel policy of the organization and sources of attitudes, behaviours, characteristics of employees and personal risk's sources arising from factors embedded in external environment.

Keywords: personnel risk, personnel risk management.

JEL Classification: L2, M5

1. Introduction

Personnel risk should be treated as one of particular types of risk making up general risk. Therefore, similarly to general risk it can be considered through various dimensions: psychosocial (for example risk connected to the psychological and social consequences of particular decisions regarding staff) as well as mathematical and statistical where the effects of decisions related to staff are expressed as the probability of the occurrence of financial losses or lack of expected gains but also as the materialization of profits being the result of decisions regarding staff (Bula 2003, p. 23). This is the reason that the aim of the article is the identification of key sources of personnel risk in the opinions of Polish managers. The analysis of the literature (Aven, Renn, 2010; Jaeger et al., 2013; Glendon, Clarke, McKenna, 2013) indicates blank which is the lack of tools to diagnose the personnel risk in the organizations. For this reason another aim is to confirm the diagnostic value of questionnaire that is a tool developed by author and based on Delphi method.

The choice of subject matter is justified by the fact that to cope with disruptive events that cannot be adequately addressed with traditional risk management systems, growing number of academics, managers, policy makers, and politicians have shifted their attention from identifying and mitigating risk to trying to increase resilience (Van der Vegt et al., 2015). Resilience reflects the ability of systems to absorb and recover from shocks, while transforming their structures and means for functioning in the face of long-term stresses, change and uncertainty. This requires actively understanding the risk landscape, determining where sources of personnel risk are. To do so the following problem must be solved: Which sources of personnel risk are considered by participating managers as the most important in respect to being a danger to the function and development of Polish enterprises? The cognition of the personnel risk's sources can be a starting point of building organisations' tolerance to threats coming from this kind of risk.

¹ Assoc. Prof. Joanna M. Moczyłowska Ph.D.; Tarasiuka 2, 16-001 Kleosin, Poland, joanna@moczyłowska.pl

* Corresponding author

The article consists of three parts. In the first part the analysis and synthesis of the problem's literature are presented. In the second part there are methodical research aspects and in the third part there are results of the research. Desk research method, qualitative measure that is expert panel and questionnaire research, in which 75 managers had participated, has been used in the research. They are senior management staff of enterprises and students of the Executive MBA at the Institute of Economics of Polish Academy of Sciences in Warsaw.

2. The Nature, Sources and Types of Personnel Risk

Risk falls into a category of concepts which have yet to gain a definition that is clear, precise and accepted by the entire scientific world. This also concerns the term *personnel risk* (alternatively described as the human factor risk or human resources risk) (Kapuścińska, Lachiewicz, Matejun, 2015, p. 78). An analysis of literature devoted to the problem of personnel risk leads to the conclusion that there are numerous competing definitions of the nature of this concept. Lipka (2002, p. 24), a leading Polish scientist studying personnel risk, defines it as "being involved in activities connected to staff under conditions of uncertainty which can end in failure" where activities connected to staff should be understood as all activities and decisions undertaken as part of the implemented HR policy and covering all of the organization's Human Resource Management processes. The author being quoted treats personnel risk as one type of "micro-organizational and micro-social risk or the risk connected to the social system of the organization" (Lipka, 2002, p. 24). Within the operational dimension risk determines the possibility of the occurrence of losses resulting from the improper selection or the fallibility of internal processes, people or technical systems or external events (Kendall 2000, p. 16).

Personnel risk can be considered in a narrow or the broad scope (Cook, Flitner, 2013). In the narrow scope it is identified with the so-called human factor risk treating employees as a potential source of risk (Zemke 2009, p. 22). Risk factors include the individual traits of employees, the unpredictable nature of their behavior, decisions or activities (intentional or unintentional) detrimental to the enterprise or random events concerning particular people which can have negative consequences for the organization (Shelest 2013; Hopkin, 2017). Another example of the narrow aspect of understanding personnel risk is reducing it to the meaning "risk of financial loss resulting from human imperfection" (Bochniarz, Gugała, 2005, pp. 97-98). This definition does not include losses which are difficult or even impossible to assess using financial indicators (such as, for example, damage to the image of the organization as an employer). Unfortunately the exploration of economic practice provides us with numerous instances of defining risk occurring in the behavior of employees in this manner. As an example it is possible to use the results of a study titled *The Global Retail Theft Barometer of Checkpoint Systems* according to which nearly 34% of all losses incurred in Polish retail facilities are caused by dishonest workers placing them in the lead of least honest employees in Europe (www.pih.org.pl).

The broader approach to the problem of personnel risk combines potential dangers connected with detrimental, from the perspective of the enterprise, attributes and behaviors of employees with the low effectiveness of the human resource management system. An example of such a definition is the treatment of personnel risk as "the danger for the deviation of the current level of employee function from the level which suits organizational aims resulting from ineffective management of human resources" (Shelest, 2013, p. 75).

As has been aptly noticed by Lipka (2002, p. 24) "personnel risk results from the often impossible to precisely predict set of elements which can cause deviation in the realization of human resource tasks" where, in the HR context, deviations signify a difference between desired aims and obtained results. Of course the final effect may be better or worse than expectations (Mitchell, 2013). A good summary to the discussion concerning the desired scope of the meaning of personnel risk is the acceptance of a comprehensive model presented in Figure 1. Personnel risk should be equated with the concept of human resources risk covering risk connected to staff and human resources risk management.

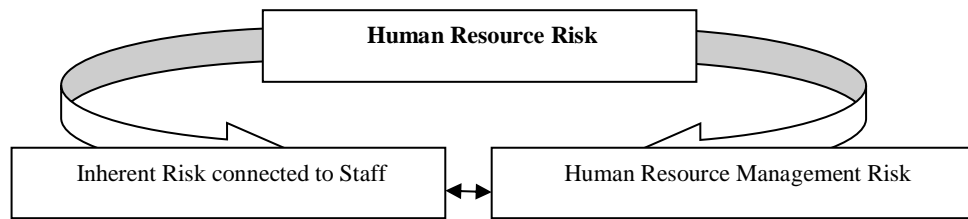


Figure 1. Comprehensive expression of personnel risk

Source: Developed by the author on the basis of: Zhao, Jia, 2017

The assessment of personnel risk requires the completion of an analysis measuring individual types of personnel risk (Chapman, 2001). The result of that analysis will be the establishment of the probability level of the occurrence of a negative event and the size of losses which it can cause (Kloti, Haupt, 2008). Personnel risk connected to the management of human resources (Mhrr) is the product of recruitment risk (Rr), the risk of interfering in employee development (Iedr), motivational risk (Mr) and derecruitment risk (Dr). This manner of dividing personnel risk into its elements indirectly shows how many organizational processes and events can cause the occurrence of personnel risk (Carter, Demczur, 2008). To simplify, it can be assumed that sources of personnel risk should be sought in external and internal environments, in the styles and manners of making human resource decisions and in the personal traits of decision makers (Beasley, Clune, Hermanson, 2005).

3. Research Methodology

Delphi method has been used in the research. Delphi may be characterized as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem (Habibi, Sarafrazi, Izadyar, 2014). In the literature, Delphi has been applied in various fields such as program planning, needs assessment, policy determination, and resource utilization (Hsu, Sandford, 2007). In various management studies the Delphi has been used in research to develop, identify, forecast and to validate in a wide variety of research areas (Skulmoski, Hartman, Krahn, 2007). The most important requirements for the use of Delphi are the need for experts' judgment, group consensus to achieve the results, multidimensional, and interdisciplinary problem, lack of consensus and imperfect knowledge, experienced and capable experts, dispersion of experts, no time limitation, and lack of cost-effective method (Landeta, 2006).

The first stage of research presented in this article was expert panel discussion. 5 people who own numerous works in the field of management sciences and 3 managers from the highest management level who have long work experience were the experts. The discussion moderated by the author had resulted in developing the list of the most important sources of the personnel risk in an organization. The next stage of the research was consisted in checking whether the sources of risk indicated by the experts were confirmed in the questionnaire surveys conducted among the managerial staff.

The study included 75 representatives of senior management staff of businesses who are also students of the Executive MBA Program at the Institute of Economics of the Polish Academy of Sciences in Warsaw. Respondents represent various levels of education but every one of them possesses management experience (on average – 5 years). Men constituted 57.3 % of the study group. The participants represented enterprises varying in size but with medium and small companies predominating. A following research problem was defined: Which sources of personnel risk are considered by participating managers as the most important in respect to being a danger to the function and development of Polish enterprises? It has been assumed that the classification of these factors by managers participating in the study as very important will confirm the diagnostic value of the tool.

4. Managers about Sources of Personnel Risk – Research Results

The discussion conducted by a panel of experts allowed the identification of 20 key sources of personnel risk facing Polish enterprises. They have been classified into three categories: sources of personnel risk related to the human resource policy of the organization, sources of personnel risk related to the attitudes, behaviors and personality traits of employees and sources of personnel risk resulting from factors connected with the organization's external environment.

Table 1. Sources of personnel risk in the assessment of management staff

Sources of personnel risk related to the human resource policy of the organization	Average for men (N= 43)	Average for women (N= 32)	Average (N= 75)	Variation (N=75)
Lack of a strategy for the management of human resources or the lack of a connection of that strategy with the business strategy of the enterprise	4.44	4.38	4.41	0.408
Low autonomy of middle management in the implementation of various management tools including motivation	4.40	4.13	4.28	0.556
Lack of a motivational system of remuneration	4.51	4.66	4.57	0.302
Lack of or infrequent personal reviews	4.40	4.47	4.43	0.680
Professional competencies of employees not diagnosed and/or improper assignment of professional tasks in respect to the professional competencies of employees	4.63	4.56	4.60	0.243
Rigid rules for the hiring, advancement and dismissal of employees	4.12	4.50	4.28	0.718
Lack of a professional training policy (no diagnosis of training needs, selection of low quality training, no correlation between increasing competencies with advancement)	4.19	4.50	4.32	0.626
Personnel policy not based on clear career paths and talent management	4.19	4.53	4.33	0.604
Lack of a system for the discovery of organizational leadership	4.16	4.56	4.33	0.658
A "dehumanized" organizational culture aimed only at results	4.21	4.66	4.40	0.568
Sources of personnel risk related to the attitudes, behaviors and personality traits of employees				
Lack of management skills especially the ability to manage diversity (cultural, generational or competence related)	4.42	4.53	4.47	0.414
Low morale and culture of work (exemplified by, for example, tardiness, high absenteeism, neglect of company property and even theft)	4.09	4.41	4.23	0.691
Lack of concern for occupational safety and health regulations	3.93	4.06	3.99	0.527
Excessive internal rivalry	4.12	4.59	4.32	0.572
Signs of unhealthy relationships such as bullying, cronyism or nepotism	4.23	4.63	4.40	0.459
Health problems including employee personality disorders	4.33	4.59	4.44	0.385
Sources of personnel risk resulting from factors connected with the organization's external environment				
Inappropriate competencies of employees in regard to the needs of the organization resulting from a faulty system of education	4.21	4.44	4.31	0.621
High cost of labor	4.58	4.63	4.60	0.270
Demographic crisis and the resulting lack of employees	4.26	4.53	4.37	0.534
Emigration of Polish specialists	4.28	4.38	4.32	0.464

Source: Developed by the author

Data contained within Table 1 presents the degree to which sources of personnel risk identified during the discussion conducted by a panel of experts is considered by the respondents as the most important from the perspective of being dangerous to the function and development of Polish enterprises. Every element was assessed on the basis of the Likert scale where 1 was a value signifying that a given element is not a source of personnel risk while a 5 meant that it is a very significant source of risk, poses the highest threat to the function and development of an enterprise.

Managers taking part in the study confirmed the importance of nearly all factors of personnel risk identified during the discussion of the expert panel. Only the value attained by the element "Lack of concern for safety or hygiene regulations" was below a 4.0. Sources of personnel risk which were deemed to be especially significant (an average value above 4.5) included: high costs of labor, the lack of a motivational system of remuneration as well as the professional competencies of employees not being diagnosed and/or improper assignment of professional tasks in respect to the professional competencies of employees. In assessing the importance of individual sources of personnel risk the vast majority of study participants agreed as evidenced by the low indicator of variation. Very high level of compliance of the respondents in the assessment of the importance of sources of personnel risk suggests that they occur in Polish companies. Confirmation of this hypothesis requires separate studies.

Table 2. Sources of personnel risk in the assessment of management staff

Sources of personnel risk related to the human resource policy of the organization	U Manna-Whitneya	W Wilcoxon	Asymptotic (bilateral)
Lack of a strategy for the management of human resources or the lack of a connection of that strategy with the business strategy of the enterprise	652.5	1180.5	0.671
Low autonomy of middle management in the implementation of various management tools including motivation	559.0	1087.0	0.129
Lack of a motivational system of remuneration	609.5	1555.5	0.326
Lack of or infrequent personal reviews	629.5	1575.5	0.473
Professional competencies of employees not diagnosed and/or improper assignment of professional tasks in respect to the professional competencies of employees	643.0	1171.0	0.570
Rigid rules for the hiring, advancement and dismissal of employees	561.5	1507.5	0.138
Lack of a professional training policy (no diagnosis of training needs, selection of low quality training, no correlation between increasing competencies with advancement)	566.0	1512.0	0.152
Personnel policy not based on clear career paths and talent management	555.0	1501.0	0.118
Lack of a system for the discovery of organizational leadership	551.0	1497.0	0.106
A "dehumanized" organizational culture aimed only at results	496.5	1442.5	0.022
Sources of personnel risk related to the attitudes, behaviors and personality traits of employees			
Lack of management skills especially the ability to manage diversity (cultural, generational or competence related)	644.0	1590.0	0.595
Low morale and culture of work (exemplified by, for example, tardiness, high absenteeism, neglect of company property and even theft)	515.0	1461.0	0.046
Lack of concern for occupational safety and health regulations	620.5	1566.5	0.434
Excessive internal rivalry	483.0	1429.0	0.016
Signs of unhealthy relationships such as bullying, cronyism or nepotism	498.0	1444.0	0.024
Health problems including employee personality disorders	551.0	1497.0	0.099
Sources of personnel risk resulting from factors connected with the organization's external environment			
Inappropriate competencies of employees in regard to the needs of the organization resulting from a faulty system of education	586.5	1532.5	0.234
High cost of labor	668.0	1614.0	0.800
Demographic crisis and the resulting lack of employees	576.0	1522.0	0.184
Emigration of Polish specialists	628.0	1574.0	0.480

Source: Developed by the author

An analysis of the answers showed significant statistical differences in conclusions drawn by women and men. Their assessment in the importance of such sources of personnel risk as: low morale and work culture, excessive internal rivalry as well as signs of unhealthy relationships (such as bullying, cronyism or nepotism) differed. In all three categories the men deemed the significance of a given source of risk to be lower than did the women. This is possibly caused by the fact that women put more weight on the relational and emotional aspects of work (Goleman, Boyatzis, McKee, 2002).

5. Conclusion

Research has confirmed the value of the diagnostic tool developed on the basis of a discussion held by experts. As many as 19 out of 20 sources of risk attained an average rating above 4 on a five-point scale. The participants of the study deemed high costs of labor, the lack of a motivational system of remuneration as well as the professional competencies of employees not being diagnosed and/or improper assignment of professional tasks in respect to the professional competencies of employees as especially dangerous to the function and development of an organization (all exceeding the value of 4.5). A statistical analysis showed high internal consistency of results. In respect to three factors of personnel risk there was a significant difference in their assessment by women and men. These are: low morale and work culture, excessive internal rivalry as well as signs of unhealthy relationships (such as bullying, cronyism or nepotism) differed.

The catalogue of personnel risk sources presented in this article can be utilized in the future to assess the level to which these sources occur in Polish enterprises and other organizations as well as to identify their consequences. It can also be used as a tool supportive for personnel policy that is oriented on personnel risk's minimizing because it indicates which elements relevant to human factor in an organization should be matter of particular concern of managerial staff.

The results of the research have also limitation coming from the fact that tested sample was homogeneous in terms of culture. It indicates necessity of continuation of the research of personnel risk's sources in the organizations that function outside the Poland and structuring universal, intercultural tools that diagnose this kind of risk.

References

- Aven, T., Renn, O. (2010). Risk Perspectives. *Risk, Governance and Society*, vol. 16, pp. 21-48.
- Beasley, M.S., Clune, R., Hermanson, D.R. (2005). Enterprise Risk Management: An Empirical Analysis of Factors Associated with the Extent of Implementation. *The Journal of Accounting and Public Policy*, vol. 24, pp. 521-53.
- Bochniarz, H., Gulaga, K. (2005). *Budowanie i pomiar kapitał ludzkiego w firmie*. Warsaw: Poltext.
- Buła, P. (2003). *Zarządzanie ryzykiem w jednostkach gospodarczych. Aspekt uniwersalistyczny*. Cracow: Cracow University of Economics.
- Carter, T.S., Demczur, J.M. (2008). Legal risk management. Check list for non-profit organizations. *Legal Risk Management*, October, pp. 28-40.
- Chapman, J.R. (2001). The controlling influences on effective risk identification and assessment for construction design management. *International Journal of Project Management*, vol. 19, iss. 3, pp. 147-160.
- Cook, M.A., Flitner, A.L. (2013). *Personal Risk Management and Property*. London: The Institutes of ProKnowledge.
- Glendon, A.I., Clarke, S., McKenna, E. (2013). *Human Safety and Risk Management*, Second Edition. London: Taylor and Francis.
- Goleman, D., Boyatzis, R., McKee, A. (2002). *Primal Leadership*. Boston: Business Review Press.
- Habibi, A., Sarafrazi, A., Izadyar, S. (2014). Delphi Technique Theoretical Framework in Qualitative Research. *The International Journal of Engineering and Science*, vol. 3, iss. 4, pp. 8-13.
- Hopkin, P. (2017). *Fundamentals of Risk Management: Understanding, evaluating and implementing effective risk managing*. London – New York - New Delhi: Kogan Page.
- Hsu, Ch., Sandford, B.A. (2007). The Delphi Technique: Making Sense Of Consensus. *Practical Assessment, Research & Evaluation*, vol. 12, no. 10, pp. 1-8.
- Jaeger, C.C., Webler, T., Rosa, E.A., Renn, O. (2013). *Risk, Uncertainty and Rational Action*. New York: Taylor and Francis.
- Kapuścińska, K.Z., Lachiewicz, S., Matejun, M. (2015). *Współczesne organizacje wobec wyzwań zarządzania ryzykiem – aspekty poznawcze*. Lodz: Lodz University of Technology.
- Kendall, R. (2000). *Risk Management for Executives*. Harlow: Pearson Education.
- Kloti, L. Haupt, I. (2008). *Personalrisiken. Qualitative und Quantitative Ansätze für das Management von Personalrisiken*. Berge: Auflage.
- Landeta, J. (2006). Current validity of the Delphi method in social sciences. *Technological Forecasting and Social Change*, vol. 73, no. 5, pp. 467-82.
- Lipka, A. (2002). *Ryzyko personalne. Szanse i zagrożenia zarządzania zasobami ludzkimi*. Warsaw: Poltext.
- Mitchell, A. (2013). *Risk and resilience: from good idea to good practice*, OECD Development Co-operation Working Papers, No. 13, Paris: OECD Publishing.
- Risk management guide for small to medium business* (2009). Melbourne: CPA Australia.
- Shelest, O. (2013). Ocena czynników ryzyka personalnego w administracji publicznej na przykładzie miasta Poznania. *Konteksty Społeczne*, vol. 1, pp. 73-85.
- Skulmoski, G.J., Hartman, F.T., Krahn, J. (2007). The Delphi Method for Graduate Research. *Journal of Information Technology Education*, vol. 6, pp. 1-21.
- Van der Vegt, G., Essens, P., Wahlstrom, M., George, G. (2015). Managing Risk and Resilience: From Editors. *Academy of Management Journal*, vol. 58, iss. 4, pp. 971-980.
- Zemke, J. (2009). *Ryzyko zarządzania organizacją gospodarczą*. Gdańsk: University of Gdańsk.
- Zhao, X., Jia Z. (2017). *Risk Analysis on Human Resource Management* [online]. Available: <http://www.seiofbluemountain.com> [2017, July 02].

Monika Mynarzová^{1*}

VŠB – Technical University of Ostrava
Czechia

Małgorzata Okreglicka²

Czestochowa University of Technology
Poland

56. THE STATE AID FOR SMALL AND MEDIUM-SIZED ENTERPRISES IN EUROPEAN UNION IN THE CONTEXT OF THE REVISED GENERAL BLOCK EXEMPTION REGULATION

Abstract: The support for business in the European Union focuses on supporting small and medium-sized enterprises (SMEs), which are considered the backbone of national economies. The article focuses on the state aid for SMEs in EU Member States in accordance with Commission Regulation no. 651/2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty. Special attention is given to the selected categories of the aid to SMEs in revised General Block Exemption Regulation (GBER). GBER declares specific categories of the state aid compatible with the Treaty and exempts these categories from the requirement of prior notification and approval. This allows Member States to implement state aid with full legal certainty and without prior control by the Commission. These block exemption regulations are particularly useful for SMEs and were in many respects specifically designed for their benefit. Through an analysis of the public support for SMEs, the main objective of the paper is to characterize and identify its trend through the prism of modernized state aid rules in the EU with special emphasis on the area of revised GBER. The authors predominantly use methods of qualitative research but of quantitative research, too. The basic research methods include literature review method and analysis and comparison. The analysis covers the period of 2008-2016.

Keywords: general block exemption regulation, European Union, small and medium-sized enterprises, state aid.

JEL Classification: F23, G38, H5, L26, M21, N44

1. Introduction

The small and medium enterprises (SMEs) are the engine of the EU's economy. SMEs are in Europe considered as an important pillar and stabilization factor of country economy and its regions (Havierníková, 2016; Mynarzová, Štverková, Kaňa, 2017; Štverková, Humlová, 2016; Žebroková, Pellešová, 2015). They are an essential source of jobs, create entrepreneurial spirit and innovation in the EU and are thus crucial for the fostering of the competitiveness and employment. In 2016 SMEs in the EU-28 non-financial business sector accounted for almost all EU-28 non-financial business sector enterprises – 99.8%. These SMEs employed 93 million people, accounting for 67% of total employment in the EU-28 non-financial business sector, and generating 57% of value added in the EU-28 non-financial business sector (EC, 2017a). SMEs have been identified as an important factor in the implementation of the European Union's growth and jobs strategy and crucial to supporting the Europe 2020 strategy. The support of SME is a central element of the EU policies, because they are meaningful for the prosperity of the whole EU economy.

European Commission has highlighted that, while SMEs are important for economic development and job creation, they have problems, especially with the access to finance and information (Ivanova, Kordoš, 2017). As a result, to address certain market failures which impact SMEs most significantly, an extraordinary regime was put in place, encouraging EU Member States to provide assistance to SMEs without being in breach of the state aid rules (Rensmann, 2017; Ivanová, Lemańska-Majdzik, 2017). The favored status of SMEs is highlighted in the revised General Block Exemption Regulation

¹ Ing. Monika Mynarzová Ph.D.; Sokolská třída 33, 701 21 Ostrava 1, Czechia, monika.mynarzova@vsb.cz

² Małgorzata Okreglicka Ph.D.; ul. Dąbrowskiego 69, 42-201 Częstochowa, Poland, m.okreglicka@wp.pl

* Corresponding author

(GBER). Main objective of the paper is through an analysis of public support for SMEs to characterize and identify its trend through the prism of modernized state aid rules in the EU with special emphasis on the area of revised GBER.

2. The State Aid Modernization in European Union from the Perspective of Block Exemptions

The creation of a system ensuring the competition between enterprises has been and is still one of the basic tasks set out in the Treaty on the Functioning of the European Union (TFEU). The rules set out in title VII, chapter 1 of the TFEU defining the principles of European competition policy aim to create optimal conditions conducive to economic development of EU Member States and the affective management of enterprises in the conditions of undistorted competition within the EU market (Barcik, 2016). European legislation considers the state aid as generally undesirable and incompatible with the principles of the EU internal market, and therefore they are, with few exceptions, prohibited by EU law. The European Commission adopted on May 21, 2014 one of the main legal instruments for State aid, Commission Regulation (EU) No 651/2014, which, in accordance with Articles 107 and 108 of the TFEU, declares certain categories of aid to be compatible with the internal market. From 1st July 2014 this regulation replaced the Commission Regulation (EC) No 800/2008 in accordance with Articles 87 and 88 of the EC Treaty declaring certain categories of aid compatible with the common market. The new regulation applies for aid in all economic sectors, except those explicitly excluded.

As a result of the reform, a meaningfully larger number of small and unproblematic measures are exempted from prior notification, notably those granting the aid to tackle local needs. The scope of the GBER now covers almost all categories of exception in the Article 107(2) and (3). The Commission included a range of new areas that had to be dealt with in the past through notifications into the modernized system of block exemptions. The most important new category includes: the aid for culture and heritage conservation, the aid for broadband infrastructure, the aid for sport and multifunctional recreational infrastructures, the aid for the local infrastructure, support innovative clusters and the process or organizational innovation, or the support for the urban development. The maximum allowable aid intensity for several types of aid has been raised. Many thresholds for notification of individual amounts of aid have also been raised (Phedon, 2014). The Commission in Regulation (EU) No 2017/1084 from May 2017 further widened the scope of the General Block Exemption Regulation (EC, 2017b). The new rules exempt support measures for the ports and airports and give Member States more flexibility to support culture, multifunctional sports arenas and businesses in the EU's outermost regions. Categories of block exemptions applicable in EU Member States are depicted in Table 1.

Table 1. Categories of aid

Regional aid
Aid for small and medium-sized enterprises
Aid for access to financing for small and medium-sized enterprises
Aid for research, development and innovation
Aid for education (training aid)
Aid for disadvantaged workers and workers with disabilities
Aid for environmental protection
Aid to make good the damage caused by certain natural disasters
Social aid for transport for residents of remote regions
Aid for broadband infrastructure
Aid for culture and heritage conservation (including audiovisual works)
Aid for sport and multifunctional recreational infrastructures
Aid for local infrastructure
<i>Aid for regional airports</i>
<i>Aid for maritime and inland ports</i>

Source: Commission Regulation (EU) No 651/2014; Commission Regulation (EU) 2017/1084

The specific block exemption rules are defined separately in the agricultural primary and forestry sector in the Commission Regulation (EU) No 702/2014 and also in the fisheries and aquaculture sector in Commission Regulation (EU) No 1388/2014. Even within these sectors, however, certain types of aid can be provided under the GBER. Some types of aid that are considered to be relatively more threatening the internal market (such as export promotion or the support for the firms in difficulty) are however excluded from the GBER.

Major changes brought by the new GBER include: the simplification of the rules for the evaluation of the incentive effect of the aid, modifying the definition of the firm in difficulty, the adjustment of the maximum aid intensities, increased absolute thresholds for the application of the block exemption, the tightening of possible sanctions by the Commission in compliance with the conditions of the GBER, the introduction of the threshold for the mandatory evaluation major support programs or the introduction of a number of incremental changes within specific rules on particular categories. The greatest benefit of using this exception is to avoid the notification procedure with the Commission and a relatively lower administrative burden (Mynarzová, Kaňa, Okręglicka, 2016a; Mynarzová, Štverková, 2015).

3. The State Aid to Small and Medium-sized Enterprises by Prism of New GBER

In order to facilitate the development of SMEs economic activities, the new EU regulation exempts certain categories of the aid when they are provided to SMEs: *the aid to SMEs* and *the aid for access to finance for SMEs*. The first category of aid titled “*Aid to SMEs*” contains: the investment aid (Art. 17 GBER), the aid for consultancy (Art. 18 GBER), the aid for participation in fairs (Art. 19 GBER) and the new aid for cooperation costs incurred by enterprises participating in European Territorial Cooperation projects (Art. 20 GBER). On the basis of these provisions, SMEs can benefit from public support of up to 7.5 million EUR (see table 2).

Table 2. Selected category of aid to SMEs in revised GBER

Category	Threshold value	The aid intensity
Aid to SMEs		
Investment aid	7.5 million EUR	shall not exceed 20 % of the eligible costs in the case of small enterprises; max. 10 % in the case of medium-sized enterprises
Aid for consultancy	2 million EUR	shall not exceed 50 %
Aid for participation in fairs	2 million EUR/year	shall not exceed 50 %
Aid for cooperation costs incurred by SMEs participating in European Territorial Cooperation projects	2 million EUR	shall not exceed 50 %
Aid for access to finance for SMEs		
Risk finance aid	15 million EUR	10 % of the risk finance provided to the eligible undertakings prior to their first commercial sale on any market; 40 % referred to in paragraph 5 (b); 60 % of the risk finance for investment provided to eligible undertakings mentioned in paragraph 5 (c) and for follow-on investments in eligible undertakings after the 7-year period mentioned in paragraph 5 (b)
Aid for start-ups	not defined	the amount of aid provided for each undertaking in Art. 22, paragraph 3, 4 and 5 GBER
Aid to alternative trading platforms specialized in SMEs	not defined	the amount of aid provided for each undertaking in Art. 22, paragraph 3, 4 and 5 GBER where the platform operator is a small enterprise
Aid for scouting costs	not defined	shall not exceed 50 %

Source: Commission Regulation (EU) No 651/2014

“*Aid for access to finance for SMEs*” is another significant category, which is intended for this category of business. Extensive empirical researches and theoretical views from influential scholars indicate that the access to finance is one of the dominant obstacles to the growth and survivability of the SMEs (Dziwiński, 2016; Piperopoulos, 2012; Lemańska-Majdzik, 2017; Korombel, 2012). The Commission considers that the development of the venture funding and the improved access for SMEs and small and medium-sized innovative companies with market capitalization of the venture financing are very important for the European Union economy in general. The Commission has created a flexible framework for granting the state aid to SMEs at every stage of their development, allowing them to innovate - to launch new products and ideas and create jobs. If the state aid for the provision of venture financing these companies properly targeted, can be an effective means to alleviate the identified market failures and enable private capital. The aid for access to finance for SMEs consists

of: the risk finance aid (Art. 21 GBER), the aid for start-ups (Art. 22 GBER), the aid for alternative trading platforms specialized in SMEs (Art. 23 GBER), and the aid for scouting costs (Art. 24 GBER). Selected category of aid to SMEs in revised GBER including the threshold of the various types of aid and their intensity shows Table 2.

The new rules provide that the aid up to EUR 15 million per year per the company must not pass the Commission's compatibility assessment of aid amounting to EUR 1.5 million in the past. EUR per year for one company. The schemes in accordance with the rules laid down in the General Block Exemption Regulation may be notified to the Commission. This makes it easier to provide delivery of aid and reduce bureaucracy (Mynarzová, Kaňa, Okręglicka, 2016b). There is now a wider range of possible financial instruments that better reflect market practices, but also the stage and sectors in which the company operates. The new rules remove the requirement that the company was 70% financed from its own resources. It is still necessary to involve private investors in order to ensure that the aid alone will attract the new investors than fully replace private funding (Ławińska, 2016). The minimum participation of private investors ranges from 10-60% depending on the age and the risk of the company (the old regulation set 50% in non-assisted areas and 30% in assisted areas).

3.1. The Research Description and Methodology

For the needs of the research, the authors used some of the basic methods of the scientific research to obtain information necessary for the complex systemic processing of the issue. The authors predominantly used methods of qualitative research but of quantitative research too. The research methods used in this paper are: the study of literature, the analysis and comparison of the secondary data. In the paper the statistical data processed by the European Commission has been used. With regard to the establishment of General Block Exemption Regulation in the European Union in 2008 the period of 2008-2015 was chosen. The full impact of the new block exemption regulation, which came into force on 1st July 2014, can be monitored from 2015 onwards. Unfortunately, at the time of paper submission, the data for 2016 and 2017 were not available.

Taking into consideration the main objective of this paper, the following research hypotheses has been put forward:

Hypothesis 1: The state aid granted under new GBER is becoming the dominant legal form of the state aid in the European Union.

Hypothesis 2: The state aid for SMEs (with the risk capital) under new GBER provides a broader and more operative support framework in European Union.

3.2. The Empirical Characteristic and Evaluation of Block-exempted Aid in European Union to Small and Medium-sized Enterprises

The European Union Member States spent 98.2 billion EUR, i.e. 0.67% of GDP, on state aid at European Union-28 in 2015, a decrease of about 0.04 p.p. of GDP compared to 2014 (-465 million EUR). In 2014, the equivalent spending was 101.2 billion EUR, i.e. 0.72% of EU GDP. In nominal terms, this represents a slight decrease of about 0.5 % compared to 2014 expenditures. The overall change in reported state aid expenditure can be explained by following factors (EC, 2016): a strong decrease of state aid for regional development, a decrease of state aid on research and development including innovation, an increase of state aid to environmental protection including energy savings, an increase of state aid for culture, an increase of state aid for employment, an increase of state aid for social support to individual consumers and the downward trend in aid given to the agricultural and forestry sectors.

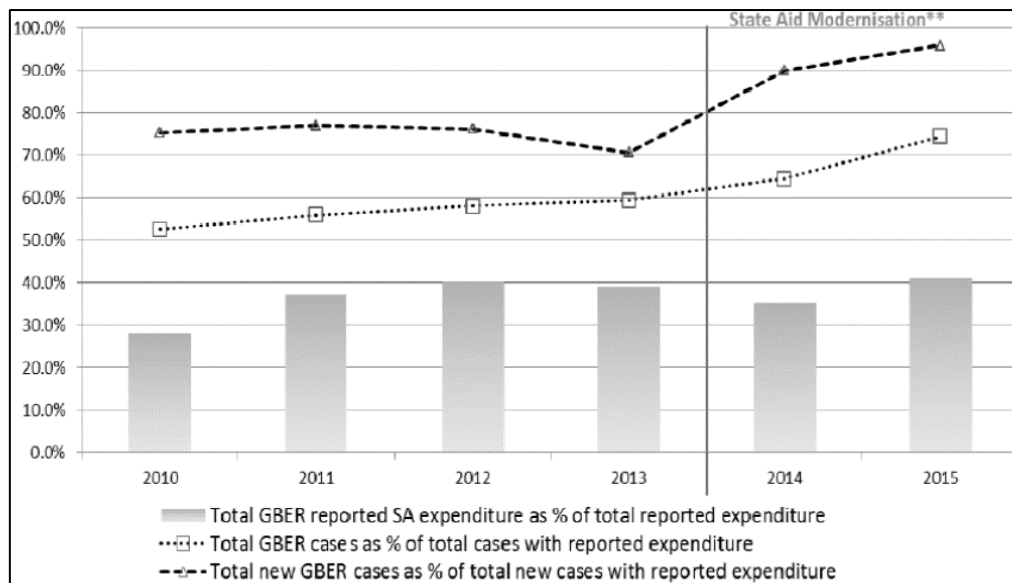
About 43% of all state aid spending for small and medium enterprises was granted under the GBER. This value was 46% for research, development and innovation, 55% for regional development, 69% of employment and 96% for training (EC, 2017d). The measures under the General Block Exemption Regulation already reflect the impact of the new regulation in 2015. The total expenditure for the GBER in the EU-28 accounted 26.37 billion euros, i.e. 30% of total expenditure in 2015 (Table 3).

Table 3. Block-exempted aid in EU in the period 2008 – 2015 (million EUR)

	2008	2009	2010	2011	2012	2013	2014	2015
Regional development	4 181.3	7 077.2	6 469.1	6 220.0	6 014.9	5 998.5	9 973.4	6 166.4
Research and development including innovation	132.8	1 184.8	1 356.0	1 980.7	2 757.2	3 243.7	3 631.3	3 774.2
Environmental protection and energy saving	7.2	651,5	684.0	5 027.1	7 414.0	8 020.1	7 689.4	9 197.4
SMEs including risk capital	3 156.5	3 017.6	2 099.1	1 907.8	1 876.4	1 634.1	1 504.0	1 698.3
Employment	1 583.2	1 195.6	1 377.9	1 327.5	1 467.8	1 637.8	1 658.2	2 182.4
Training	805.2	863.4	722.5	817.4	1 026.6	747.0	559.3	750.5
Culture	0.0	0.0	125.3	1.8	0.0	16.4	425.4	1 661.3
Compensation of damages caused by natural disaster	0.0	0.0	0.0	0.0	0.0	28.8	110.7	169.3
Heritage conservation	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Social support to individual consumers	0.0	0.0	0.0	0.0	0.0	0.0	437.7	430.0
Total	9 866.5	14 100.2	12 954.7	17 383.0	20 656.1	21 496.4	26 100.1	26 366.2

Source: European Commission, 2017; own processing

The EU Member States have made extensive use of the new rules that have excluded further categories of the problem-free measures since the Commission's previous scrutiny (new GBER). More than 96% of the new measures for which expenditure was first reported were GBER in 2015, i.e. an increase of 24 percentage points compared to 2013 (EC, 2017c). When looking at all the measures which have been reported spending, not only on the new measures, were 75% of all the block exempted measures in 2015 (Figure 1).

**Figure 1. The Use of GBER in the European Union in the period of 2010-2015**

Source: European Commission, 2017c

Figure 2 shows the state aid expenditure by objectives in 2014 and 2015. As we can see the spending for item “SMEs including risk capital” increased in 2015 compared to 2014. GBER's total spending on the cultural heritage and the cultural heritage has almost tripled (+290.5%) a significant increase has been recorded for the aid to compensation for damages caused by natural disasters (+ 52.9%), training (+41.3%), environmental protection and energy savings (+21.6%) and employment (+ 32%). The block-exempted aid to SMEs including risk capital increased by 18.6%.

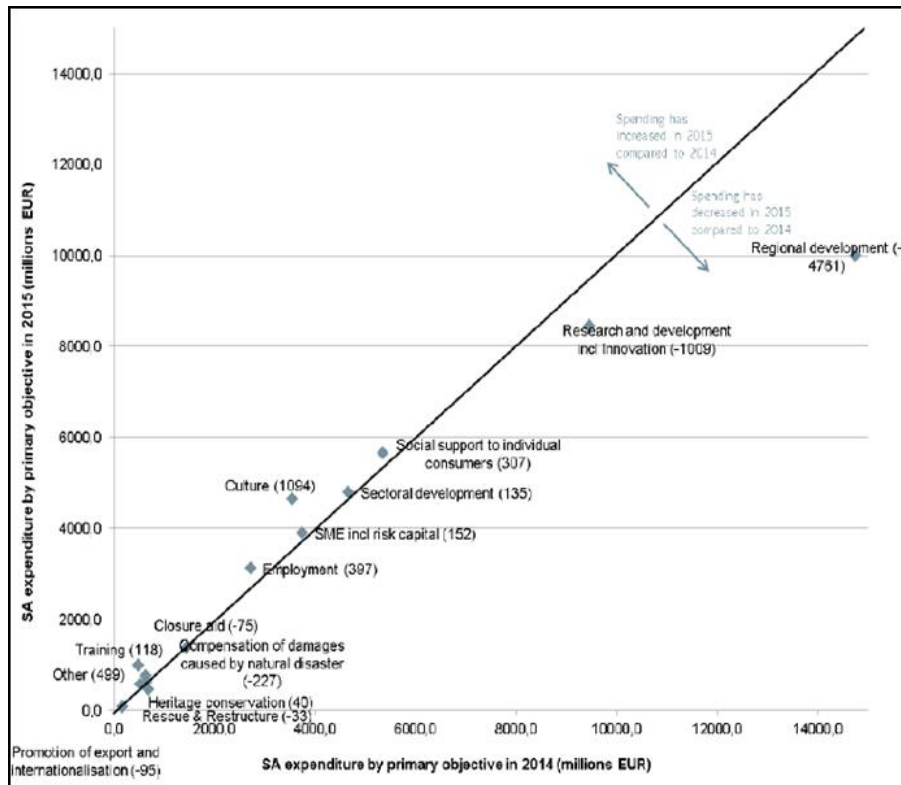


Figure 2. State Aid expenditure by objectives in EU in 2014 and 2015 (millions EUR)

Source: European Commission, 2016

4. Conclusion

In the article the selected aspects of public support for SMEs in the context of the new public support system in the European Union were discussed. Since May 2012, the European Commission has implemented a major reform package, State Aid Modernization. Through an analysis of the public support for SMEs, the main objective of the paper was to characterize and identify its trend through the prism of modernized state aid rules in the EU with special emphasis on the area of revised GBER.

In the EU legal system, the state aid is banned because it can favour one enterprise or group of companies at the expense of others, thereby distorting competition. The objective of state aid modernization was to stimulate economic growth and to concentrate EU approval procedures on large state aid cases that could lead to unfair competition. Generally, any EU state aid measure to enterprises must be notified to the European Commission for previous approval. One of the basic principles of the reform of State aid rules was to simplify procedures for providing assistance without prior notice. This simplification was introduced by the new General Block Exemption Regulation, which declares certain categories of aid to be compatible with Articles 107 and 108 of the TFEU (Art. 107 and 108 TFEU) and thus exempted from the general notification obligation. As a result of the carried out reform, a much greater number of measures are exempt from the previous notification, especially those that provide support to address local needs. Only aid cases which have the highest potential for distortion of competition in the internal market of the European Union must continue to face ex ante notifications. The categories of exempted aid fall under support for SMEs and some sectors such as science and research, the environment, culture, sport, employment, training and regional support.

Reported expenditure on state aid measures under GBER State aid measures is starting to reflect the first impacts of the new Regulation as early as 2015. Approximately 95% of the State aid measure was granted under the revised GBER, i.e. it could have been granted without the previous consent of the European Commission and could have been paid out faster - an increase of 24% compared to 2013. Of the total amount of state aid for SMEs, 43% provided under the GBER (EC, 2016). Support for small and medium-sized enterprises recorded an overall increase of 18.6%. Most of the aid granted helped economic growth and created new jobs and contributed to the realization of other objectives of common interest.

The reform allows EU Member States to quickly implement state aid that supports investment, economic growth and job creation, and leaves the Commission to focus its state aid control on cases that could distort competition. A number of initiatives have been put in place to ensure a balance between flexibility and accountability, in terms of transparency, monitoring and evaluation. Given that Member States no longer have to report simpler cases, Commission staff can now work intensively on more complex cases. Despite the increased complexity, the duration of these procedures is now stable around four months. In particular, according to the new transparency requirements, from 1 July 2016, Member States are required to publish the name of the beneficiary and the aid amount for each state aid over EUR 500 000. The Commission has developed a new IT - Transparency Module (TAM) where all Member States are expected to start coding and publishing information (EC, 2017d).

The purpose of the public support of the enterprises should be to strengthen global and long-term business competitiveness and stimulate entrepreneurial activity. It can be said that, as a result of the modernization process, the new State aid scheme currently meets these criteria. It can be assumed that block exemptions will be the most widely used legal title in the future as part of the EU public support system. Public support should continue to be primarily based on horizontal support, in particular to support the development of small and medium-sized enterprises.

The research hypotheses stated in the article were generally verified. Nowadays, the state aid granted under new GBER is the dominant legal form of the state aid in the European Union. Over 95% of new implemented aid measures fell under the new GBER and could be quickly implemented by EU Member States to the benefit of entrepreneurs and regions, avoiding bureaucracy and time delays. The state aid for SMEs (with the risk capital) under new GBER now provides a broader and more operative support framework in European Union. The new, broader GBER allows for more types of aid to be exempted without notification. In relation to SMEs, they can benefit from any category of aid covered by the GBER. In addition, the section on aid to SMEs, considered specifically for SMEs, covers investment aid, aid for consultancy services, aid for participation in fairs and new aid for cooperation costs incurred by SMEs participating in European Territorial Cooperation projects. The reform allows a faster implementation of state support that promotes investment, economic growth and job creation. The modernized approach allows better allocation of resources and promotes higher efficiency. The future research will be aimed at exploration of the effectiveness of this support for SMEs in the context of protection of the competition in European Union.

References

- Barcik, A. (2016). Co-opetition of Enterprises in Terms of the European Competition Policy. In *Proceedings of the 3rd International Conference on European Integration 2016*, pp. 65-71. Ostrava: VSB-TUO, Faculty of Economics.
- Dziwiński, P. (2016). Restructuring of Small and Medium-Sized Enterprises – the European Perspective. In *Proceedings of the 3rd International Conference on European Integration 2016*, pp. 190-196. Ostrava: VSB-TUO, Faculty of Economics.
- European Commission (2017a). *Annual Report on European SMEs 2016/2017 Focus on self employment*, [online]. Available: https://ec.europa.eu/growth/smes/business-friendly-environment/performance-review_en#annual-report. [2017, November 15].
- European Commission (2017b). *State aid: Commission widens scope of the General Block Exemption Regulation – frequently asked questions*, [online]. Available: http://europa.eu/rapid/press-release_MEMO-17-1342_en.htm. [2017, November 15].
- European Commission (2017c). *State Aid Scoreboard 2016*, [online]. Available: http://ec.europa.eu/competition/state_aid/scoreboard/index_en.html. [2017, November 20].
- European Commission (2017d). *State aid: 2016 Scoreboard shows benefits of modernisation for quick implementation of aid measures in Member States*, [online]. Available: http://europa.eu/rapid/press-release_IP-17-624_en.htm. [2017, November 20].
- European Commission (2016). *State Aid Scoreboard 2016: Results, trends and observations regarding EU28*, [online]. Available: http://ec.europa.eu/competition/state_aid/scoreboard/technical_note_en.pdf. [2017, November 20].
- EUR-Lex (2015a). Commission Regulation (EU) No 651/214, [online]. Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014R0651&from=EN>. [2015, October 10].
- EUR-Lex (2015b). Commission Regulation (EU) No 2017/1084, [online]. Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32017R1084&from=EN>. [2015, October 10].
- Havierníková, K. (2016). The Identification and Classification of Risks in Terms of Cluster Cooperation. In M., Okręglička, I., Gorzeń-Mitka, A., Lemańska-Majdzik, M., Sipa, A., Skibiński, (Eds.) *Proceedings of the 1st International Conference*

- Contemporary Issues in Theory and Practice of Management CITPM 2016*, pp. 130-136. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Ivanová, E., Kordoš, M. (2017). Innovation Policy of SMEs in Slovakia in the Context of European Union Innovation Policy. *Marketing and Management of Innovations*, vol. 3, pp. 213-225.
- Ivanová, E., Lemańska-Majdzik, A. (2017). Comparison of the Quality of the Business Environment in the Slovak Republic and Poland, *Vadyba-Journal of Management*, no. 1, iss. 30, pp. 21-33.
- Korombel, A. (2012). Enterprise Risk Management in Practice of Polish Small Businesses – Own Research Results. *7th International Scientific Conference "Business and Management 2012"*, May 10-11, 2012, p. 1137-1143. Vilnius: Vilnius Gediminas Technical University.
- Lemańska-Majdzik, A. (2017). The barriers of the business activity of micro, small and medium-sized enterprises in Poland in the aspect of business environment. In Š. Majtán (Ed.), *Aktuálne Problémy Podnikovej Sféry 2017*, pp. 650-659. Bratislava: Vydavateľstvo EKONOM. International Scientific Conference Current Problems of the Corporate Sector 2017, May 17-18 2017, Handlová – Ráztočno.
- Ławińska, O. (2016). Planning and implementation of infrastructure investments financed from EU funds in Czestochowa in 2010-2015, In E. Kovarova, L. Melecky and M. Stanickowa (Eds.). *Proceedings of the 3rd International Conference on European Integration 2016*, pp. 546-554. Ostrava: VSB – Technical University of Ostrava.
- Mynarzová, M., Kaňa, R., Okręglicka, M. (2016a). Selected Aspects of Public Support for Small and Medium-sized Enterprises in European Union through the Prism of Block Exemption Regulation. In M., Okręglicka, I., Gorzeń-Mitka, A., Lemańska-Majdzik, M., Sipa, A., Skibiński, (Eds.), *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management CITPM 2016*, pp. 294-301. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Mynarzová, M., Kaňa, R., Okręglicka, M. (2016b). Public Support for Small and Medium-sized Enterprises on European Union Internal Market in the Context of New Block Exemption. *Social and Economic Review*, no. 4, vol. 14, pp. 38-45.
- Mynarzová, M., Štverková, H. (2015). Veřejná podpora jako významný faktor konkurenceschopnosti malých a středních podniků na vnitřním trhu Evropské unie. In S., Majtan, (Ed.), *Aktuálne problémy podnikovej sféry 2015. Zborník vedeckých prác.*, pp. 452-461. *Conference on Current Problems of the Corporate Sector*, Bratislava, Slovakia, 05-6 May 2016. Bratislava: Vydavateľstvo EKONOM.
- Mynarzová, M., Štverková, H., Kaňa, R. (2017). The Role of Entrepreneurship in Society by Prism of Economics Development Trends. *Marketing i rynek*. vol. 7, pp. 547-556.
- Phedon, N. (2014). An Economic Assessment of the Usability of the New General Block Exemption Regulation for State Aid (Regulation 651/2014). *European Competition Journal*, vol. 10, iss. 3, pp. 403-417.
- Piperopoulos, P.G. (2012). *Entrepreneurship, Innovation and Business Clusters*. Farnham: MPG Books Group.
- Rensmann, I. (2017). *Small and Medium-Sized Enterprises in International Economic Law*. Oxford: Oxford University Press.
- Štverková, H., Humlová, V. (2016). Assessment of the Competitiveness of SMEs Through BEE Model in the Moravian-Silesian Region. In M., Okręglicka, I., Gorzeń-Mitka, A., Lemańska-Majdzik, M., Sipa, A., Skibiński, (Eds.), *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management CITPM 2016*, pp. 423-429. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Žebroková, V., Pellešová, P. (2015). The Competitiveness of Small and Medium-sized Enterprises in Retail. In *Proceedings of 12th International Scientific Conference: Economic Policy in the European Union Member Countries 2015*, pp. 917-926. Ostravice: Silesian University Opava.

Valentinas Navickas^{1*}

Kaunas University of Technology, School of Economics and Business
Lithuania

Mantas Svazas²

Kaunas University of Technology, School of Economics and Business
Lithuania

Emilia Krajnakova³

Alexander Dubček University of Trenčín
Slovakia

57. SUPPLY CHAIN AS A FUNDAMENTAL DETERMINANT OF BIOMASS CLUSTER

Abstract: As global energy trends change, it is necessary to form new energy supply structures for the public. This becomes especially relevant when fossil fuel is replaced by biodegradable fuel. In case of biomass clusters, the formation of a competitive supply chain becomes an essential factor in the production and sales of energy, which also ensures the competitiveness of the cluster itself. In the scientific literature, the integration of a competitive supply chain into a biomass cluster is investigated relatively poorly. The aim of the paper is to investigate the impact of the supply chain on the efficiency of biomass cluster activity. The results of research carried out by authors' show that it is necessary to agree on the optimal supply distance in the supply chain development process. Essentially, it is the distance data that determines the final cost of energy supply. The authors of the article formulated a competitive supply chain model for the case of a biomass cluster, which explored the possibilities of supplying regional power plants with the required amount of biomass. That allows to calculate the cost of the heat energy and determine the frequency at which the supply chain parts must operate. Using a competitive supply chain model, biomass clusters can balance the supply of biomass to power plants and ensure their continuity. Thus, research by authors reveals that the supply chain is slowly becoming the main factor in the competitiveness and existence of a cluster.

Keywords: Biomass cluster, cluster, regional energy system, supply chain.

JEL Classification: M21, O13, Q41

1. Introduction

When the world is transitioning towards the use of green energy, it is important to balance energy supply processes. In order to eliminate the human factor, it is necessary to ensure the technical security of supply, but for some types of energy production human resources are indispensable. This is especially true when talking about the use of biomass, since combustion of biomass requires labour for tasks ranging from fuel preparation to delivery. In this context the most relevant is the supply chain, which is a prerequisite for the smooth delivery of heat energy. There are quite a lot of research done in the field of biomass supply chain, but it is fragmented. Pirraglia et al. (2013) states that the smooth operation of the supply chain is inevitably linked to responsible cost management. According to San Miguel et al. (2015), if the growth of energy crops is being developed, biomass production costs are primarily associated with land rental (39%), harvesting (21%) and transportation (8% considering 25 km). As the distance increases, transport costs grow as well so it is necessary to balance the supply chain. At the same time, there are other important factors that determine the competitiveness of supply in relation to fossil resources. According to Testa, et al. (2014), the results are highly variable due to differences in biomass yields (which depends on many parameters such as soil type, climatology, water availability, species and clone, etc.), land rental costs, wood chip market prices and the

¹ Prof. Valentinas Navickas; Gediminost. 50-501, Kaunas, Lithuania, valna@ktu.lt

² Mantas Svazas Ph.D. Student; Gediminost. 50-501, Kaunas, Lithuania, mantas.svazas@ktu.edu

³ Assoc. Prof. Emilia Krajnakova; Študentskášt. 2, Trenčín, Slovakia, emilia.krajnakova@tuni.sk

* Corresponding author

availability of public subsidies. Lim and Lam (2016) introduces a new approach to the supply chain based on the Biomass Element Life Cycle Analysis (BELCA) model. According to it, the main objective of BELCA is to: (i) discover potential underutilised biomass via element classification, (ii) improvement of biomass supply chain via consideration of underutilised biomass. Awudu and Zhang (2013) developed a stochastic production planning model for a biomass supply chain which included biomass suppliers, biomass refinery plants and distribution centres. Researchers believe the supply chain is one of the key elements of the competitiveness of biomass but they lack of information on the very composition of the supply chain. Scientists are investigating the biomass supply chain based on different conditions. Shabani et al. (2014) states that, uncertainty in biomass supply is a critical issue that needs to be considered in the production planning of bioenergy plants. Incorporating uncertainty in supply chain planning models provides improved and stable solutions. Sharma et al. (2013), found the weather uncertainty in the biomass supply chain by developing a scenario optimization model. The model had a one-year planning horizon with monthly time steps and the objective function of minimizing the cost of biomass supply to biorefineries. De Meyer et al. (2014) included the following key conditions to be analyzed in the supply chain research: sourcing of biomass, choice of capacity, technology and location of storage, pre-treatment and conversion facilities. This leads to the fact that the results of the research are not concentrated and are widely applicable to those entities that are decision makers when reorienting the energy systems of countries or regions.

The abundance of research shows that the supply chain is relevant and important for the success of the whole process. However, researches related to cluster supply chains are rarely conducted. Only specific supply chains are researched according to individual cases. Yu, Klein and Jang (2014) and De Meyer, Cattrysse and Van Orshoven (2016) analyzed the supply chains of energy crops distribution to power plants. That way planting and harvesting processes were included. Čuček et al. (2012) conduct research on the biomass supply chain based on the life cycle assessment model. Uslu, Faaij and Bergman (2008) reported that the bioenergy supply chain costs are very sensitive to the harvest operation period. 8 months harvesting is considered. Shorter harvesting periods result in increased biomass production costs. However, he thinks there is lack of attention to the fact that the supply chain is the main part of the competitiveness.

The novelty of the research manifests itself through the perception prism, where each cluster determinant gives a different effect on the performance of the cluster's functionality, thereby affecting the efficiency and profitability of the cluster's activity accordingly. In this case, the supply chain ensures the existence of a cluster. The existence of a biomass cluster without a balanced supply chain would be uncompetitive for other clusters.

2. Theoretical Background

2.1. Cluster Components

The structure of the biomass energy sector has not developed fully as new and more efficient ways of using biomass are discovered while adding new types of fuel as well. By starting to utilize the unused biomass resources, market stability and environmental balance are maintained, with the primary priority being given to the disposal of unusable biomass in boiler houses. At the same time, the processing field is expanding because different types of biomass types are needed. Consistent progress and the increase in the efficiency of equipment is a major advantage of biomass energy compared with fossil-based energy. That is determined by the dynamic cluster structure, which already has the basic operating principles.

Biomass clusters help preserve forests, but it requires the involvement of all stakeholders. In order to efficiently and coherently use forest resources, stakeholder engagement with the cluster is necessary. According to Saah et al. (2014), in forest based rural communities this approach requires tighter coordination between members of the community, existing forest product producers, non-forest business, land owners, and land managers interested in developing cluster benefits. Since the activities of the biomass cluster are complex, they can act as a coherent regional management structure. This includes not only the preservation of mixtures, but also the integration of other relevant networks into the cluster structure. Continuing the idea of the authors, beyond employment, the inclusion of biomass energy alternatives in land management has many motivations. Land managers must thus integrate new information and data sources on infrastructure, transport networks and local energy needs, and re-

examine prior assumptions of joint-production (e.g. timber vs. biofuel vs. recreation vs. scenic impacts vs. wildlife habitats). In general, the biomass cluster can coordinate the use of forest resources in a wider perspective, ensuring positive economic and environmental impacts, as well as recreational opportunities.

SUPPLY CHAIN	PROVIDERS
<u>BIOMASS SUPPLIERS</u>	<u>BIOMASS BOILERS PRODUCERS</u>
<u>OSIER BREEDERS</u>	<u>CONSTRUCTION AND EQUIPMENT</u>
<u>TRANSPORTATION</u>	<u>EXPLOATATION</u>
<u>PREPARATION</u>	GOVERNMENT
<u>STORAGE</u>	<u>MACROREGULATORS</u>
<u>CUSTOMERS</u>	<u>MACRO SUPERVISORS</u>
<u>POWER PLANTS</u>	<u>TAX INSTITUTIONS</u>
MUNICIPALITY	ADVISERS
<u>MEZO ENERGY NETWORKS</u>	<u>ASSOCIATIONS</u>
<u>MICRO REGULATORS</u>	<u>EXPERTS</u>
<u>PUBLIC ENERGY COMPANIES</u>	<u>INSTITUTES</u>

Figure 1. Structure of the biomass cluster: institutional determinants

Source: Created by authors

The structure of cluster is favourable for cooperation at various levels, while each determinant forms its contribution to the cluster's activity. All five determinants (Figure 1) work closely together and ensure the uninterrupted power supply. Clusters exchange not only resources but knowledge as well. Steinfeld, LaRose Chew and Tong (2012) argue that clusters possess a stockpile of knowledge built over time based on experience of their members. Cluster members can take advantage of this knowledge stock through what is called “knowledge spillovers”. In this case, the biomass energy sector is in line with the necessity to maintain a low operating distance and meets the criteria for the effectiveness of the information exchange. Erkus-Öztürk (2009) explores the idea that clusters unite firms from different levels in the industrial chain (suppliers, customers), with service units, making firms within the cluster interdependent due to the value chain links through common technologies, inputs, customers, infrastructure and distribution channels. Improving the structure of the biomass energy sector by focusing resources is one of the key elements of competitive success. Also, the concept of relative capital is distinguished, which creates the conditions to form new value added between the existing financial capital managers in the cluster. Relative capital is based on the dissemination of knowledge and its purposeful use for business activities. Since the biomass energy sector is highly localized, suitable conditions for qualitative dissemination of information emerge. This way, the goal of meeting the energy needs of consumers is achieved.

By assessing the cluster activity in a given region, there are broad opportunities for cooperation. It creates the preconditions for synergies between certain companies in order to meet the region's energy needs. The biomass cluster can collaborate with other clusters using different types of fuels as they share similar infrastructures. Interaction of clusters may occur especially in agglomerated areas where uninterrupted energy supply is required, thus it requires interconnection of different energy resources. In order to interact in the single market the cluster must have an open structure, which allows additional value.

The structure of the biomass cluster is flexible enough to attract new members. However, when shifting to the level of determinants, it is necessary to emphasize that individual business entities immediately become a part of a specific determinant. Operating in the cluster allows to efficiently coordinate processes and facilitate processes of energy supply to consumers. The supply chain, as a level of cluster activity, involves the widest range of business entities, thus emphasizing its position as the main biomass cluster determinant. Processes in the supply chain form the activity scope of other cluster levels.

2.2. Biomass Clustering Motives and Positive Effects

The preconditions for the formation of the clustering benefits are inseparable from clustering motives. The main motivation for creating a cluster is the creation of added value through resource co-operation. Resources co-operation creates synergies, which is reflected in quantitative benefits. The main areas of cooperation in clusters are (Staniszewska, Kočańska, 2013):

- the need to introduce network to improve products or services on market,
- standards and apprentice,
- public, non--financial system supporting cooperation between science and the business at the local level,
- public financial system supporting cooperation between science and the business at the local level,
- promotion and information on the benefits of cooperation between science and business,
- qualifications of academic workers, corresponding with the current needs of the business,
- logistics opportunities for joint research and development,
- joint investment in research tools,
- availability of forms and language of cooperation between science and business,
- flexibility of economic and research structures.

The cluster includes both consumers and businesses from a microeconomic point of view. Suppliers can have a variety of business entities while consumers are supported by close and trust-based connections. Since the main goal of the cluster is to occupy a new market, they are interested in working efficiently and offering the user a reasonable price. The positive attitude of the state and the desire to promote renewable energy is extremely important for promoting the activities of the biomass cluster. Political decisions that focus on the development of the biomass energy sector can serve to this end. These potential policies included (Krupa, Burch, 2011):

- direct government investment in a particular renewable technology,
- micro-financing schemes for renewable energy in impoverished communities,
- development of a “green power” market,
- renewable energy manufacturing clusters.

Carroll, Reid (2004) distinguishes the benefits of clusters based on the microeconomic point of view:

- Clusters increase levels of local expertise. This provides sourcing companies with a greater depth to their supply chain and allows for the potential of inter-firm learning and co-operation.
- Clusters give firms the ability to draw together complementary skills in order to bid for large contracts that as individual units they would be unable to successfully compete.
- Clusters allow for potential economies of scale to be realized by further specializing production within each firm, by joint purchasing of common raw materials to attract bulk discounts or by joint marketing.
- Clusters allow for the development of an infrastructure of professional, legal, financial and other specialist services.
- Cluster increases the productivity and competitiveness of micro and small enterprises.

Scientific literature generally displays the grouping of clustering benefits in terms of economic, social and sustainability perspectives. However, it is also necessary to include one additional component of benefits: a commercial benefit. It includes a wider range of benefits than an economic benefit component. Figure 2 shows that one of the expressions of commercial gain is the growing competitiveness of small and medium-sized enterprises (SMEs). This is especially relevant for the biomass cluster, whose activities are based on the inclusion of such companies. The qualitative growth of SME activity is not limited to the growth of competitiveness: productivity growth is a direct expression of the economic benefits generated by the cluster. Resources balancing and cost sharing directly contributes to productivity growth, as limited resources are used more effectively than individual companies. Environmental and social development benefits are emerging as a synergy of commercial and economic benefit groups. In the whole, the cluster functionality allows its members to grow both in terms of quantity and quality while spreading benefits to the public.

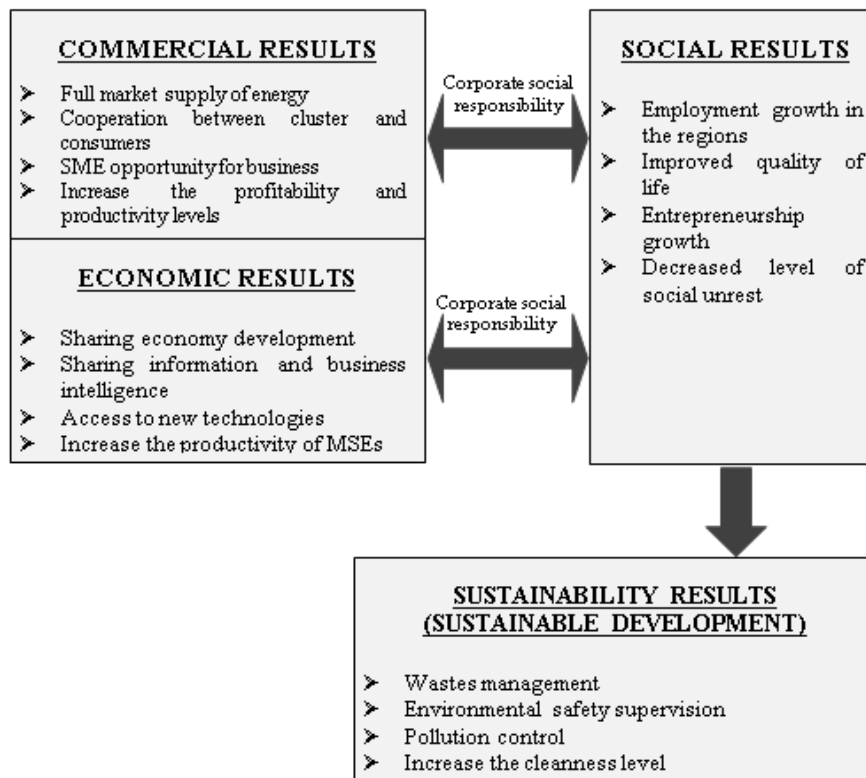


Figure 2. Cluster determinants in terms of their performance (simplified scheme)

Source: Created by authors

According to Figure 2, presented in the structure of the cluster determinants' performance results, it is apparent that economic, commercial and social results are important. A link to social outcomes is based on commercial and economic results without ignoring the principles of corporate social responsibility. In the final phase, social outcomes shape sustainable development. This allows us to confirm that the biomass cluster is a unique structure. Based on this circumstance, the cluster generates not only economic impacts on its members and society, but also the social impact on the country and the region. The cluster is capable of incorporating low-skilled human resources into the labour market, contributing to regional development. In the latter case, the cluster can become a serious municipality partner in developing solutions that meets the needs of the people in the region.

The motives behind the operation of the biomass cluster are determined by the changing needs of the energy situation and the promotion of regional activities. The biomass cluster is able to operate more efficiently than locally produced resources by fossil fuel producers. At the same time, synergistic effects are obtained: the economic situation of the regions improves alongside positive changes in social development. Nevertheless, achieving a positive result requires a balanced supply chain. The supply chain involves the largest number of business entities, which shape the importance of the supply chain in the energy production process.

3. Methodology and Research Findings

The biomass energy sector is an extremely important supply chain. The efficiency of the supply chain depends on the final cost of energy sales. The degree of optimality of chain processes depends on the scope of the activity. According to the distance of biomass sources and the location of combustion plants, a possible level of cost is determined. The management of biomass raw material and balanced transport capabilities create a competitive advantage in the market. A cluster structure that brings together raw material managers, suppliers, and users serves to ensure the efficiency of the supply chain. Meanwhile, the cluster's success depends directly on the smooth supply of biomass. This way, the supply chain becomes the main determinant of the biomass cluster, integrating the biomass cluster into a competitive environment in the energy sector.

The biomass cluster supply chain is characterized by the fact that it develops relatively short distance between related entities. This helps to maintain a high level of engagement with processes and allows consumers to offer energy at competitive prices. The biomass cluster supply chain consists of processes carried out by different cluster companies. The processes in the chain go into operational phases, such as the preparation and processing of biomass, storage, transportation and incineration. In the case of energy crops, the initial stages relate to the preparation and planting of the land, regular maintenance and harvesting. Each stage in the supply chain forms a component of the energy cost and the individual supply chain interruptions raise the total cost of energy. The competitiveness of biomass with respect to fossil fuels decreases, therefore the supply chain efficiency is one of the main conditions for the diffusion of biomass.

The importance of the supply chain needs to be measured through the prism of costs. The lower the cost, the greater the efficiency of the cluster supply chain. As the costs significantly affect the efficiency of the cluster itself, the authors of the study treat the supply chain as the main determinant of the biomass cluster. First, the cost of the supply chain network is estimated, which consists of existing infrastructure and potential production potential.

$$ECI = \sum_i RM_n * DC_{n,k} + \sum_j DiC_m * A_{m,l} \quad (1)$$

ECI – Existing Country infrastructure; RM – Raw material, spatial metre; DC – Distance cost, EUR; DiC – Direct combustion, spatial metre; A – Amortisation, EUR.

In the first stage, it is estimated that the distance between the biomass deposits and the combustion plant is 50 km away. This is the optimal distance for simplified cost management. Depreciation is related to the policy set by each company. In case of energy companies, the amortization period is 20 to 25 years.

$$DCI = \sum_i RM_n * DC_{n,k} + \sum_j DiC_m * A_{m,l} \quad (2)$$

DCI – Development of Country infrastructure

When considering the country's development of infrastructure, it is important to account for the remoteness of biomass and the possibility of increasing the number of combustion plants. It is considered that the cost-effective distance is 70-80 km. After receiving interim data, it is translated into the final formula.

$$SCNC = ECI + DCI \quad (3)$$

SCNC – Supply chain network cost

In the second stage of the assessment, the focus goes to the specific business branches. The indicators related to the market situation of raw materials and combustion plants are then calculated. The final cost of extracting raw materials is determined by the removal and initial treatment of biomass.

$$TPMP = \sum_n C * CPU + C * PCC \quad (4)$$

TPMP – Total price of raw material plants; n – number of mine; C – Capacity, spatial metre; CPU – Cost per unit, EUR/sp.m.; PCC - Processing category cost, EUR/sp.m.

Biomass removal and processing costs depend on the location characteristics and cluster efficiency. Larger and more easily accessible biomass deposits reduce cost while a large number of small deposits grows in cost per unit. The finished biomass enters the power plant and at that moment becomes the object of its cost. The final cost of combustion plants is determined by the formula:

$$TPCP = \sum_n C * TC + C * CC + \frac{C}{2} * AUC \quad (5)$$

TPCP – Total price of direct combustion plants; TC – Transportation cost, EUR/sp.m.; CC – Combustion cost, EUR/sp.m.; AUC – ash utilisation cost, EUR.

When conducting the calculations, it is assumed that the vehicle is carrying 90 sp. m. biomass at a time. Decisions that increase the volume of deliveries by single run can significantly reduce the cost.

The combustion process results in ash reaching half the amount of burnt biomass. Consequently, the management costs resulting from processing and combustion processes are assessed. Management costs are calculated using the formula:

$$MCI = PE + TE + DCE \quad (6)$$

MCI – management cost index; PE – preparation costs per employee, EUR/sp.m.; TE – transportation costs per employee, EUR/km; DCE – direct combustion cost per employee, EUR/kWh

The mid-term evaluation process purpose is to find out how management costs affect the biomass points and direct the combustion plants activities. It helps to assess the overall costs incurred in the key supply chain processes.

$$CCI = \sum_i RM_n * MCI + \sum_j DiC_m * MCI \quad (7)$$

CCI – Common cost index

In the final stage, the final costs of the supply chain are assessed. The costs are calculated using the data obtained beforehand. The overall indicator helps to monitor the changes in the supply chain in a timely manner, as well as makes it possible to compare the supply chain with other business entities.

$$TSCCI = \sum_n RM_n * MCI + \sum_m DiC_m * MCI \quad (8)$$

TSCCI – Total supply chain cost index

The lower the value of the indicator, the more efficient is the supply chain activity, thus, affecting the final energy cost and profitability of the cluster members' activities. The value of the indicators depends on the number of biomass deposits, their area, the number of power plants and their capacity, as well as the number of employees per biomass energy conversion unit.

The supply chain of the biomass cluster generates significant impacts on cluster members and the public, which makes it possible to prove theoretical research instruments. The abundance of components that make up the formula shows that the supply chain brings together different processes and large quantities of human and technical resources. The formulas can be used to assess and compare the efficiency of different biomass deposits and the need for resources to process them.

4. Conclusion

This study has shown that the biomass cluster supply chain can be considered as the main cluster determinant. The supply chain focuses on biomass preparation, pre-treatment, direct combustion and energy supply processes. Different material resources and large human resources are required for this purpose. The analysis showed that the supply chain has the largest number of business entities and can shape the commercial, economic, sustainability and social outcomes. Cluster members interact with each other to create synergy effects and the supply chain is one of their main sources. Sound communication and information exchange is needed to ensure the efficiency of the supply chain. The proposed supply chain value validation formulas can be used to evaluate the supply chain data in different regions. They can also be applied to different types of fuels: wood biomass, energy crops, straw, and other type of solid biofuels.

In future research, solutions for applying these formulas will be made when considering the potential of one region for smooth operation of the cluster. To meet this goal, it is mandatory to have precise data of available biomass reserves and supply options in the region. There is also an opportunity to compare data from the supply chain of individual regions, thus allowing to improve the process.

Acknowledgements

This publication was created within the frame of the project no. 1/0953/16 funded by VEGA agency.

References

Awudu, I., Zhang, J. (2013). Stochastic production planning for a biomass supply chain under demand and price uncertainties. *Applied Energy*, vol. 103, pp. 189-196.

- Carroll, M.C., Reid, N. (2004). *Cluster Based Economic Development: A Comprehensive to Secure*. Ohio: NW Ohio's Economic Future, 2004.
- Čuček, L., Varbanov, P. S., Klemeš, J. J., Kravanja, Z. (2012). Total footprints-based multi-criteria optimisation of regional biomass energy supply chains. *Energy*, vol. 44, iss. 1, pp. 135-145.
- De Meyer, A., Cattrysse, D., Rasinmäki, J., Van Orshoven, J. (2014). Methods to optimise the design and management of biomass-for-bioenergy supply chains: A review. *Renewable and sustainable energy reviews*, vol. 31, pp. 657-670.
- De Meyer, A., Cattrysse, D., Van Orshoven, J. (2016). Considering biomass growth and regeneration in the optimisation of biomass supply chains. *Renewable Energy*, vol. 87, pp. 990-1002.
- Erkus-Öztürk, H. (2009). The role of cluster types and firm size in designing the level of network relations: The experience of the Antalya tourism region. *Tourism Management*, vol. 30, pp. 589-597.
- Krupa, J., Burch, S. (2011). A new energy future for South Africa: The political ecology of South African renewable energy. *Energy policy*, vol. 39, pp. 6254-6261.
- Lim, C. H., Lam, H. L. (2016). Biomass supply chain optimisation via novel biomass element life cycle analysis (BELCA). *Applied Energy*, vol. 161, pp. 733-745.
- Pirraglia, A., Gonzalez, R., Saloni, D., Denig, J. (2013). Technical and economic assessment for the production of torrefiedligno-cellulosic biomass pellets in the US. *Energy Conversion and Management*, vol. 66, pp. 153-164.
- Saah, D., Patterson, T., Buchholz, T., Ganz, D., Albert, D., Rush, K. (2014). Modeling economic and carbon consequences of a shift to wood-based energy in a rural 'cluster'; a network analysis in southeast Alaska. *Ecological Economics*, 107(107), 287-298.
- San Miguel, G., Corona, B., Ruiz, D., Landholm, D., Laina, R., Tolosana, E., Sixto, H., Cañellas, I. (2015). Environmental, energy and economic analysis of a biomass supply chain based on a poplar short rotation coppice in Spain. *Journal of Cleaner Production*, vol. 94, pp. 93-101.
- Shabani, N., Sowlati, T., Ouhimmou, M., Rönnqvist, M. (2014). Tactical supply chain planning for a forest biomass power plant under supply uncertainty. *Energy*, vol. 78, pp. 346-355.
- Sharma, B., Ingalls, R. G., Jones, C. L., Khanchi, A. (2013). Biomass supply chain design and analysis: basis, overview, modeling, challenges, and future. *Renewable and Sustainable Energy Reviews*, vol. 24, pp. 608-627.
- Staniszewska, M., Kočańska, E. (2013). Cooperation model between the bioenergy for the region cluster and competence network. *Acta Innovations*, vol. 7, pp. 5-17.
- Steinfeld, C., LaRose, R., Chew, H.E., Tong, S.T. (2012). Small and Medium-Sized Enterprises in Rural Business Clusters: The Relation Between ICT Adoption and Benefits Derived From Cluster Membership. *The Information Society*, vol. 28, iss. 2, pp.110-120.
- Testa, R., Di Trapani, A. M., Foderà, M., Sgroi, F., Tudisca, S. (2014). Economic evaluation of introduction of poplar as biomass crop in Italy. *Renewable and Sustainable Energy Reviews*, vol. 38, pp. 775-780.
- Uslu, A., Faaij, A. P., Bergman, P. C. (2008). Pre-treatment technologies, and their effect on international bioenergy supply chain logistics. Techno-economic evaluation of torrefaction, fast pyrolysis and pelletisation. *Energy*, vol. 33, iss. 8, pp. 1206-1223.
- Yu, Z., Klein, C., Jang, W. (2014). Multi period operational planning in woody biomass system. *Proceedings of the 2014 Industrial and Systems Engineering Research Conference*, May 31-June 4, 2014, Montreal, Canada.

Eva Nedeliaková^{1*}
University of Zilina
Slovakia
Adrián Kuka²
University of Zilina
Slovakia

58. APPLICATION OF RISK MANAGEMENT METHODS IN TRANSPORT UNDERTAKINGS

Abstract: The transport undertakings have to continuously deal with increasing competitive pressure, which drives out not only from the growing number of market players, the higher demands of customers, but also the globalization tendencies which apply in the current economy. For the undertakings, it is particularly important to react flexibly to the changing state of the transport market. It leads to various risks that may have a nature of the risk of one employee work performance, but also the risk in the operation of the whole company may occur. This paper is focused on the application of risk management methods that can be helpful for the transport undertakings. It brings a new view to the risk management in the specific transport market conditions.

Keywords: management, risk, transport undertaking.

JEL Classification: L91, R49

1. Introduction

A transport undertaking has a demanding position in the transport sector and in society nowadays. Business management takes strategic decisions under conditions of risk and uncertainty with long-term consequences for own businesses, carriers and society (Majerčák, Nedeliak, 2010). Therefore, the growing importance of risk management and its link with the operative management is necessary (Heidari, Loucopoulos, 2014). A risk management is an integral part of strategic management because it significantly affects the competitiveness of the transport undertaking on the transport market (Gorzeń-Mitka, Okręglicka, 2014). The purpose of the paper is to explain the algorithm of the risk management methods application, as a result of a wide research.

Considering the fact that transport has to be sustainable, it is substantial to support railway transport as safety and environmentally conscious transport mean (Lusková, Hudáková, 2009). Therefore this paper is focused on the application of risk management methods within railway transport undertaking. The risk management system aims to serve as a guarantor of processes to effectively manage a process through KPIs within the meaning of the required parameters and eliminate resp. reduce the significance of the identified risks to acceptable levels, below the level of risk tolerance (Hudáková, 2014).

How can be risks in the railway undertaking perceived? New research conducted at the University of Zilina in cooperation with foreign universities in Czechia, Poland, Croatia and Spain, showed that the risks in transport undertakings can be differentiated into four groups such as knowledge risks, norms/standards risk, transport risk connected with the level of providing services and communication risk.

2. Literature Review

The research comes out from the approaches to risk management in transport undertakings, following attitudes of the experts in the scientific literature sources in these ideas:

¹ Assoc. Prof. Ing. Eva Nedeliaková Ph.D.; Univerzitná 1, 010 26 Žilina, Slovakia, e-mail: eva.nedeliakova@fpedas.uniza.sk

² Ing. Adrián Kuka; Univerzitná 1, 010 26 Žilina, Slovakia, e-mail: adrian.kuka@fpedas.uniza.sk

* Corresponding author

- the problem of railway management and the criteria for evaluating the traffic risk (according Bureika, 2017),
- essential management methods influencing demanding risk areas of management (Drucker, 1999),
- the role of the risk management in capturing value from innovation (Chesbrough, Rosenbloom, 2002),
- ensuring the efficient functioning of transport chains and using the FMEA method for evaluation of constraints (Kudláč, 2017),
- a risk methods as an integral part of the standards ISO 14000 when talking about the environmentally conscious approach in railway transport,
- supporting railway transport and considering its sustainability ((Heidari, Loucopoulos, 2014),
- a degree of risk and uncertainty that significantly affects the turbulent transport market environment, the complexity of processes, relationships in the transport undertakings and the severity of managerial decisions including sustainability of transport system (Lusková, Hudáková, 2009),
- strategic decisions under conditions of risk and uncertainty with long-term consequences for own businesses, carriers and society (Majerčák, Nedeliak, 2010),
- consequences for risk management tools for the participants of in transport market, namely infrastructure managers, railway undertakings, as well as manufacturers and distributors (Jablonski, 2016).

If considering ISO 31000, this paper certainly respects the interconnected phases of the risk management. It covers establish context, risk assessment (risk identification, risk analysis, risk evaluation), risk treatment, monitoring and review, communication and consultation. Other ISO standards related to risk management (ISO Guide 73:2009, ISO/IEC 31010:2009) bring basic definitions and risk assessment techniques which were taken into account along the research.

3. Objective of the Paper and Methodology of Research

The main aim of this paper is highlighting a necessity of suitable risk management in transport undertakings. The main part of this paper is focused on the construction of the algorithm helpful for the transport undertakings in this area. The example of the algorithm application is shown for the railway transport where unified risk model has been created (Nedeliaková, Dolinayová, Nedeliak, 2013). However, it is applicable to various transport undertakings.

To reach the research aims and objectives, the researchers used miscellaneous research methods. The research was subordinate to published and online form of scientific journals, conference papers, research projects, books, case studies of specific conditions on the transport railway undertakings, etc. This was the first stage to conduct a literature review.

Stage number two was to conduct a questionnaire among railway undertakings, concerning processes, main criteria decisive for the quality of transportation with defining the approach used when extraordinary situations happen during the transportation and risks increase.

The research was conducted during the years 2015 and 2016, at the University of Zilina in cooperation with foreign universities.

The aim of the research was to recognize various approaches to the risk management in the railway undertakings in practice.

Of the 45 undertakings which were willing to participate in the survey, the majority of the sample (32 undertakings) was private carriers. In the accordance with the research aim, both types of railway undertakings, infrastructure managers and railway carriers were covered by the research.

Following the methods of observation, gaining experience from the practice and of literature, we proposed the new algorithm of risk management in transport undertakings respecting specific conditions on the transport market.

4. Own Research: the Algorithm Concerning Specific Approach in the Conditions of Transport Undertaking

The algorithm has three following basic steps:

- the division of four groups of risks,
- the definition of evaluation criteria and their assignment to processes,
- the application and comparison of risk management methods; explanation in which specific cases they can be used (methods such as BSC / Risk Matrix / FMEA).

4.1. First Step of the Algorithm - The Division of Four Groups of Risks

The research defined four groups of risks which are shown in figure 1. This step is linked with the knowledge that customers of transport undertaking generally have a tendency to compare provided service with the service that they expect (Lemańska-Majdzik, Okręglicka, 2015). If the services offered do not conform to the expectations of the customer, arises a negative risk. This risk is necessary measured and it measures the difference between the expectations of customers and offer of service (Chesbrough, Rosenbloom, 2002). The basic assumption of the measurement is that customers can evaluate the offer by comparing their perceptions with their expectations.

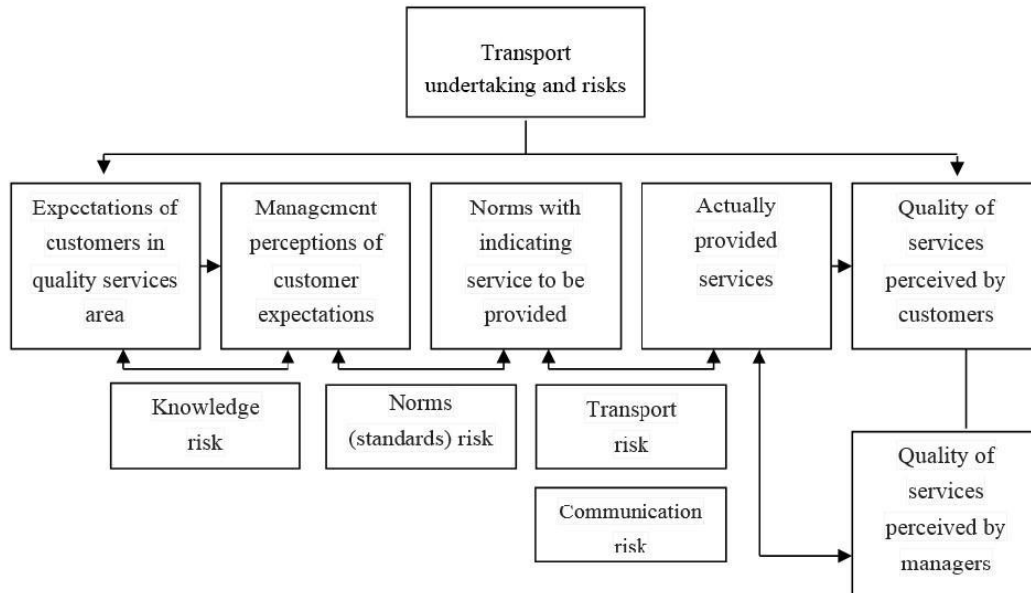


Figure 1. Connections between groups of risk

Source: Authors

Knowledge risk can be a result of insufficient market research, incorrectly interpreted and understood information about customers, about their expectations, or when the research is not focused on requisite quality. Following this fact, problems may arise when the management or service provider might correctly perceive what the customer wants, but may not set a performance standard. An example would be that in transport service the management of the undertakings may focus on a speed and delivery on time, but may not determine, for security reasons, more quickly as safety standard permits. The gap may arise in an undertaking from following reasons:

- insufficient planning,
- insufficiently declared liabilities of leadership,
- unclear or ambiguous service acts,
- non-system processes.

The other group of risk may arise in the process of service creation. It is caused by incorrect service or intervention or progress of employee of the undertaking. Here is necessary realize the fact that vocational training has an influence on the quality of service. The possible main reasons for this difference are deficiencies in human resource policies such as ineffective recruitment, role ambiguity, and role conflict. Then other problems can influence this risk, such as the incorrect system of quality evaluation, ineffective internal market, and violation of declared supply or demand.

The different kind of problem is attached with consumer expectations that are highly influenced by statements made by undertaking's representatives and advertisements. The discrepancy between actual service and the promised one may happen to the following reasons:

- purposely promising external communication campaigns,
- inability to handle expectations of customers,
- failure to perform according to the specifications,
- incapable contractors.

Transport risk is typical in the field of transport market. It can be based on bottleneck on transport chain, on infrastructure or vehicles. It can be caused by the nature of the consignment or the influence of the weather conditions.

These risks must be measured so that it will be possible reduce with remedies and compare it with the previous state. This is only possible by providing quality services and regular detection what the customer perceives, in order to satisfy its requirements.

4.2. Second Step of the Algorithm - The Definition of Evaluation Criteria and their Assignment to Processes

Based on internal surveys performed in the railway undertakings where employees themselves reported deficiencies, there was identified risk in the perception of quality services on the part of management and customer. A suitable option to eliminate this risk is regular vocational training and courses such as the course of control of communication techniques, course how to lead the project, course of right decision, or rationalization and standardization work for managers of railway undertaking. This risk may be tracked and consequently further reduced by increasing the quality services provided by railway undertaking and its regular research between customers. The research should be centered on monitoring communication between contact employees and customers. One of the basic benefits is that we may define criteria which will evaluate communication between employee and customer.

Because of the extensive issue, we would like to explain in this paper the criteria for evaluation of communication between employee and customer, stated out for the first group of risks such as knowledge risk. They were set out in the research as follows:

- competence,
- customer knowledge,
- behaviour,
- ability to empathize to the customer requirements,
- willingness and speed with which staff are trying to solve customer problems,
- civility and credibility of staff,
- clarity of the provided information.

The research assigns evaluation criteria to processes and services which are daily provided in railway undertakings. The process card was prepared and applied in the conditions of railway undertakings for more than two hundred processes. In the following table 1, there is listed a short fragment of chosen processes and associated criteria applied in practice when identifying and evaluating risk.

Table 1. Fragment of processes and associated criteria applied in practice

Number	Process	Criterion
1	Direct customer contact	Customer knowledge
3	Information process	Clarity of the provided information
4	Advertisement	Communication
5	Rolling stock	Accessibility
6	Place equipment	Trustworthiness
7	Railway operation techniques	Accessibility
8	Transport order	Customer care
9	Placing of wagons at loading	Understanding and knowledge of customers
10	Loading	Customer care
11	Consignment soundness	Reality

Source: Authors

4.3. Third Step of the Algorithm - The Application of Risk Management Methods

This part of the paper tries to explain which management method can be used in accordance with previous two steps of the algorithm. Following previous research, we know about groups of the risk, evaluation criteria connected with processes in railway transport undertaking and now we have to choose the appropriate method for solving risks.

First of them, which was applied in conditions of railway undertaking is Balanced Scorecard (BSC) method. It's using in practice in this field of transport undertakings was not so typical in the past, but nowadays the priority of triggering becomes more and more actual when we are talking about strategic risks linked to the strategic objectives (Sujanová et al., 2012). Integration of risks into the internal environment is based on the fact that is shown in following figure 2.

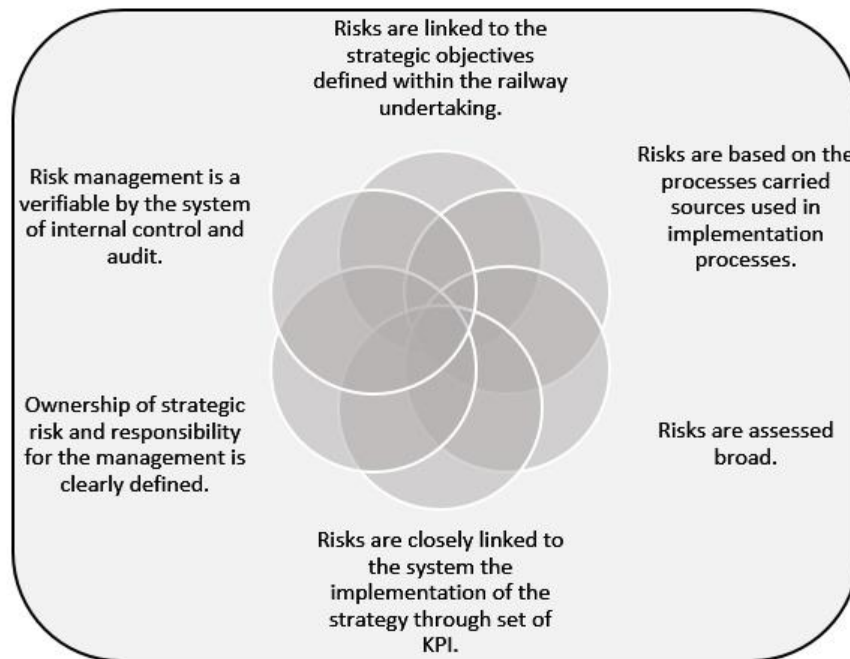


Figure 2. Integration of risks into the internal environment

Source: Authors according to BSC principles

The risk management system aims to serve as a guarantor of processes to effectively manage the process through Key Performance Indicators within the meaning of the required parameters and eliminate resp. reduce the significance of the identified risks to acceptable levels, below the level of risk tolerance (Juran, 2005). Risks in strategic level in railway undertakings, monitored during the research, were connected with strategic goals such as sustainable modern infrastructure, uninterrupted operation, functional vehicles, educated and experienced staff, maintained and improved processes (Nedeliaková, Sekulová, 2014).

The risk analysis assesses the relevance and acceptability of risk based on the probability of the risk occurring and the severity of the consequences of the impact of risk (Harmanová, 2007).

Risk matrix prepared on the basis of these factors will determine the significance of risks to the process (insignificant, medium significance, significant), their eligibility and conditions for the acceptability of risk (Harmanová, 2015). The degree of probability and severity of economic risk is expressed by at least three levels (low, medium and high) (Nedeliaková, 2017). It can also use more levels. When using Failure Mode and Effect Analysis (FMEA), this risk matrix can conclude up to ten levels. The FMEA should be a catalyst to stimulate the interchange of ideas between the areas affected and thus promote a team approach in the transport undertaking (Kaplan and Norton, 2004).

Through the use of FMEA method, approx. 70-90% failures can be detected, resp. potential risks in the specified quality criteria can be found. This new approach of using BSC and FMEA as dynamic risk management tools, respects systemic process, which leads to the prevention of poor quality, reduction the losses which are caused by non-quality of system, helps to increase customer satisfaction

and control system of service quality in railway undertaking (Riha, Němec, Soušek, 2014). In railway undertakings, these methods are not usually applied both together (Nedeliakova, Dolinayová, Nedeliak, 2013). Figure 3 shows the application of process FMEA in railway undertaking.

FMEA of process										
Element/ Function/ Requirement on process	Possible failure	Possible consequence of the failure	Failure significance	Possible causes / failure mechanism	Failure probability	Type of control / preventive control method	Type of control / screening control method	Failure detection	Recommended actions	Risk number
Process name: Railway passenger transport on the track Bratislava - Žilina										
Analysed sub-process: Information process										
Passenger satisfied with information process in railway stations	Lack of orientation and information points in railway station	Unsatisfied customer due to incomplete information	4	Absence of electric visual devices Opacity of information	5	System of sustainable control of electric visual devices	Customer's complaints / negative image in media	2	Introduce information panels on boards at sides where failures were revealed	40
Passenger satisfied with information process in railway vehicles	Non-providing the required information in trains /in case of delay, extraordinary circumstances	Unsatisfied customer due to inability to solve the problem during extraordinary operation	5	Malfunctioning electronic reporting system Staff's unwillingness Communication failures	5	System of information and communication preventive control following internal railway undertaking's standards	System of screening control through railway undertaking's dispatchers	3	Continuous devices control/ vocational training	75
Passenger satisfied with additional services in information process	Non-providing additional services during extraordinary circumstances	Unsatisfied customer due to lack of extra additional services	3	the carrier does not have the requested service, or the service taxes are either temporarily unavailable	4	Critical analysis of service availability	Passenger complaints / staff alerts	3	Based on passenger requirements, consider introducing new additional services	36

Figure 3. Fragment of the application FMEA method in railway undertaking

Source: Authors

Despite the fact that the time of implementation of the results is short, first benefits were found out. The benefits, based on the application of the algorithm in practice in 12 undertakings came from better knowledge of risks in processes. The first launch of the algorithm was in 2017. The advantages that have been identified during the research based on the above mentioned qualitative model FMEA in connection with BSC method include:

- detailed understanding of customer requirements and needs, thereby finding the further diversion from them,
- the possibility of determining the consequences arising from failures that highlighted customers and employees,
- pointing out the importance of failures and their consequences in terms of their value,
- selection of the reasons set out in detail on the basis of failures and their consequences,
- determination of the possibility of purposes throughout the analysis,
- important benefits stemming with previous results is the establishment of measures that lead to improvement (Sekulová, Nedeliak, 2013).

This risk management system was used in both types of railway undertakings – infrastructure managers and carriers.

5. Conclusion

Progressive approaches to risk management must generally identify the current level of risk, reveal the causes of the risks, the causes and consequences of dissatisfaction of customers and employees, reveal the strengths and weaknesses of an undertaking, its suppliers and competitors, provide relevant data for the process of continually improving service quality and deliver qualified, measurable outputs with the ability to evaluate trends in service quality (Nedeliaková, Panák, 2015).

Based on research results and in terms of theories which deal with mentioned issue, the gain of created algorithm lies in stating new progressive approach towards risk management in transport undertakings. The example of the application was explained in conditions of railway undertakings. In July 2017, this algorithm was launched in selected railway undertakings.

First results are more comprehensible and clearer thanks to the new approach enable react flexibly to the changing state of the transport market. The significant asset is a revelation of substantial tight spots in all phases of transport chain, which were hidden until now. Thanks to the chronological procedure, defined in the algorithm, are caught all elements of transport chain which affect transport technology both positively and negatively.

The drawbacks and limitations this approach could raise if not properly managed by strategists or complexity of this approach will not be sustain.

From the side of the railway transport undertaking's leaders there exist positive feedback on this, scientifically approved, the fluent process of monitoring risks which level is often changed by the influence of stochastic factors.

This unified risk management system can be applied to all kinds of service, departments and undertakings. As four month's using showed, it is inevitable in terms of strategic decisions joining operative solving problems. It becomes a way out for regulation of service, which increase in quality is an urgent condition for keeping companies in competitive business environment.

Acknowledgements

This paper was supported by Grant Agency KEGA 010ŽU-4/2017 New methods of teaching quality management in the study program Railway transport with a focus on optimization of extraordinary events in terms of customer orientation.

References

- Bureika, G., Gaidamauskas, E., Kupinas, J., Bogdevičius, M., Steišūnas, S. (2017). Modelling the assessment of traffic risk at level crossings of Lithuanian railways. *Transport*, vol. 32, iss. 3, pp. 282-290.
- Drucker, P.F. (1999). *Management Challenges for the 21st Century*. New York: HarperCollins Publishers, Inc.
- Gorzeń-Mitka, I., Okręglicka, M. (2014). Improving Decision Making in Complexity Environment. In: *21th International Economic Conference of Sibiu 2014, IECS Prospects of Economic Recovery in a Volatile International Context: Major Obstacles, Initiatives and Projects*. pp. 402-409. Procedia Economics and Finance. Sibiu.
- Harmanová, D. (2007) Success of the strategy of the organization depends on the success of its implementation. *Žilina: ZDAL*, pp. 116-119.
- Harmanová, D. (2015). Risks of railway infrastructure investment projects. *Horizons of Railway Transport 2015*, pp. 94-101.
- Heidari, F., Loucopoulos, P. (2014). Quality evaluation framework (QEF): Modeling and evaluating quality of business processes. *International Journal of Accounting Information Systems*, vol. 15, iss. 3, pp. 193-223.
- Hudáková, M. (2014). Current approach of enterprises to the risk management. *Studies of socio-economics and humanities*. vol. 4, no. 1, pp. 5-11.
- Chesbrough, H., Rosenbloom, R.S. (2002). The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies. *Oxford Journals, Social Sciences, Industrial and Corporate Change*, vol. 11, iss. 3, pp. 529-555.
- Jablonski, A. (2016). Tasks of Independent Assessment Bodies in Risk Management in Rail Transport – the Polish Experience. In: *16th International Conference on Transport Systems Telematics (TST)*. Katowice, Poland.
- Juran, J.M. (2005). *Critical Evaluations in Business and Management*. London and New York: Routledge, Taylor & Francis Group.
- Kaplan, S.R., Norton, D.P. (2004). *Balanced scorecard: strategic system of company performance measurement*. Praha: Management Press.
- Kudlac, S., Štefancová, V., Majerčák, J. (2017). Using the Saaty Method and the FMEA Method for Evaluation of Constraints in Logistics Chain. In: *10th International Scientific Conference on Transportation Science and Technology (TRANSBALTICA)*. Vilnius, pp. 749-755.
- Lemańska-Majdzik, A., Okręglicka, M. (2015). Business Process Management in an Enterprise - Determinants of the Implementation and Expected Advantages. In: *Liberec Economic Forum 2015. Proceedings of the 12th International Conference*, pp. 305-314. Liberec: Technical University of Liberec.

- Lusková, M., Hudáková, M. (2009). Using methods of risk analysis in Slovak enterprises. *13th world multi-conference on systemics, cybernetics and informatics*, pp. 283-286. Orlando.
- Majerčák, J., Nedeliak, I. (2010). Practical experiences with modeling of IT systems and business processes. In: *6th Forum of rail transport*, 16-17.3.2010, pp. 81-84. Bratislava.
- Nedeliaková, E., Dolinayová, A., Nedeliak, I. (2013). *Methods of evaluation of the transportation services quality*. Žilina: EDIS, 2013.
- Nedeliakova, E., Sekulová, J. (2014). Services in railway passenger transport and its evaluation by dynamic models. Transport means 2014: proceedings of the 18th international conference, October 23-24, 2014, pp. 227-230. Kaunas: University of Technology.
- Nedeliakova, E. (2017). New methods of teaching quality management in the study program Railway transport with a focus on optimization of extraordinary events in terms of customer orientation, 010ŽU-4/2017. Žilina: University of Žilina.
- Nedeliakova, E., Nedeliak, I., Majerčák, P. (2014). Research of services quality after the end of transportation in railway freight transport. In: *Management innovation and business : 2nd international conference on Management innovation and business ICMIBI 2014* , pp. 54-61. Singapore: Singapore Management and Sports Science Institute.
- Nedeliakova, E., Panák, M. (2015). New Trend in process-oriented quality management. *Procedia Economics and Finance*, Elsevier, vol. 34, p. 172-179.
- Riha, Z., Němec, V., Soušek, R. (2014). Transportation and environment – Economic Research. In: *The 18th World Multi-Conference on Systemics, Cybernetics and Informatics. Orlando, Florida: International Institute of Informatics and Systemics*, vol. II, pp. 212-217.
- Sekulová, J., Nedeliak, I. (2013). Utilization of GAP model in providing of services in the railway freight transport. *Perner's Contacts*, 8th ed. vol. 4, pp. 67-75.
- Sujanova, J., Gabris, P., Licko, M., Pavlenda, P., Stasiak-Betlejewska, R. (2012). Aspects of Knowledge Management in Slovak Industrial Enterprises. In: *13th European Conference on Knowledge Management (ECKM)*, vols. 1 and 2, pp. 1135-1144. Univ Politecnica Cartagena, Spain.

Agnieszka Noga^{1*}

Czestochowa University of Technology
Poland

Aleksandra Ptak²

Czestochowa University of Technology
Poland

59. IMPACT OF THE HUMAN FACTOR ON THE EVALUATION OF THE PRODUCTION PROCESS

Abstract: The paper presents the results of the evaluation of the importance, by production employees, of factors occurring in the production process. The aim of the study was to show how big impact employees of the company have on cognition, evaluation and eventual decisions concerning improvement of production processes (and their management). For the evaluation, authors used the questionnaire, in which, the opinion of employees on interrupting production after detection of a quality problem, the use of reliable technology or the use of visual inspection, were asked. The structure of characteristics of surveyed employees was presented. The structure of evaluations of the importance of factors influencing the company's development using pie charts, was analyzed. Partial importance series for individual assessments were developed. Received questionnaires were analyzed statistically, the result is summarizing the series of validity of factors presented in the bar diagram. The survey showed that the company is sensitive to the quality of its products, because the surveyed employees recognized the factors: continuous system of revealing problems and using only reliable technology, as the most important.

Keywords: employee characteristics, evaluation, human factor, improvement.

JEL Classification: D22, D24, C40

1. Introduction

Every activity of the production company is related to the production of the product. The main objective at the operational level (Francis et al., 2014) is striving to make the production process as effective as possible. It is people, who create the work potential, which apart from material and financial, is an essential part of the company's production potential (Durlik, 2006). Taiichi Ohno (2008) showed how to produce more efficiently, reduce costs, improve quality, and pay attention to work of employees. Ohno should be regarded as the creator of the production system used by Toyota and one of the pioneers, who believed that production must be primarily effective, but people who support it must be respected (Toma, Naruo, 2017).

The aim of the research was to show how big impact the employees of the company can have, on getting to know, assess and make decisions regarding the improvement of production processes (and their management).

2. Literature Review

The concept of the process is derived from the Latin word *processus* – to act, conduct. It determines the course of the following phenomena interrelated with each other in a causal relation (Kopaliński, 2004). The definition of the process is used in all areas of life (Grabowska, 2015). There are many different definitions of the process in the literature.

The process is described as e.g.:

- logical sequence of successive or parallel activities, which lead to meet the client's expectations (...), by providing the product or service (Skrzypek, 2002),
- series of steps (actions) designed and implemented to manufacture the product or service (Bagiński, 2004),
- natural determinant of achieving the effectiveness growth of a modern organization (Grajewski, 2007).

¹ Mgr Agnieszka Noga; Dąbrowskiego 69, 42-201 Częstochowa, Poland, agnieszka.noga@wz.pcz.pl

² Aleksandra Ptak Ph.D.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, aleksandra.ptak@wz.pcz.pl

* Corresponding author

There are various divisions, functions or process attributes. The study concerns the analysis of the production process. Production process, according to Durlík (2006), is "*the transformation process, i.e. transformation of the input vector of the production system into the output vector*". Whereas, "*production system is a deliberately designed and organized material, energy and information system operated by man and used to produce specific products (products or services) in order to meet various consumer needs*".

Improving processes is the basic factor in the progress of civilization. The knowledge on production management and engineering is the most general knowledge about the economy in terms of technology (Olejnik, 2015). In the culture of the Far East, improvement was understood as the permanent process, whereas quality was "*perfection, which will never be achieved, but to which one must persistently strive*" (Borkowski, Jagusiak-Kocik, 2016). The Japanese, whose success is based on a people-oriented approach, teamwork and the philosophy of continuous improvement – Kaizen (Garcia et al., 2014), (Schwarz et al., 2017), determine the principles of quality management (Schonberger, 2007) such as:

- customer orientation (the goal of enterprises should be to serve customers and meet their needs),
- full commitment of the managers (emotional and through its activities for the enterprise) (Johansen et al., 2015),
- full commitment of all employees participating in the company's activities,
- orientation on bottom-up activities (employees, who physically carry out processes, and have the practical knowledge, should be constantly trained by the management) (Mom, Van Den Bosch, Volberda, 2007),
- setting ideal goals (both ambitious and achievable),
- using simple management tools (based on long-range concepts, even with short-term financial results),
- taking into account humanistic aspects (in accordance with the belief that people are the highest value of the company) (Liker, 2005).

3. Research Methodology

3.1. Characteristics of the Research Facility

The research object was a large-format printing house offering a wide range of products: advertising banners, coated tarpaulins, advertising coffers equipped with energy-saving LED lighting, advertising posters, large-format photos on monomeric film and laminated to improve their resistance to external conditions. The printing house also offers storefronts, companies and private cars covering, advertising catalogs and many other smaller services. Through an individual approach to the customer and understanding his needs, the company gained regular recipients of the offered products among large companies.

3.2. The Way of Results Obtaining and their Presentation

The research was carried out using the BOST survey - Toyota management rules (Monden, 2011) in questions (Borkowski, 2012a). The name "BOST" comes from the first two letters of the name and surname of the author and is legally protected (Borkowski, 2012a; Borkowski, Rosak-Szyrocka, Klimecka-Tatar, 2013). The core of the BOST method are the Toyota management rules, which are divided into sections directly related to the structure of the Toyota road model described in the guiding works (Liker, 2005; Liker, Meier, 2006). The BOST survey provides two groups of variables: an independent variable - the personal characteristics of the respondents and a dependent variable - an assessment of the validity of factors that describe Toyota's management principles (Coetzee, van der Merwe, van Dyk, 2016). The structure of the survey consists of areas – each which one of them deals with a characteristic issue related to one of the 14 Toyota management rules. The study concerns two areas of the survey: the area, where the set of factors describes the Toyota management principle 2 and the area describing the personal characteristics of the respondents. The BOST survey is the measurement tool that has an ordinal scale, according to which respondents rank the importance of the described factors. The results are subject to verification, statistical analysis and comparison rating in a numerical or percentage system. The research was carried out once. The questionnaires took form of the paper, and have been handed to employees (respondents) to fill in their workplace. All analyzed surveys were completed correctly.

The employee (respondent), by completing a questionnaire, provides important information about the examined enterprise. It helps employees to get acquainted with the surveyed enterprise and the managers to respond to the current state of the processes taking place in it. By conducting surveys, one can determine the condition of the company.

3.2.1. Characteristics of Respondents

Worth emphasizing is, that an important element of the analysis of subjective assessments of process factors defined in the questionnaire questions, is the identification of independent variables affecting the level of these assessments, i.e. the characteristics of employees (respondents).

In the survey, six features have been distinguished. Each of them has several variants: gender MF (2), EC education (4), age WI (8), seniority SC (8), mobility MR (6), mode of admission to work TR (3). Three features: gender, education and work admission mode have descriptive characteristics and the remaining features have numerical ones (Borkowski, 2016). Figure 1 presents results regarding the characteristics of respondents, collected in surveys.

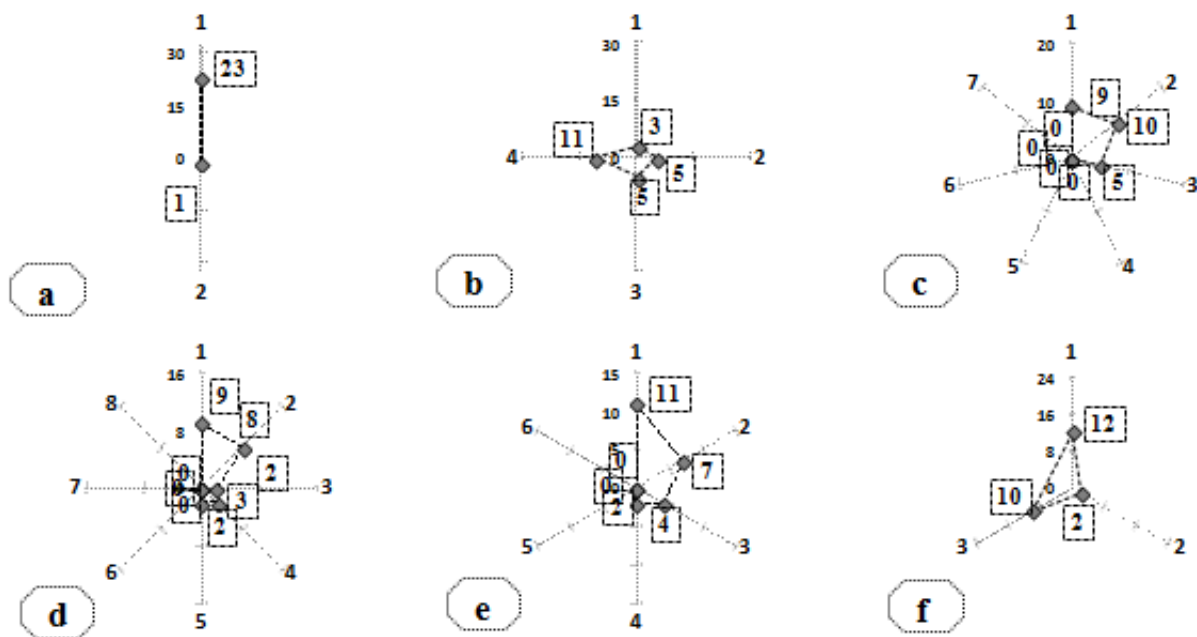


Figure 1. Radar graphs. Numerical respondents characteristic with consideration of: a) gender, b) education, c) age, d) job seniority, e) mobility, f) mode of admission to work

Source: Own study

The research was conducted among 24 employees of the printing house. The research shows that the employee is statistically a male, aged 31-40, working professionally for no more than five years, for which the current workplace is the first place of employment in the, so-called, normal mode.

The majority (46%) are employees with second higher education degree. People with higher education degree and secondary education accounted for 21% of employees, while the smallest group (13%) were employees with less than secondary education.

3.2.2. Presentation of Results

In the survey conducted in the examined enterprise, employees were asked, among other things, to answer the question (Borkowski, 2012b):

What is the most important factor in the production process? (in the box write 1; 2; 3; 4; 5; 6; where 6 - the most important factor).

CP	Continuous system of revealing problems
PE	Aborting production after detecting the quality problem
SZ	Standard tasks, processes, documents
EU	Granting power of attorney down
ST	Using only reliable technology
SW	Using visual control

The question regarding Toyota management principle 2, was chosen to check, which factors determine the effectiveness of the processes taking place in the company. It was dictated by their compatibility with the second chapter of Toyota principles according to J.K. Liker (Liker, 2005) entitled “The right process leads to the right results”.

Figure 2 presents the structure of evaluations of the validity of factors defined in the presented section of the survey.

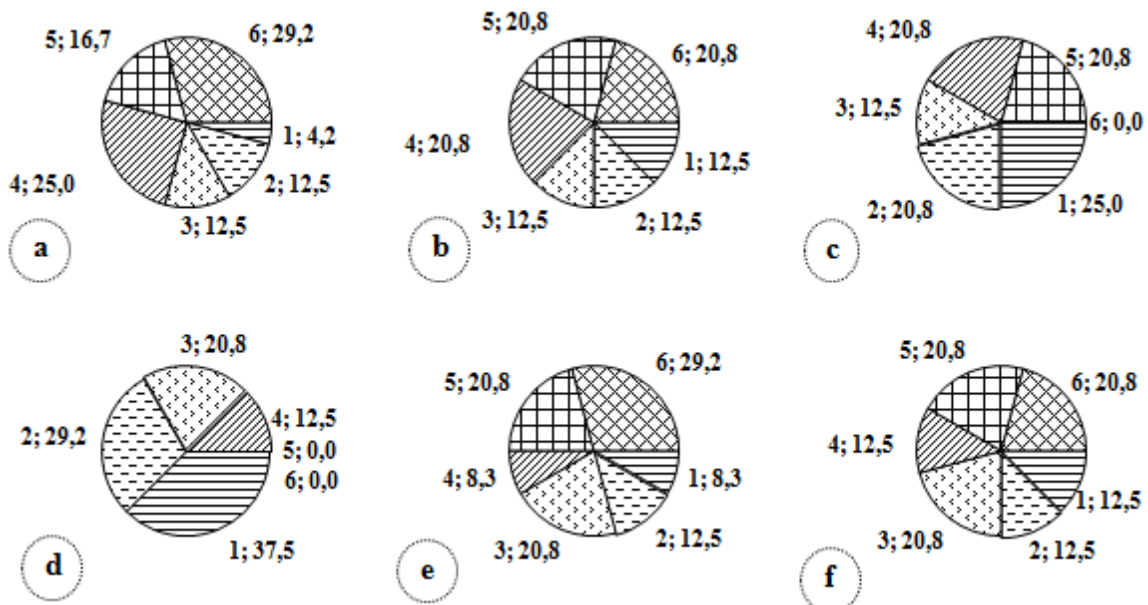


Figure 2. Structure of the factor validation ratings: a) CP, b) PE, c) SZ, d) EU, e) ST, f) SW

Source: Own work

When analyzing the importance of factors evaluations, assigned by employees, it should be stated that factors: *continuous system of revealing problems* (CP) and *the use of only reliable technology* (ST) have the greatest impact on the efficiency of processes. As many as 29% of all respondents assigned the maximal score of 6 for both mentioned factors (Figure 2a and Figure 2e). In the case of factors: *aborting production after detecting the quality problem* (PE) and *the use of visual control* (SW), it was observed that they are slightly less important than previous factors (Figure 2b and Figure 2f). For these factors, most responses gave the 6 and 5 (nearly 21% of respondents). The least number of votes among mentioned four factors obtained rating 1.

According to the respondents, of the least importance in the production process, are factors: *granting power of attorney down* (EU) and *standard tasks, processes, documents* (SZ). The mentioned received the highest number of lowest rating - 1. Factor (EU) received up to 37.5%, and factor (SZ) 25% of all obtained ratings (Figure 2d and Figure 2c).

4. Development of Results – Series of Validity of the Considered Factors

The series of factors importance for particular evaluations were constructed in order to indicate the place of the examined factor among the others. Symbolic factor designations were used, at the same time taking into account the percentage description (bracket emphasizes the same percentage value). The series are as follows:

- for rating "1" $EU > SZ > (PE; SW) > ST > DK$ (1)
- for rating "2" $EU > SZ > (CP; PE; ST; SW)$ (2)
- for rating "3" $(EU; ST; SW) > (CP; PE; SZ)$ (3)
- for rating "4" $CP > (PE; SZ) > (EU; SW) > ST$ (4)
- for rating "5" $(PE; ST; SW; SZ) > CP > EU$ (5)
- for rating "6" $(CP; ST) > (PE; SW) > (EU; SZ)$ (6)

The obtained results were subjected to statistical analysis (Pułaska-Turyna, 2011), the result of which are numerical average ratings of validity of the considered factors, presented in figure 3.

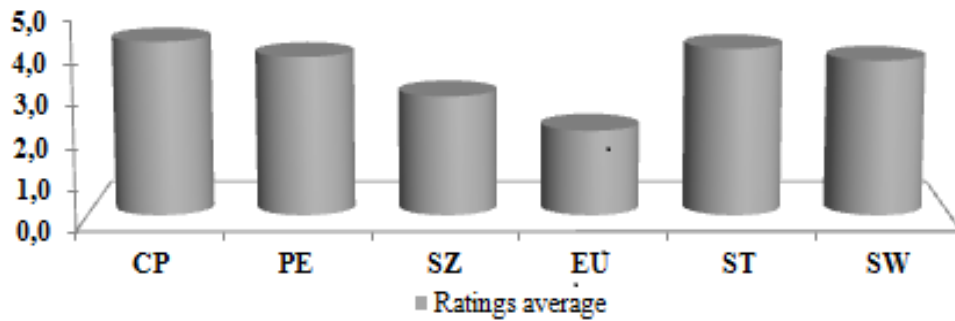


Figure 3. Average (numerical) evaluation of the importance of factors

Source: Own work

On the basis of average numerical evaluations, the final series of expiration of factors was constructed, and presents as follows:

$$CP > ST > PE > SW > SZ > EU \quad (7)$$

In the employees' opinion, the most important factor determining the implementation of the process is the factor - *continuous system of revealing problems* (CP). Its confirmation is, according to the formula (7), the highest rank in the series of one of the secondary values, which is the average.

Supporting this analysis with appropriate computer software, such as the Statistica package (Greber, 2002), greatly simplifies the task and shortens the time between detecting and responding to irregularities. The cognitive content of processes is additionally increased by the use of graphical forms consisting on making graphs (Noga, Ptak, 2015).

5. Impact of Employee Characteristics on the Assessment of the Importance of Factors

Table 1 presents sets of evaluations of validity factors depending on individual characteristics of employees.

Table 1. Evaluations of validity factors depending on individual characteristics of respondents

Gender (MK)												
Rating	CP		PE		SZ		EU		ST		SW	
	M	F	M	F	M	F	M	F	M	F	M	F
1	1		3		6		8	1	2		3	
2	3		3		5		7		2	1	3	
3	3		3		3		5		5		4	1
4	6		5		4	1	3		2		3	
5	3	1	5		5				5		5	
6	7		4	1					7		5	

Age (WI)																		
Rating	CP			PE			SZ			EU			ST			SW		
	1-30	31-40	41-50	1-30	31-40	41-50	1-30	31-40	41-50	1-30	31-40	41-50	1-30	31-40	41-50	1-30	31-40	41-50
1		1			1	2	2	3	1	4	4	1		1	1	3		
2	3			1	1	1	1	2	2	3	3	1	1	1	1		3	
3	1	1	1		2	1	2	1		1	2	2	3	2		2	2	1
4	3	1	2	3	2		1	3	1	1	1	1	1	1		2	1	
5		3	1	3	2		3	1	1				1	2	2	2	2	1
6	2	4	1	2	2	1							3	3	1	2	1	2

Education (WE)																								
Rating	CP				PE				SZ				EU				ST				SW			
	< secondary	secondary	higher I st.	higher II st.	< secondary	Secondary	higher I st.	higher II st.	< secondary	Secondary	higher I st.	higher II st.	< secondary	secondary	higher I st.	higher II st.	< secondary	secondary	higher I st.	higher II st.	< secondary	secondary	higher I st.	higher II st.
1		1			1		1	1		1		5	2	2	3	2			1	1		1		2
2		1		2	1	1		1	2		2	1		2	1	4		1	1	1			1	2
3	1		1	1			2	1		1	2	2	1	1	1	2	1	1		3		3	1	2
4	1	1	1	3	1	2		2	1	2	2	3				3			1	1			1	2
5		2	1	2			2	3		1	1						1	1	2	1	2	1		2
6	1		3	3		2		3									1	2		4	1	1	2	1

Mobility (MR)																								
Rating	CP				PE				SZ				EU				ST				SW			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	1				1		2		2	3		1	4	3	1	1		1	1		3			
2	1	2			2		1		2	2	1		3	2	1	1	2			1	1	1	1	
3	1	1	1			2	1		3				2	1	2		2	3			3			2
4	4	1	1		1	3		1	2	2	2	1	2	1			2				2	1	1	
5	1	1		2	4	1			2		1						2	1	2		2	2	1	
6	3	2	2		3	1		1									3	2	1	1	2	2	1	

Work experience (SC)																														
Rating	CP					PE					SZ					EU					ST					SW				
	up to 5	6-15	16-20	21-25	26-30	do 5	6-15	16-20	21-25	26-30	up to 5	6-15	16-20	21-25	26-30	do 5	6-15	16-20	21-25	26-30	do 5	6-15	16-20	21-25	26-30	do 5	6-15	16-20	21-25	26-30
1			1							4		1		1	3	4		2		1		1		1		1	2			
2	2	1				1	1	1	1		3		2		4	1		2		2	2				1	2	1			
3	1	1		1		1	1		1	1	2				1	2	1	1		4			1		1	2	1		1	
4	3	2			1	3					3	1	1		1	1	1			1	1				1	1		1		
5	1	1	1		1	2	3							1							4		1		2		1	2		
6	2	3		2		2	2	1												3	1	1	1	1	2	2			1	

Mode of admission to work (TR)																		
Rating	CP			PE			SZ			EU			ST			SW		
	Normal	Transfer	Finances	Normal	Transfer	Finances	Normal	Transfer	Finances	Normal	Transfer	Finances	Normal	Transfer	Finances	Normal	Transfer	Finances
1	1			3					6	5	1	3	1	1		2		1
2	1		2	3			3	1	1	2	1	4	1		2	2		1
3	2		1	1	2		3			4		1			5	2		3
4	4	1	1			5	4		1	1		2	2			1	1	1
5			4	4		1	2	1	2				4	1		2		3
6	4	1	2	1		4							4		3	3	1	1

Source: Own study

Analyzing the distribution of respondents' voices due to their six characteristics specified in the survey, it can be seen, that men rated the most: *continuous system of revealing problems* (CP) and *the use of only reliable technology* (ST), while the woman awarded “6”, the *aborting production after detecting the quality problem* (PE). The weakest rating, given by the largest number of men and the only woman, was assigned to the *granting power of attorney down* factor (EU).

The oldest employees in the company are of the opinion, that the most important factor affecting the efficiency of the process is *the use of visual control* (SW), while the youngest and the best educated employees appreciated *the use of only reliable technology* (ST) factor.

Respondents with higher education of the second degree in their distribution of assessments also drew attention to the fact, that *standard tasks, processes, documents* (SZ) deserve the lowest grades. The same distribution of the best and the weakest grades can be read by analyzing another feature of employees - seniority. The shortest working employees, mostly gave “sixes” to reliable technology, and “ones” to standard tasks and documents.

Employees, who have chosen this company due to better financial conditions gave “ones” to *standard tasks and documents* (SZ). This group of respondents gave the highest rating to the *aborting production after detecting the quality problem* (PE) factor.

6. Conclusion

The BOST survey, used in the research, is the tool built on management principles originating from the Japanese Toyota company. The questionnaire used for the research is designed to determine the impact of personal characteristics of respondents on the level of assessments of specific factors describing particular Toyota management rules.

Thanks to IT technologies (Bloom et al., 2014) the results obtained from surveys and their analysis were presented in the form of properly selected diagrams. Their proper design and presentation gives the opportunity to take the right management decisions, among others, to improve production processes (Dima et al., 2010). The structured information satisfies the information needs of the superiors at the level guaranteeing the methodological rationality of decisions (Kościelniak, 2014; Bajdor, Lis, Ptak, 2016).

In the opinion of the surveyed employees, the most important factors in the process are: factor *continuous system of revealing problems* (CP), which was the highest ranked in the series describing average factor validity ratings (formula 7) and the factor *using only reliable technology* (ST), ranked first in rows (formulas 5 and 6) describing the highest grades (5 and 6). Employees recognize that the implementation of new production technologies will affect innovation and increase production efficiency. Employees' observations are the valuable guide while assessing performance and developing strategies for further process improvement.

It is assumed, that the presented instruments will lead to the creation of an algorithm of proceedings allowing for the evaluation of the process and making right decisions, that will enable its improvement in an enterprise, in which the production system exists regardless of the country or type of manufactured products. The study presents the results and analysis of the part of the survey (two areas) which emphasizes its main advantage - the wealth of information that can be obtained through it. The remaining areas of the survey will serve as material for subsequent studies.

The method has been used successfully for many years in both, Polish and foreign manufacturing companies. The advantage of the presented method is also the fact that it can be successfully used in manufacturing enterprises as well as in service institutions (eg. in banks, hospitals, schools, shops, etc.).

References

- Bagiński, J. (2004). *Zarządzanie jakością*. Warszawa: Oficyna Wydawnicza Politechniki Warszawskiej.
- Bajdor, P., Lis, T., Ptak, A. (2016). The role of information/knowledge flow in the clients' purchasing decisions. *3rd Business & Management Conference*, Lisbon, 22 March 2016, Lizbona, pp. 22-32.
- Bloom, N., Garicano, L., Sadun, R., Van Reenen, J. (2014). The Distinct Effects of Information Technology and Communication Technology on Firm Organization. *Management Science*, vol. 60, iss. 12, pp. 2859-2885.
- Borkowski, S. (2012a). *Dokumenty zawierające wymyślony termin (TOYOTARYZM) oraz zawierające nazwę i strukturę opracowanej metody (BOST)*. Potwierdzenie daty: "AAK" KANCELARIA PATENTOWA s. c., Częstochowa.

- Borkowski, S. (2012b). *Zasady zarządzania Toyoty w pytaniach. Wyniki badań BOST*. Warszawa: Wydawnictwo Menedżerskie PTM.
- Borkowski, S., Rosak-Szyrocka, J., Klimecka-Tatar, D. (2013). Determination of the Technology Place in the Metal Company on the Basis of the Toyota's Management Principles. *METAL 2013: 22nd International Conference on Metallurgy and Materials*, Brno, Czech Republic. pp. 1691-1696.
- Borkowski, S. (2016). *Potencjał naukowy Toyotaryzmu i metody BOST*. Warszawa: Polski Instytut Jakości sp. z o.o.
- Borkowski, S., Jagusiak-Kocik, M. (2016). *Doskonalenie w teorii i praktyce z uwzględnieniem metody BOST*. Warszawa: Polski Instytut Jakości sp. z o.o.
- Coetzee, R., van der Merwe, K., van Dyk, L. (2016). Lean Implementation Strategies: How Are the Toyota Way Principles Addressed? *South African Journal of Industrial Engineering*, vol 27, iss. 3, Special Edition, pp 79-91.
- Dima, I.C., Grabara, J., Man, M., Modrak, V., Goldbach, I.R. (2010). Applying of mathematics methods in decision talking process concerning replacement of machines and equipments used in flexible manufacturing cells. *MATH'10. 15th WSEAS International Conference on Applied Mathematics. Recent Researches in Applied Mathematics*, Athens, Greece, pp. 109-115.
- Durlik, I. (2006). *Inżynieria zarządzania. Strategia i projektowanie systemów produkcyjnych cz. I*. Warszawa: Agencja Wydawnicza Placet.
- Francis, M., Fisher, R., Thomas, A., Rowlands, H. (2014). The meaning 'value' in purchasing, Logistics and Operations Management. *International Journal of Production Research*, vol. 52, iss. 22, pp. 6576-6589.
- García, J, Maldonado, A, Alvarado, A., Rivera, D. (2014). Human critical success factors for kaizen and its impacts in industrial performance. *The International Journal of Advanced Manufacturing Technology*, vol. 70, iss. 9-12, pp. 2187-2198.
- Grabowska, S. (2015). Reengineering business processes in manufacturing company. *Hutnik, Wiadomości Hutnicze, Wydawnictwo SIGMA-NOT*, vol. 82, iss. 6, pp. 416-419.
- Grajewski, P. (2007). *Organizacja procesowa: projektowanie i konfiguracja*. Warszawa: PWE.
- Greber, T. (2002). *Statystyczne sterowanie procesami – doskonalenie jakości z pakietem STATISTICA*. Kraków: StatSoft Polska.
- Johansen, S., Olsen, T., Solstad, E., Torsteinsen, H. (2015). An insider view of the hybrid organization: How managers respond to challenges of efficiency, legitimacy and meaning. *Journal of Management & Organization*, vol. 21, iss. 6, pp. 725-740.
- Kopaliński, W. (2004). *Podręczny słownik wyrazów obcych*. Warszawa: Oficyna Wydawnicza Rytm.
- Kościelniak, H. (2014). An Improvement of Information Processes in Enterprises - the Analysis of Sales Profitability in the Manufacturing Company Using ERP Systems. *Polish Journal of Management Studies*, vol. 10, no. 2, pp. 65-72.
- Liker, J.K. (2005). *The Toyota way - 14 management principles*. McGraw-Hill.
- Liker, J.K, Meier, D. (2006). *The Toyota Way fieldbook – A practical guide for implementing Toyota's 4Ps*. New York: McGraw-Hill.
- Mom, T.J.M., Van Den Bosch, F.A.J., Volberda, H.W. (2007). Investigating Managers' Exploration and Exploitation Activities: The Influence of Top-Down, Bottom-Up, and Horizontal Knowledge Inflows. *Journal of Management Studies*, vol. 44, iss. 6, pp. 910-931.
- Monden, J. (2011). *Toyota Production System: An Integrated Approach to Just-In-Time*. Boca Raton: CRC Press.
- Noga, A. Ptak, A. (2015). Computer Support for Technological Process Management with the Use of the Stability Map. Results Visualization. *Applied Mechanics and Materials*, vol. 795, pp. 157-164.
- Ohno, T. (1988). *Toyota production system: Beyond large-scale production*. Oregon: Productivity Press.
- Olejnik, R. (2015). Stability and quality map of Toyota technological processes and its computer-aided marketing analysis. *Polish Journal of Management Studies*, vol. 12, no 2, pp. 122-129.
- Pułaska-Turyńska, B. (2011). *Statystyka dla ekonomistów*. Warszawa: Difin.
- Schonberger, R.J. (2007). Japanese production management: An evolution-With mixed success. *Journal of Operations Management*, vol. 25, iss. 2, pp. 403-419.
- Schwarz, U., Nielsen, K.M., Stenfors-Hayes, T. et al. (2017). Using kaizen to improve employee well-being: Results from two organizational intervention studies. *Human Relations*, vol. 70, iss. 8, pp. 966-993
- Skrzypek, E. (2002). *Jakość i efektywność*. Lublin: Wydawnictwo UMCS.
- Toma, S.G., Naruo, S. (2017). Total Quality Management and Business Excellence: The Best Practices at Toyota Motor Corporation. *Amfiteatru Economic*, vol. 19, iss. 4, pp. 566-580.

Claudia Ogorean^{1*}

Lucian Blaga University of Sibiu
Romania

Mihaela Herciu²

Lucian Blaga University of Sibiu
Romania

60. INNOVATION-DRIVEN COMPETITIVENESS – A MULTILEVEL ANALYSIS OF THE STATE OF THE ART

Abstract: Competitiveness represents – at any level of analysis (firms, industries and countries) – both a measure of performance and an indicator of progress – because it places the different “subjects” amongst their peers (at a certain moment in time), while serving as driving force behind their efforts towards (continuous) improvement. Innovation (of any form and at any level), on the other hand, has been revealed (by academia) and has been proven (by practitioners) to be the generic source of competitive advantage, the cornerstone that supports, fuels, ignites, and capitalizes on, into a never-ending virtuous circle, the process of searching for competitiveness. Against this background, innovation-driven competitiveness occurs to be the perfect solution to the thorny and recurring problem of achieving and maintaining competitiveness; but, given the complexity that nowadays characterizes the global economic system (in terms of diversity and dynamism), it is not an easy one. The main objective of the paper is to analyze the most innovative companies (and, subsequently, industries and countries) of nowadays, in order to identify the main characteristics that define them, together with their most significant determinants. A series of globally renowned rankings and reports – such as: The World’s Most Innovative Companies (Forbes); Top 100 Global Innovators (Clarivate Analytics); The State of Innovation Report (Clarivate Analytics); The Global Competitiveness Report (WEF); and The Global Innovation Index (Cornell University, INSEAD, WIPO) – will serve as supporting benchmarks for this endeavor, aiming to provide some preliminary guidelines for the “subjects” that are searching for innovation-driven competitiveness, while opening avenues for future researches.

Keywords: competitiveness, innovation, innovation-driven competitiveness, most innovative: companies, industries, countries.

JEL Classification: O00, O31

1. Introduction

Competitiveness represents – at any level of analysis (firms, industries/regions and countries) – both a measure of performance/success and an indicator of progress/development – because it places the different “subjects” amongst their peers (at a certain moment in time), while serving as driving force behind their efforts towards (continuous) improvement. Innovation (of any form and at any level), on the other hand, has been revealed (by academia) and has been proven (by practitioners) to be the generic/ultimate source of competitive advantage, the cornerstone that supports, fuels, ignites, and capitalizes on, into a never-ending virtuous circle, the process of searching for competitiveness.

Against this background, innovation-driven competitiveness occurs to be the perfect solution to the thorny and recurring problem of achieving and maintaining competitiveness; but, given the complexity that nowadays characterizes the global economic system (in terms of diversity and dynamism) it is not an easy one: both the (objective) content and the (subjective) understanding of competitiveness, innovation and innovation-driven competitiveness are changing – under the extreme pressure of increasing uncertainty, emergent and emerging patterns of (unexpected) evolutions, new forms of (disruptive, social, value, and so on) innovation and new requirements as regards (sustainable and responsible) competitiveness.

Identifying the leaders, understanding their innovation drivers and connecting to the global trends they are (signaling and) setting have to become essential (core) competencies and (dynamic) capabilities for any global actor that is trying to thrive, while searching for innovation-driven competitiveness becomes crucial in order to survive. The main goal of the paper is to analyze the most

¹ Prof. Claudia Ogorean Ph.D.; 10, Victoriei Bd., Sibiu, 550024, Romania, claudia.ogorean@ulbsibiu.ro

² Prof. Mihaela Herciu Ph.D.; 10 Victoriei Bd., Sibiu, 550024, Romania, mihaela.herciu@ulbsibiu.ro

* Corresponding author

innovative companies (and, subsequently, industries and countries) of nowadays, in order to identify the main characteristics that define them, together with their most significant determinants. A series of globally renowned rankings and reports – The World’s Most Innovative Companies 2017 (Forbes); Top 100 Global Innovators 2016 (Clarivate Analytics); The State of Innovation Report 2017 (Clarivate Analytics); The Global Competitiveness Report 2017-2018 (WEF); and The Global Innovation Index 2017 (Cornell University, INSEAD, WIPO) – will serve as supporting benchmarks for this endeavor, aiming to provide some preliminary guidelines for the “subjects” that are searching for innovation-driven competitiveness, while opening avenues for future researches.

2. Literature Review

Ubiquitous and controversial (in terms of specific content), competitiveness and innovation are two of the common buzzwords of nowadays in a multitude of research fields (e.g. economics, entrepreneurship, strategic management, international business). The lack of a universally embraced understanding on each of these concepts has represented the fertile ground for a multitude of studies to flourish on both topics, enriching the specific bodies of scientific knowledge, while developing bridges and creating synergies between them. Therefore:

As regards competitiveness, academia has developed an extensive research in the field, aiming at depicting the different facets, levels, traits and measurements of competitiveness (Ajitabh, Momaya, 2004; Delgado et al., 2012), and/or at integrating them into comprehensive and thoroughly articulated theories and models (Chang Moon, Peery, 1995; Chikan, 2008). Regardless of the differences and/or controversies that still surround the conceptualization of competitiveness at different levels (Feurer, Chaharbaghi, 1994; Snowdon, Stonehouse, 2006; Bhawsar, Chattopadhyay, 2015), one thing is for sure: achieving and sustaining competitiveness are strategic goals (Aiginger, Vogel, 2015), whose accomplishment can only be evaluated against one’s competitors, through benchmarking (Zairi, 1994).

With respect to innovation, it has also been revealed by researchers as a dynamic and multi-valences concept (Gopalakrishnan, Damanpour, 1997; Shavinina, 2003; Baregheh, Rowley, Sambrook, 2009), which broadly represents “significant positive change” (Berkun, 2013). No matter its particular definition, form or aspect it is referring to, innovation is built on the (dynamic) capability of “entrepreneurs” to systematically look for and capitalize on the “innovative opportunities” (Drucker, 2014). The crucial role of innovation has been emphasized decades ago by Michael Porter, who argued that “a nation’s competitiveness depends on the capacity of its industry to innovate and upgrade” but “ultimately, only companies themselves can achieve and sustain competitive advantage” (Porter, 1990).

Since then, the interplays between innovation and competitiveness have been intensively analyzed by academia at different levels, in order to identify the main conditions, mechanisms and patterns that have the propensity of leading, through innovation, to the desired outcomes of competitive advantage, competitiveness and sustained performance (Lengnick-Hall, 1992; Denton, 1999; Clark, Tracey, 2004; Cantwell, 2005; Castellacci, 2008). The new circumstances of nowadays, characterized by increasing complexity, add new challenges – opportunities (e.g. new innovators, new forms of innovation) and threats (e.g. rapid erosion of the competitive advantage, risks related to intellectual property) – to the agents operating into the global economy, asking for repositioning, (re)strategizing, and operational adjustments at all decisional levels (Ahrweiler, 2010; Bititci et al., 2012; Boutellier, Gassmann, Von Zedtwitz, 2013; Fankhauser et al., 2013; Gorzeń-Mitka, Okręglicka, 2015; Iñigo, Albareda, 2016).

3. Methodology

In order to reach its goal, the paper will firstly analyze the companies listed and/or ranked – by renown benchmarks – as Top Global Innovators, in order to discover their (both common and idiosyncratic) features; data on the represented industries and countries, as well as on the Top Global Innovators in terms of industries and countries, will complement the analysis with additional insights. Subsequent to the findings, some conclusion will be drawn, followed by directions for future research.

4. Results – Evidences from Global Benchmarks

4.1. Company-centered Analysis on the Top Global Innovators

Clarivate Analytics’ list of the Top 100 Global Innovators and Forbes’ ranking (co-created with consulting firm *Innovator’s DNA*) of the Top 100 World’s Most Innovative Companies are two global benchmarks in terms of innovation-driven competitiveness at company level; they are quite different in terms specific methodologies, resulted lists of companies and reflected aspects related to innovation.

In order to list its winning companies (without ranking them), “the Clarivate Analytics Top 100 Global Innovators methodology analyzes patent and citation data across four main criteria: volume, success, globalization and influence using Clarivate Analytics solutions” (Clarivate Analytics, 2017b); having “at least 100 unique inventions protected by a granted patent over the most recent five year period” (Clarivate Analytics, 2017b) is a prerequisite for any company annually listed amongst the “winners”. When considered for inclusion in the Forbes’ Top 100, “companies are ranked by their innovation premium: the difference between their market capitalization and the net present value of cash flows from existing businesses [...and therefore the list consists of...] firms that investors feel are most likely to come up with the next big innovation” (Forbes, 2017a); having “seven years of financial data and \$10 billion in market capitalization” (Forbes, 2017a) are the prerequisites for any company in order to be included in Forbes’s Top 100.

As Clarivate Analytics does not rank the companies into its Top 100 Global Innovators, a more in deep analysis of these companies (in terms of represented industries and countries) will be performed into the next sections of the paper. On the other hand, the analysis of the Top 10 Most Innovative Companies (Table 1) according to the most recent Forbes’ list reveals some interesting insights:

- The USA based companies not only dominate the Top 10 (with 6 companies), but they also occupy the first 3 spots; two Indian companies, a Chinese one and a South Korean one complete the Top 10,
- The 12-Month Sales Growth is not the most obvious determinant of a company’s position in Top – if considering, for instance, the significant difference between the 25.87% 12-month sales growth of Salesforce.com (the first placed company in Top 10) and the 73.01% 12-month sales growth of Tesla (the second placed company in Top 10),
- In terms of represented industries: 3 companies belong to Biotechs, 2 companies belong to the Internet & Catalog Retail, while 5 companies belong to other 5 different industries,
- The “oldest” company is the India-based Asian Paints, which counts 75 years of history, while the “youngest” one is the USA-based Tesla, with only 14 years of history.

Table 1. Top 10 Forbes’ Most Innovative Companies 2017

Top 10 Companies	Country	12-Month Sales Growth	Innovation Premium	Industry	Founded
1. Salesforce.com	USA	25.87%	82.46%	Software & Programming	1999
2. Tesla	USA	73.01%	78.43%	Auto & Truck Manufacturers	2003
3. Amazon.com	USA	27.08%	72.78%	Internet & Catalog Retail	1994
4. Shanghai RAAS Blood Products	China	15.27%	71.72%	Biotechs	1988
5. Netflix	USA	30.26%	71.54%	Internet & Catalog Retail	1997
6. Incyte	USA	46.7%	70.91%	Biotechs	1991
7. Hindustan Unilever	India	3.03%	68.59%	Household & Personal Products	1956
8. Asian Paints	India	7.19%	68.28%	Specialized Chemicals	1942
9. Naver	South Korea	23.62%	65.85%	Computer Services	1999
10. Regeneron Pharmaceuticals	USA	18.44%	64.4%	Biotechs	1988

Source: Forbes, 2017b

4.2. Industry-centered Analysis on the Top Global Innovators

If considering the industries/sectors represented in Forbes’ Top 100 and in Clarivate Analytics’ Top 100 (Table 2), the following observations could be extracted:

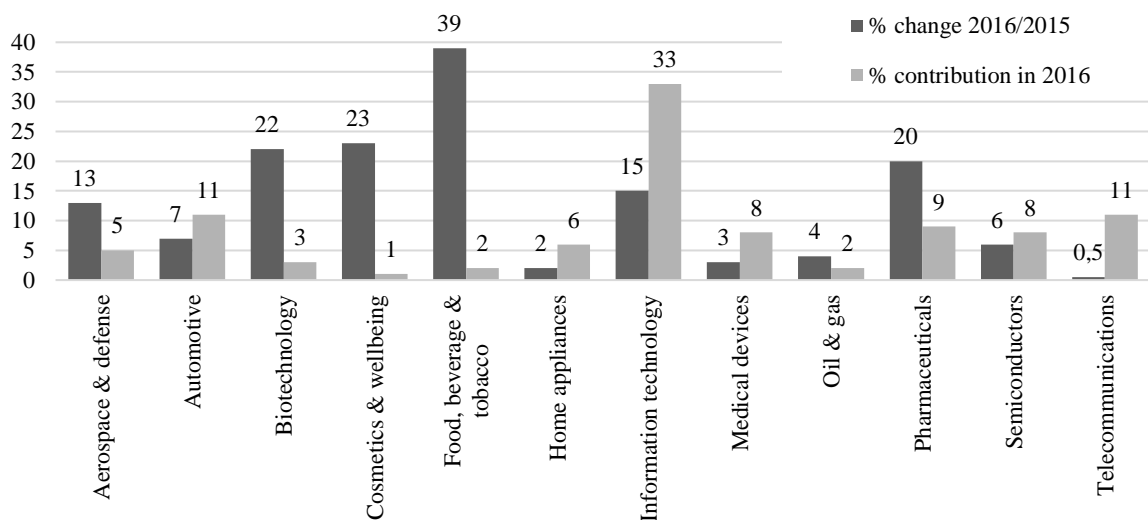
- 17 industries are represented in Top 100 Forbes, while Top 100 Clarivate Analytics gathers together companies belonging to 12 industries,
- Top 3 industries – by number of companies in Top 100 Forbes are: Software & Services, Health Care Equipment & Services, and Food, Beverage & Tobacco,
- Top 3(-4) industries – by number of companies in Top 100 Clarivate Analytics are: Hardware & Electronics, Manufacturing & Medical, Chemicals & Cosmetics and Automotive,
- Clarivate Analytics lists amongst “industries” 5 Institution & Government Research “winners” (academic institutions, research and development centers, and government agencies) – as they are “significant contributors to innovation”.

Table 2. Number of companies – by industry (Forbes Top 100 World’s Most Innovative Companies comparative to Clarivate Analytics Top 100 Global Innovators)

Industry – Forbes Top 100 World’s Most Innovative Companies	No of companies	Industry – Clarivate Analytics Top 100 Global Innovators	No of companies
Software & Services	16	Hardware & Electronics	27
Food, Beverage & Tobacco	13	Manufacturing & Medical	15
Health Care Equipment & Services	13	Automotive	9
Pharmaceuticals, Biotechnology & Life Sciences	10	Chemicals & Cosmetics	9
Retailing	10	Household Goods	7
Household & Personal Products	8	Pharmaceuticals	7
Commercial & Professional Services	6	Telecommunications	6
Consumer Services	5	Institution & Government Research	5
Capital Goods	4	Oil, Gas, & Energy	5
Consumer Durables & Apparel	4	Software	5
Materials	3	Aerospace & Defense	4
Food & Staples Retailing	2	Agriculture & Forestry	1
Telecommunication Services	2		
Automobiles & Components	1		
Media	1		
Semiconductors & Semiconductor Equipment	1		
Technology Hardware & Equipment	1		

Source: Forbes, 2017b; Clarivate Analytics, 2017b

Besides its Top 100 Global Innovators, Clarivate Analytics also annually releases a State of innovation report – developed around the most innovative industries, and which aims “to identify current trends and key players, and to look forward to emerging technologies that can help address tomorrow’s challenges and opportunities” (Clarivate Analytics, 2017a). The analysis of the 2017 edition of the report reveals some significant insights on two industry-related aspects of innovation (Figure 1):

**Figure 1. Percentage change in innovation activity (2016/2015) and percentage contribution in 2016 – by sector (%)**

Source: Clarivate Analytics, 2017a

- from a static perspective: the analysis of the percentage contribution to innovation (in terms of volume) of the twelve sectors covered by the report in 2016 shows that Top 3 is composed of: Information technology (33%), Telecommunications, and Automotive (each one with 11%),
- from a dynamic perspective: the analysis of the percentage change in innovation activity (2016/2015) highlights that Food, beverage & tobacco (39% increase), Cosmetics & wellbeing (23% increase), and Biotechnology (22% increase) are the leading industries in terms of percentage growth in innovation activity – closely followed by Pharmaceuticals (20% increase).

4.3. Country-centered Analysis on the Top Global Innovators

The country-centered analysis brings into discussion two other benchmarks: the Report on The Global Innovation Index (developed by Cornell University, INSEAD, and WIPO), and The Global Competitiveness Report (developed by The World Economic Forum).

The Global Innovation Index 2017 report is “devoted to measuring the innovation performance of 127 economies” (Dutta, Lanvin, Wunsch-Vincent, 2017). The overall Global Innovation Index (GII) score – based on which countries are ranked in terms of innovation – “is the simple average of the Input and Output Sub-Index scores”; basically, “The Innovation Input SubIndex is comprised of 5 input pillars that capture elements of the national economy that enable innovative activities: Institutions, Human capital and research, Infrastructure, Market sophistication, and Business sophistication, [...while...] The Innovation Output SubIndex provides information about outputs that are the results of innovative activities within the economy [..., the two output pillars being...]: Knowledge and technology outputs and Creative outputs” (Dutta, Lanvin, Wunsch-Vincent, 2017).

On the other hand, “covering 137 economies, the Global Competitiveness Index 2017–2018 measures national competitiveness” (World Economic Forum, 2017); the Global Competitiveness Index (GCI) is based on 12 pillars of competitiveness, which are “organized into three subindexes: basic requirements [grouping 4 pillars: Institutions, Infrastructure, Macroeconomic environment, and Health and primary education], efficiency enhancers [grouping 6 pillars: Higher education and training, Goods market efficiency, Labor market efficiency, Financial market development, Technological readiness, and Market size], and innovation and sophistication factors [grouping 2 pillars: Business sophistication, and Innovation]. The three subindexes are given different weights in the calculation of the overall Index, depending on each economy’s stage of development”. According to the GCI: in the first stage, the economy is factor-driven – and it mostly valorizes the basic requirement factors; as a country becomes more competitive, it will then move into the efficiency-driven stage of development – where it mostly valorizes the efficiency enhancers, and finally, as the country moves into the innovation-driven stage, it will valorize the most the innovation and sophistication factors (World Economic Forum, 2017).

If considering Forbes’ Top 100 World’s Most Innovative Companies and Clarivate Analytics’ Top 100 Global Innovators and adding their respective countries – together with: the countries’ stage of development (according to the Global Competitiveness Report) and their ranks in terms of both competitiveness (according to the Global Competitiveness Report) and innovation (according to the Global Innovation Index Report), the following aspects deserve to be emphasized (Table 3):

- 22 countries are represented in Forbes’ Top 100, and only 12 are represented in Clarivate Analytics’ Top 100, while 8 countries are represented in both lists: United States, Japan, China, France, South Korea, Switzerland, Ireland, and Netherlands,
- both lists are dominated by US companies: 50 (out of 100) in Forbes’ ranking and 39 (out of 100) in Clarivate Analytics’ list; Top 3 represented countries in Forbes’ ranking is completed by Japan (9 companies) and China (6 companies), while Top 3 represented countries in Clarivate Analytics’ list is completed by Japan (34 companies) and France (10 companies),
- considering the represented countries’ stage of development (in accordance to the GCI Report): 14 countries (out of the 22) represented in Forbes’ Top 100 are in Stage 3: Innovation-driven, two are in Transition from stage 2 to stage 3, five are in Stage 2: Efficiency-driven, and one is in the Stage 1: Factor-driven; on the other hand, 11 countries (out of the 12) represented in Clarivate Analytics’ Top 100 are in Stage 3: Innovation-driven, while one is in Stage 2: Efficiency-driven,
- there is a strong positive rank correlation between competitiveness (as measured in accordance with the GCI) and innovation (as measured in accordance with the GII) with reference to the countries represented in both Forbes’ Top 100 (0.770), and in Clarivate Analytics’ Top 100 (0.772 – the value here does not consider Taiwan, for which is no available rank into the GII report).

Table 3. Forbes’ Top 100 Most Innovative Companies and Clarivate Analytics’ Top 100 Global Innovators: data on represented countries

Country	No of companies		GCI Report (2017-2018)		GII Report (2017)
	Forbes	Clarivate Analytics	Stage of development	Rank GCI/137	Rank GII /127
United States	50	39	3	2	4
Japan	9	34	3	9	14
China	6	1	2	27	22
France	4	10	3	22	15
United Kingdom	4	-	3	8	5
Switzerland	3	3	3	1	1
India	3	-	1	40	60
South Korea	3	3	3	26	11
Denmark	3	-	3	12	6
Russia	2	-	2	38	45
Ireland	2	1	3	24	10
Saudi Arabia	1	-	Transition from 2 to 3	30	55
Canada	1	-	3	14	18
Indonesia	1	-	2	36	87
Thailand	1	-	2	32	51
Australia	1	-	3	21	23
Chile	1	-	Transition from 2 to 3	33	46
Brazil	1	-	2	80	69
Belgium	1	-	3	20	27
Spain	1	-	3	34	28
Italy	1	-	3	43	29
Netherlands	1	2	3	4	3
Germany	-	4	3	5	9
Finland	-	1	3	10	8
Sweden	-	1	3	7	2
Taiwan	-	1	3	15	NA

Source: Forbes, 2017b; Clarivate Analytics, 2017b; Dutta, Lanvin, Wunsch-Vincent, 2017; World Economic Forum, 2017

The exclusively “country” level of analysis on innovation-driven competitiveness (without considering the most innovative companies and/or industries) is based on the Top 10 “most innovative countries” according to The Global Innovation Index on one hand, and on two sets of Top 10 “most competitive countries” according to the Global Competitiveness Index on the other hand (Top 10 most competitive countries overall – based on the GCI, and Top 10 “most competitive by innovation” countries – based on the Innovation Pillar); comparing the three sets of data, the following remarks could be highlighted:

- Switzerland is the leading country in terms of innovation, competitiveness, and innovation-based competitiveness, although it has only 3 companies in both Top 100 (Forbes and Clarivate Analytics),
- seven countries are present in all the three Top 10: Switzerland, Sweden, Netherlands, United States, Singapore, Finland, and Germany,
- although it is not amongst Top 10 most competitive countries (according to GCI), Denmark is an “innovative” country according to both GII and Global Competitiveness Report,
- Israel is ranked the third country in terms of innovativeness – according to the Global Competitiveness Report, but it is not present amongst the Top 10 countries in terms of competitiveness overall, or innovativeness according to the GII report,
- other countries, present in at least one of the three Top 10, are: United Kingdom (amongst the most innovative according to GII and amongst the most competitive according to GCI), Ireland (amongst the most innovative according to GII), Hong Kong SAR (amongst the most competitive according to GCI), and Japan (amongst the most competitive and innovative according to the Global Competitiveness Report).

5. Conclusion

As innovation (of any kind, and at any level) represents the key to (sustainable) competitiveness, aiming for innovation-driven competitiveness is an imperative for any agent operating in the complex global economy of nowadays. The three-level analysis of the global innovators (companies, industries and countries) has provided some significant insights on the state of the art in the area of innovation-driven competitiveness; the main results refer to the following aspects:

- with respect to “the most innovative companies”: despite their methodological differences (but rather because of them), the two “barometers” of innovation-driven competitiveness at company level (Clarivate Analytics Top 100 and Forbes Top 100) perfectly complements each other: they reveal different determinants and facets of innovation (based on “hard certification” of patents and their citation, and “soft prospection” on future potential of innovation respectively), while covering quite different industries and sets of countries (Clarivate Analytics’ list is “shorter” in terms of these two dimensions); the complementarity of the two benchmarks in terms of revealed issues are essential in order to get a proper image of “the bigger picture” – both diachronically and synchronically,
- with respect to “the most innovative industries”: there is a big difference between the static and the dynamic approach: (a). from a static perspective, the analysis of the percentage contribution to innovation (in terms of volume) shows the following 3 sectors as leading innovators (in 2016): information technology, telecommunications, and automotive; (b). from a dynamic perspective, the analysis of the percentage change in innovation activity (2016/2015) highlights the following industries: food, beverage & tobacco, cosmetics & wellbeing, and biotechnology as leading innovators (Clarivate Analytics, 2017a),
- with respect to “the most innovative countries”: the findings based on country-level indexes (GII and GCI in particular) are quite different than those extracted from the company-level analysis (on the most innovative companies) – which suggest that some of the “most innovative countries”, “most competitive countries” and “most competitive by innovation” countries (as they were called in the paper) – such as: Singapore, Hong Kong, and Israel, for instance (which are amongst the Top 10 on country-based rankings, but have no company in Top 100 innovators – neither by Forbes or Clarivate Analytics) – are not capitalizing enough/yet on their potential for innovation.

The advantages of the paper reside in the fact that it has emphasized on the importance of innovation-driven competitiveness (at different levels), while performing an analysis of the interdependencies (as they are today) between these levels – based on globally renowned benchmarks; therefore, possible applications could cover: investing and entrepreneurial decisions – on one hand, and companies’ strategies (in terms of product/services, industries and/or countries to be targeted) – on the other hand. The limitations of the study consist in the lack of a more in deep analysis (on the three investigated levels), able to be followed by consistent and comprehensive correlations of data, in order to extract behaviors and patterns that might serve as benchmark for both academia and practitioners; future research directions will envisage this kind of analysis.

References

- Ahrweiler, P. (Ed.). (2010). *Innovation in complex social systems*. New York: Routledge.
- Aiginger, K., Vogel, J. (2015). Competitiveness: from a misleading concept to a strategy supporting Beyond GDP goals. *Competitiveness Review*, vol. 25, iss. 5, pp. 497-523.
- Ajitabh, A., Momaya, K.S. (2004). Competitiveness of firms: review of theory, frameworks and models. *Singapore Management Review*, vol. 26, no. 1, pp. 45-61.
- Baregheh, A., Rowley, J., Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. *Management Decision*, vol. 47, iss. 8, pp. 1323-1339.
- Berkun, S. (2013). *The best definition of innovation*, [online]. Available: <http://scottberkun.com/2013/the-best-definition-of-innovation/>. [2017, November 15].
- Bhawsar, P., Chattopadhyay, U. (2015). Competitiveness: review, reflections and directions. *Global Business Review*, vol. 16, iss. 4, pp. 665-679.
- Bititci, U., Garengo, P., Dörfler, V., Nudurupati, S. (2012). Performance measurement: challenges for tomorrow. *International Journal of Management Reviews*, vol. 14, iss. 3, pp. 305-327.

- Boutellier, R., Gassmann, O., Von Zedtwitz, M. (2013). *Managing global innovation: uncovering the secrets of future competitiveness*. Springer Science & Business Media.
- Cantwell, J. (2005). Innovation and Competitiveness. In J. Fagerberg, D. C. Mowery, R. R. Nelson, (Eds.). *The Oxford Handbook of Innovation*. Oxford University Press.
- Castellacci, F. (2008). Innovation and the competitiveness of industries: Comparing the mainstream and the evolutionary approaches. *Technological Forecasting and Social Change*, vol. 75, iss. 7, pp. 984-1006.
- Chang Moon, H., Peery Jr, N.S. (1995). Competitiveness of product, firm, industry, and nation in a global business. *Competitiveness Review: An International Business Journal*, vol. 5, iss. 1, pp. 37-43.
- Chikan, A. (2008). National and firm competitiveness: a general research model. *Competitiveness Review: An International Business Journal*, vol. 18 (1/2), pp. 20-28.
- Clarivate Analytics (2017a). *The State of Innovation Report 2017*, [online]. Available: https://cdn.clarivate.com/wp-content/uploads/2017/10/The_State_of_Innovation_Report_2017.pdf. [2017, November 15]
- Clarivate Analytics (2017b). *Top 100 Global Innovators*, [online]. Available: <http://top100innovators.stateofinnovation.com/>. [2017, November 15].
- Clark, G., Tracey, P. (2004). *Global Competitiveness and Innovation. An Agent-Centred Perspective*. New York: Palgrave MacMillan.
- Delgado, M., Ketels, C., Porter, M.E., Stern, S. (2012). *The determinants of national competitiveness* (No. w18249). National Bureau of Economic Research.
- Denton, D.K. (1999). Gaining competitiveness through innovation. *European Journal of Innovation Management*, vol. 2, iss. 2, pp. 82-85.
- Drucker, P. (2014). *Innovation and entrepreneurship*. New York: Routledge.
- Dutta, S., Lanvin, B., Wunsch-Vincent, S. (Eds.) (2017). *The Global Innovation Index 2017: Innovation Feeding the World*. Cornell University, INSEAD, and WIPO Ithaca, Fontainebleau, and Geneva.
- Fankhauser, S., Bowen, A., Calel, R., Dechezleprêtre, A., Grover, D., Rydge, J., Sato, M. (2013). Who will win the green race? In search of environmental competitiveness and innovation. *Global Environmental Change*, vol. 23, iss. 5, 902-913.
- Feurer, R., Chaharbaghi, K. (1994). Defining competitiveness: a holistic approach. *Management Decision*, vol. 32, iss. 2, pp. 49-58.
- Forbes (2017a). *Forbes Releases Seventh Annual List of the World's Most Innovative Companies*, [online]. Available: <https://www.forbes.com/sites/forbespr/2017/08/08/forbes-releases-seventh-annual-list-of-the-worlds-most-innovative-companies/#228c2ae74373>. [2017, November 15].
- Forbes (2017b). *The World's Most Innovative Companies*, [online]. Available: https://www.forbes.com/innovative-companies/list/#tab:rank_header:position. [2017, November 15].
- Gopalakrishnan, S., Damanpour, F. (1997). A review of innovation research in economics, sociology and technology management. *Omega*, vol. 25, iss. 1, pp. 15-28.
- Gorzen-Mitka, I., Okreglicka, M. (2015). Perception of Complexity Area in Management-an Exploratory Study in Poland. *Information Management and Business Review*, vol. 7, iss. 5, p. 36.
- Iñigo, E.A., Albareda, L. (2016). Understanding sustainable innovation as a complex adaptive system: a systemic approach to the firm. *Journal of Cleaner Production*, vol. 126, pp. 1-20.
- Lengnick-Hall, C. A. (1992). Innovation and competitive advantage: What we know and what we need to learn. *Journal of Management*, vol. 18, iss. 2, pp. 399-429.
- Porter, M.E. (1990). The Competitive Advantage of Nations. *Harvard Business Review*, vol. 68, iss. 2, pp. 73-93.
- Shavinina, L.V. (Ed.). (2003). *The International Handbook on Innovation*. Oxford: Elsevier.
- Snowdon, B., Stonehouse, G. (2006). Competitiveness in a globalised world: Michael Porter on the microeconomic foundations of the competitiveness of nations, regions, and firms. *Journal of International Business Studies*, vol. 37, iss. 2, pp. 163-175.
- World Economic Forum (2017). *The Global Competitiveness Report 2017-2018*, [online]. Available: <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>. [2017, November 15].
- Zairi, M. (1994). Benchmarking: the best tool for measuring competitiveness. *Benchmarking for Quality Management & Technology*, vol. 1, iss. 1, pp. 11-24.

Marcelo T. Okano^{1*}
CPS (Paula Souza Center)
Brazil
Eliane Simões²
CPS (Paula Souza Center)
Brazil
Marcelo Eloy Fernandes³
FATEC Barueri
Brazil

61. THE IMPORTANCE OF SOCIAL INNOVATION IN THE CURRENT CONTEXT: A BIBLIOMETRIC RESEARCH ON THE ACADEMIC PRODUCTION OF THE LAST 20 YEARS

Abstract: Business management has always focused on financial gain, but this type of management is changing due to the social goals that companies have had in recent years. These social innovations are growing and increasingly demanding specific management for this type of business. Research on social innovation has gained momentum in the last decade, driven especially by growing interest in social issues related to management, entrepreneurship and public management. However, the limits of social innovation processes have not yet been fully defined, leaving considerable scope for contributions to theory and practice. This article aims to show the importance of social innovation through academic production from 1995 to 2017, using bibliometrics. To show the importance of social innovation, we use bibliometric indicators to analyze and evaluate articles in the Scopus database. We obtained 983 articles in the period from 1995 to 2017, the highest production in the last ten years, showing the evolution of research in the field of social innovation and highlighting by quantity the years 2014 and 2017. This theme is of interest to several areas of knowledge, although the greater concentration is in the social sciences, the other areas have also contributed with articles, characterizing that this is a multidisciplinary theme. In the same way, this theme is researched in several countries and institutions and research of the world. Their relevance for the continuity of the articles, during the period of this research (1995 to 2017) and remain until the present day, has increased in authors, citations and works in the last twenty Times.

Keywords: academic research, bibliometrics, innovation, social innovation.

JEL Classification: O3, O35

1. Introduction

Business management has always focused on financial gain, but this type of management is changing due to the social goals that companies have had in recent years. These social innovations are growing and increasingly demanding specific management for this type of business.

Innovation and its cycle can, historically, be divided into three stages: invention, present from the beginning of humanity; imitation or diffusion, common in markets whose economy was based on the production and outsourcing of consumer products and innovation, strategy for economic sustainability of organizations in the 21st century, emerging after globalization of the economy and alternative to keep up with the speed of demand for new products, characteristic of contemporary dynamics (dos Santos, Fazon, de Meroe, 2011).

The capitalist model evolved towards fluctuations in the supply and demand of goods and services. Although these fluctuations generate business opportunities, this dynamic is limited and does not consider technological and behavioral changes. Thus, organizations with a unique vision in the supply and demand fluctuation have a short-term management, are closed to the conquest of new markets generated by new demands. Consequently, they are closed to the innovative process and its vital contribution to growth (dos Santos, Fazon, de Meroe, 2011).

¹ Prof. Dr. Marcelo T. Okano; Rua dos Bandeirantes 169, São Paulo, Brazil, marcelo.okano@cps.sp.gov.br

² Prof. Dr. Eliane Antonio Simões; Rua dos Bandeirantes 169, São Paulo, Brazil, eliane@uel.br

³ Prof. Dr. Marcelo Eloy Fernandes; Av. Carlos Capriotti 123, Barueri - São Paulo, Brazil, marceloeloyfernandes@gmail.com

* Corresponding author

A new type of innovation begins to emerge, concerns about social issues begin to emerge and be important to organizations, called social innovation. According to Juliani et al. (2014), the mobilization around the theme stems from the lack of capacity of the State to meet the needs of the population and also from the policies that direct public investment to increase competitiveness to the detriment of social development.

Research on social innovation has gained momentum in the last decade, driven especially by growing interest in social issues related to management, entrepreneurship and public management. However, the limits of social innovation processes have not yet been fully defined, leaving considerable scope for contributions to theory and practice (Cajaiba-Santana, 2014).

This article aims to show the importance of social innovation through academic production from 1995 to 2017, using bibliometrics. Bibliometric indicators have been shown to be relevant for the analysis and evaluation of the science produced in the different areas of knowledge at the regional, national and international levels (Grácio, Oliveira, 2013).

2. Conceptual Framework

2.1. Social Innovation

There is a great discussion about the definition of Social Innovation, according to Mulgan, Tucker and Danders (2011), some definitions are very specific and do not include many examples of social innovation (especially those coming from the market). Others are so broad that they include examples of projects and organizations that are not particularly innovative (although they deliver benefits to the communities they serve). Part of the problem lies in the fact that many use the term to describe things that are neither “social” nor “innovative”.

Currently, social innovation is much broader than any social entrepreneurship or social enterprise - though often include one or both of these. Unlike the terms of social entrepreneurship, social innovation transcends sectors, levels of analysis, and methods to discover processes - strategies, tactics and theories of change - that produce lasting impacts (Mulgan, Tucker, Sanders, 2011).

In this research we selected some definitions of the term made by the authors of the articles presented in Table 1.

Table 1. Definitions of social innovation

Author	Concept
Taylor (1970)	Improved forms of action, new ways of doing things, new social inventions.
Fleury (2001)	The process of social innovation produces the effect of rebuilding social relations systems, as well as the structure of rules and resources that reproduce such systems. Therefore, according to the author, one only speaks of social innovation "when the changes alter the processes and social relations, changing the pre-existing structures of power".
Lévesque (2001)	Social innovations are thought of as events in which new solutions are implemented in order to solve a situation of social precariousness
Dagnino and Gomes (2000)	Knowledge - intangible or embedded in people or equipment, tacit or codified - whose objective is to increase the effectiveness of processes, services and products related to the satisfaction of social needs.
Cloutier (2003)	A new response defined in action and with lasting effect, to a social situation considered unsatisfactory, which seeks the well-being of individuals and / or communities.
Goldenberg (2004)	Social Innovation is the development and application of new or improved activities, initiatives, services, processes or products designed to overcome the social and economic challenges faced by individuals and communities.
Novy and Leubolt (2005)	Social innovation derives mainly from: meeting basic human needs; increased political participation of marginalized groups; increased sociopolitical capacity and access to resources needed to strengthen rights that lead to the satisfaction of human needs and participation.
Rodrigues (2006)	Changes in the way the individual recognizes himself in the world and in the reciprocal expectations between people arising from approaches, practices and interventions.
Moulaert et al. (2007)	Tool for an alternative vision of urban development, focused on meeting human needs (and power) through innovation in neighborhood relations and community governance.
Mulgan et al. (2007)	New ideas that work in the satisfaction of social goals; innovative activities and services that are motivated by the goal of satisfying social needs and which are predominantly developed and disseminated through organizations whose primary purposes are social.
Phills et al. (2008)	The purpose of seeking a new solution to a social problem that is more effective, efficient, sustainable or just than existing solutions and for which the value created mainly affects society as a whole and not individuals in particular.

Pol and Ville (2009)	New idea that has the potential to improve quality or quantity of life.
Hochgerne (2009)	Social innovations are new concepts and actions accepted by impacted social groups that are applied to overcome social challenges.
Murray et al. (2010)	New ideas (products, services and models) that simultaneously satisfy social needs and create new relationships or social collaborations. In other words, they are innovations that, at the same time, are good for society and increase society's capacity to act.
Howaldt and Schwarz (2010)	A social innovation is a new combination and / or a new configuration of social practices in certain areas of action or social context promoted by certain actors in order to better meet or respond to the needs and problems of society.
Bignetti (2011)	It is the result of knowledge applied to social needs through the participation and cooperation of all the actors involved, generating new and lasting solutions for social groups, communities or for society in general.
Rollin and Vicent (2007)	They consider social innovation as an alternative that offers new opportunities, with income distribution in a more equitable way, differing from those that emphasize the technological aspect because they do not fit into the logic of competitiveness or attending the whims of the clients.
Castor (2007)	It understands "the search, discovery, experimentation, development, imitation, and adoption of" alternative social arrangements "to produce something." And it defines alternative social arrangements as being other ways of organizing the collective effort of production, differing from traditional forms of production. Therefore, different forms from those normally adopted by strictly economic companies, whose purpose of constitution is focused on profit and competitiveness. It aims at creating innovative projects for economic and social purposes.
Westley (2008)	Social innovation is an initiative, a product, process or program that profoundly changes the basic routines, resources and flows of authority or beliefs of any social system.
Mulgan et al. (2011)	Social innovations are innovations that are social, both in their ends and in their meanings. Specifically, we define social innovations as new ideas (products, services and models) that simultaneously meet social needs (more effectively than alternatives) and create new social relationships or collaborations. In other words, they are innovations that are good for society and improve society's ability to act.
Oliveira and Silva (2012)	The concept of social innovation in the sense of generating social changes refers to the idea of concern for the improvement of living conditions, to generate opportunities and to provide a more fraternal society. Therefore, social innovation arises from a desire or a need that is not being satisfied by the State, or by the market, and which finds, especially in developing countries, more space for action, by the conditions of degradation of human life.
Center for Social Innovation (2016)	Social innovation refers to the creation, development, adoption and integration of new concepts and practices that put people and the planet first. Social innovations solve existing social, cultural, economic and environmental challenges.

Source: Prepared by the authors – adapted from: Bignetti, 2011; Juliani et al., 2014

2.3. Bibliometry

According to Lopes et al. (2012), bibliometrics is a quantitative and statistical technique to measure knowledge production and dissemination indexes, as well as follow the development of several scientific areas and the patterns of authorship, publication and use of research results. The evaluation of the scientific production, important for the recognition of researchers in the scientific community, is made through the application of several bibliometric indicators, which are divided into indicators of scientific quality, importance and impact.

Bibliometry analyzes written communication, by counting words. It is currently related to the counting not only of textual elements present in the paper support, but mainly of information extracted from bibliographic databases (Amaral et al., 2004).

Tarapanoff, Miranda and Araújo Júnior (1995) define bibliometrics as the study of quantitative aspects of the production, distribution and use of information registered, from mathematical models, for the decision-making process.

Some researchers have observed that the frequency distribution of the data in a text or in a set of bibliographic references follows certain standards. These observations gave rise to bibliometric laws: Lotka's Law that determines the contribution of each author to the advancement of Science; the Bradford Act which is a method for selecting the most representative periodicals for an area of science; and Zipf's Law that found that if words occurring in a text are counted and sorted in descending order of number of occurrences, the multiplication of the number of occurrences by the ranking position for each word is a constant (Amaral et al., 2004).

2.4. Scopus Database

Scopus is not intended as an index of citations, but includes citations of articles since 1996. Its main intention is to search by author and subject. Looking for a detailed coverage from 1996 to the present. Contents of other Elsevier databases since 1966 have been selectively included in Scopus in order to increase and improve coverage (Lopes et al., 2012).

The Scopus team has improved its Journal Analyzer, having agreed with SCImago that the SJR calculation is included in the database. As main advantages we can indicate: indexes more than 18,000 titles of journals includes titles in Open Access, conferences, web pages, patents and books; the "more" feature allows you to quickly view the orphaned records; very strong coverage of science and technology journals; contains useful tools to identify the authors; automatically generates the h-index, and includes more languages than English - 60% coverage is outside the US (Lopes et al., 2012).

3. Research Methodology

In this work a bibliometric research was carried out, or bibliometrics, for a quantitative analysis of the written communication of articles published in periodicals, annals, books, etc. Citations and co-citations were analyzed. The citation analysis is based on the premise that authors cite articles that they consider important in the development of their research. On December 14, 2017, in the Scopus database, the articles were produced, from the search terms: "social innovation", in "Article Title, Abstract, Keywords", and with filter for type of documents "Article "For the greater years of 1994 and all subareas.

Scopus's own analysis tools were used, 983 articles were obtained, being the universe of the research, and the following items were analyzed: Types of publication, publications by year, main authors, main institutions, countries and areas of interest, knowledge.

This data was exported in BibTeX format and imported into Projection Explorer (PEX) software, a Java-based tool that can be used to create and exploit visual representations of document collections, helping the user to understand their content.

4. Results

The results of bibliometric research have shown that there has been a large increase in articles in journals in the last 20 years, from 3 articles in 1995 to 165 in 2017. We can notice a significant increase from 2008, as pointed out by Cajaiba-Santana (2014). The evolution can be seen in Figure 1.

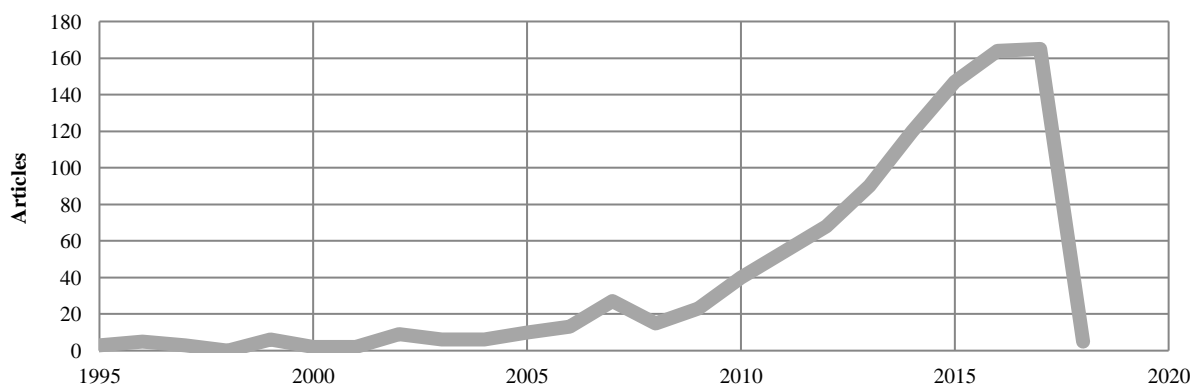


Figure 1. Publications per year

Source: Prepared by the authors

We present in Figure 2 the 15 countries with the largest number of articles in the period 1995 to 2017, with the first three positions being the United Kingdom, the United States and Canada, respectively, with 153, 137 and 86 articles on social innovation.

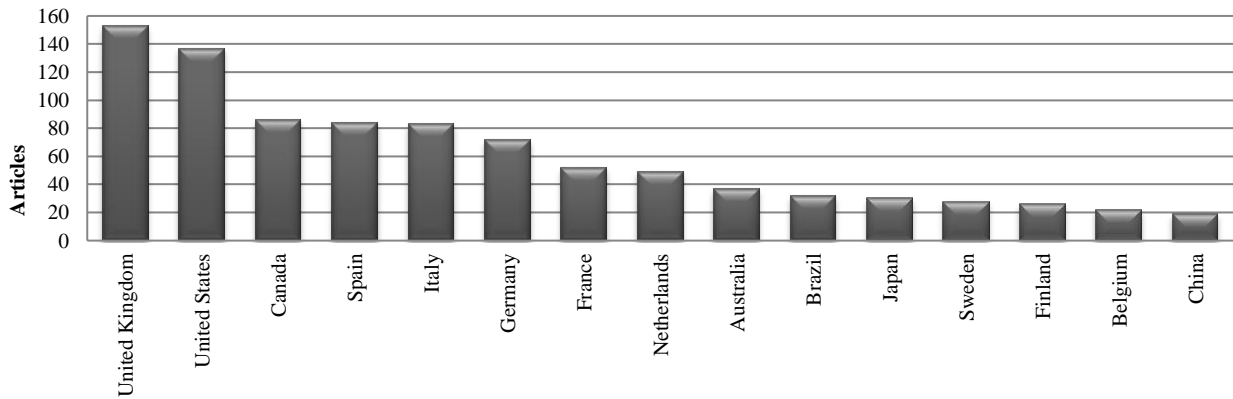


Figure 2. Publications by country

Source: Prepared by the authors

The theme "social innovation" is more present in the areas of Social Sciences and Administration, but also appears in other areas, Figure 3.

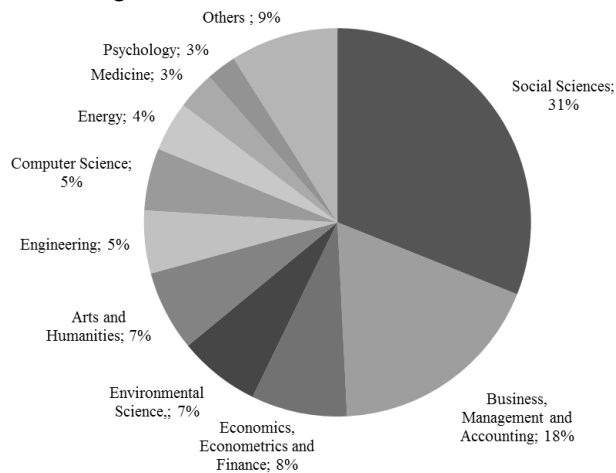


Figure 3. Publications by area of knowledge

Source: Prepared by the authors

In Figure 4 we find the ten teaching and research institutions that most published articles in the period from 1995 to 2017.

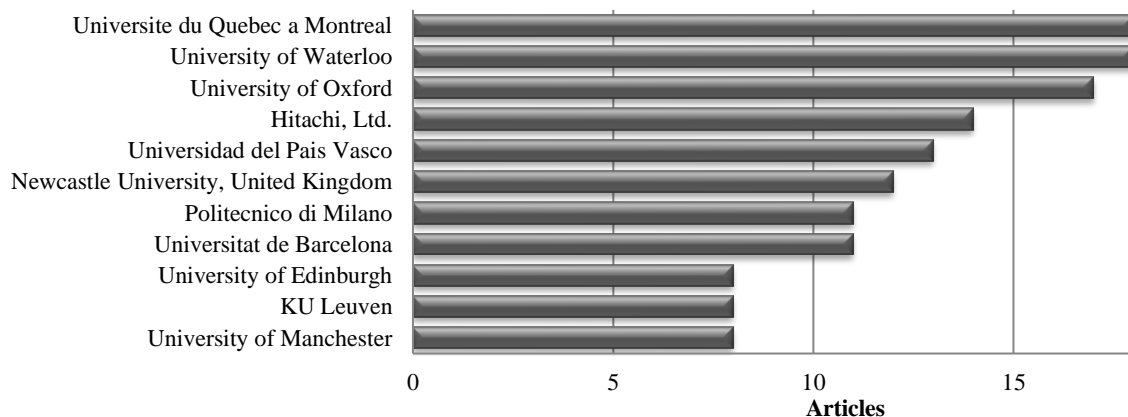


Figure 4. Publications by Institution of Education and Research

Source: Prepared by the authors

Figure 5 shows the 15 journals with article quantities in the period 1995 to 2017, the first three are: Hitachi Review, Journal of Social Entrepreneurship and Salute and Innovation.

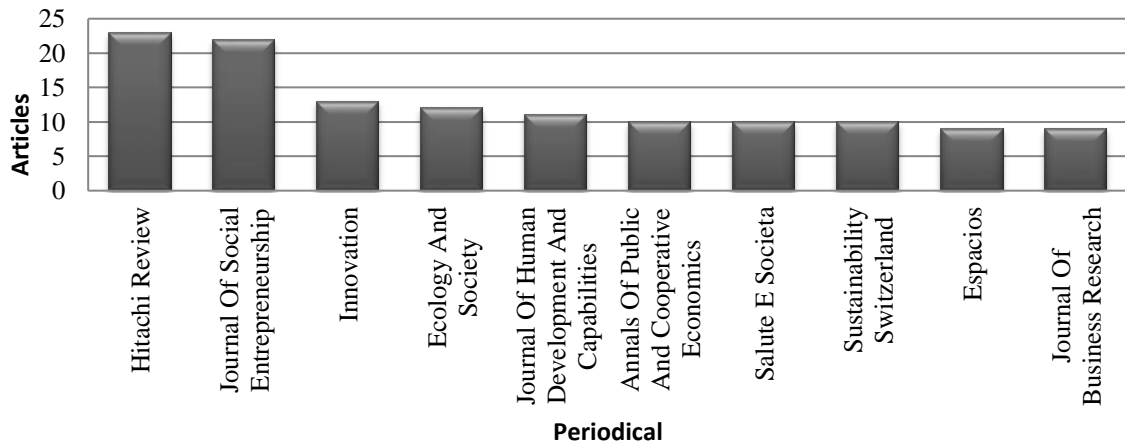


Figure 5. Publications by Periodicals

Source: Prepared by the authors

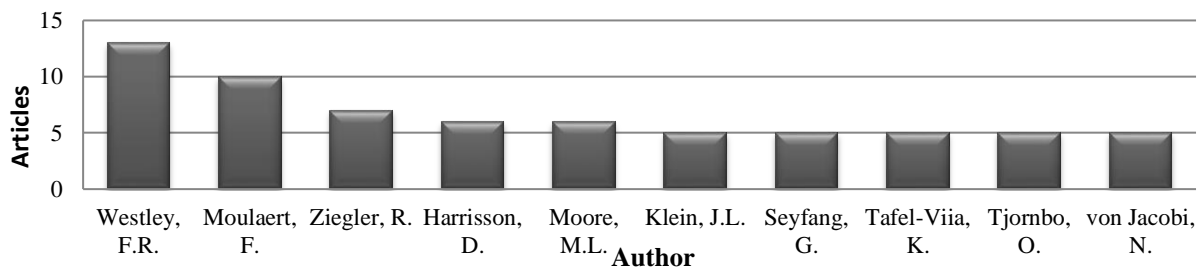


Figure 6. Publications by author (the main authors in this period)

Source: Prepared by the authors

Table 2 presents the most cited works and their authors. To perform the citation analysis it was necessary to place a restriction to consider only the 50 most cited authors, to use the Projection Explorer (PEX) software to create the sociogram of the authors' relationship.

Table 2. Most cited works

Authors	Title	Year	Cited by
Margolis J.D., Walsh J.P. Misery	Loves Companies: Rethinking Social Initiatives by Business	2003	1653
Holt-Lunstad I., Smith T.B., Layton J.B.	Social relationships and mortality risk: A meta-analytic review	2010	1209
Schau H.J., Malt Jr. A.M., Arnould E.J.	How brand community practices create value	2009	715
Mumford M.D., Scott G.M., Gaddis B., Strange J.M.	Leading creative people: Orchestrating expertise and relationships	2002	569
Asheim B.T., Coenen L.	Knowledge bases and regional Innovation systems: Comparing Nordic clusters	2005	518
Crossan M.M., Apaydin M.	A multi-dimensional framework of organizational innovation: A systematic review of the literature	2010	500
Tsemberis S., Gulcur L, Nakae M.	Housing First, Consumer Choice, and Harm Reduction for Homeless Individuals with a Dual Diagnosis	2004	500
Markard J., Raven R., Truffer B.	Sustainability transitions: An emerging field of research and its prospects	2012	406
Gronroos C., Voima P.	Critical service logic: Making sense of value creation and co-creation	2013	384
Smith A., Voß J.-P., Grin J.	Innovation studies and sustainability transitions: The allure of the multi-level perspective and its challenges	2010	384

Source: Prepared by the authors

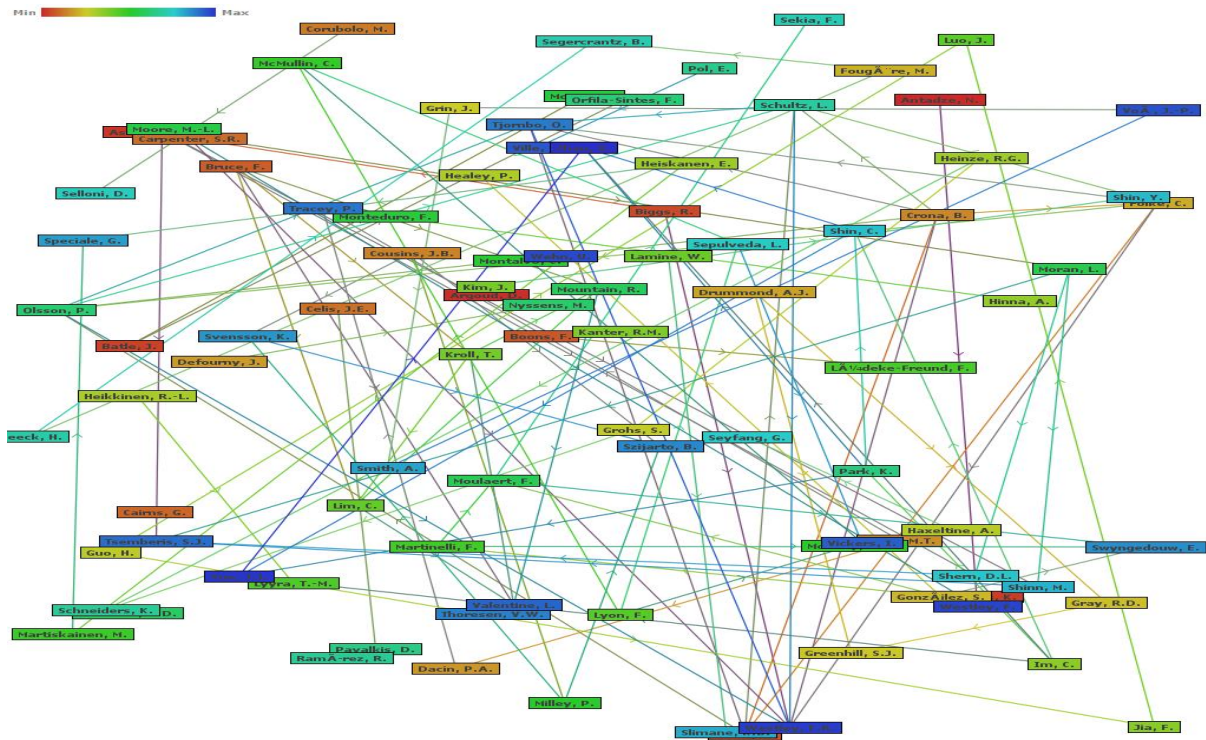


Figure 7. Sociogram of citations

Source: Prepared by the authors

5. Conclusion

The theme of social innovation is new, much is confused with social entrepreneurship and technological innovation, but different from other types of innovation, where the result is economic, social issues become the priority item. According to Juliani et al. (2014), the mobilization around the theme stems from the lack of capacity of the State to meet the needs of the population and also the policies that direct public investment to increase competitiveness to the detriment of social development.

In its own definition it presents several versions, varying from author to author, as we can prove in the conceptual referential.

To show the importance of social innovation, we use bibliometric indicators to analyze and evaluate articles in the Scopus database. We obtained 588 articles in the period from 1995 to 2015, the highest production in the last ten years, showing the evolution of research in the field of social innovation and highlighting by quantity the years 2014 and 2015. This theme is of interest to several areas of knowledge, although the greater concentration is in the social sciences, the other areas have also contributed with articles, characterizing that this is a multidisciplinary theme. In the same way, this theme is researched in several countries and institutions of education and research of the world. Their relevance for the continuity of the articles, during the period of this research (1995 to 2015) and remain until the present day, has increased in authors, citations and works in the last twenty years.

The use of bibliometric databases is now a reality. However, it should be borne in mind that they differ not only in the content they index, at the level of document typology (articles, journals, patents, books, etc.), but also at the level of thematic, temporal, geographical and idiomatic coverages.

References

- Amaral, R.M., Possatti, M.A., Faria, L.I.L., Alliprandini, D.H., Pereira, N.A. (2004). *Uma visão da produção científica nos Anais do Encontro Nacional de Engenharia de Produção através da Bibliometria. Artigo. XXIV Encontro Nacional de Engenharia de Produção*. Florianópolis, SC. Brasil, 3-5 November 2004.
- Bignetti, L.P. (2011). As inovações sociais: uma incursão por ideias, tendências e focos de pesquisa, *Ciências Sociais Unisinos*, vol. 47, iss. 1, pp. 3-14.
- Cajaiba-Santana, G. (2014). Social innovation: Moving the field forward. A conceptual framework. *Technological Forecasting and Social Change*, vol. 82, pp. 42-51.

- Castor, B.V.J. (2007). Inovação social e desenvolvimento. In Farfus, D.; de Souza Rocha, M.C. (orgs.). *Inovações sociais*. Curitiba: SESI/SENAI/IEL/UNINDUS.
- Centre for Social Innovation, [online]. Available: <http://socialinnovation.ca/about>, [2016, January 24].
- Cloutier, J. (2003). *Qu'est-ce que l'innovation sociale?* Cahier du CRISES. Collection Études théoriques – no ET0314 Crises, [online]. Available: www.crisis.uqam.ca, [2016, January 25].
- Dagnino, R., Gomes, E. (2000). Sistema de inovação social para prefeituras. In Conferência Nacional de Ciência e Tecnologia para Inovação. Anais... São Paulo.
- Fleury, S. (2001). *Observatório da inovação social*. VI Congreso Internacional del CLAD sobre la Reforma del Estado y de la Administración Pública, Buenos Aires, Argentina, 5-9 November 2001.
- Goldenberg, M. (2004). *Social innovation in Canada: How the non-profit sector serves Canadian ... and how it can serve them better*. Canadian Policy Research Networks: Ottawa.
- Grácio, M.C.C., de Oliveira, E.F.T. (2013). A inserção e o impacto internacional da pesquisa brasileira em estudos métricos': uma análise na base Scopus. *Tendências da Pesquisa Brasileira em Ciência da Informação*, vol. 5, iss. 1, pp. 1-19.
- Hochgerne, R.J. (2009). Soziale Innovationen finden, erfinden und realisieren. Powerpoint presentation during the XV. congress for applied sociology, Sozialwissenschaftliche Theorien und Methoden im Beruf, *Forum 8: Soziale Innovationen – Potenziale der Sozialwissenschaften bei der Neukonfiguration sozialer Arrangements*. University Hamburg, pp.5-6.
- Howaldt, J., Schwarz, M. (2010). *Social Innovation: Concepts, research fields and international trends*. Trend Study of the International Monitoring Project (IMO).
- Juliani, D.P., Juliani, J.P., de Souza, J.A., Harger, E.M. (2014). Social innovation: perspectives and challenges. *Revista ESPACIOS*, vol. 35, no. 5, p. 23.
- Lévesque, B. (2001). *Les entreprises d'économie sociale, plus porteuses d'innovations sociales que les autres?* In: Colloque du CQRS au Congrès de l'ACFAS, 2001, Montreal, Cahiers du CRISES, v. 0205.
- Lopes, S., Costa, M.T., Fernández-Llimós, F., Amante, M.J., Lopes, P.F. (2012). *A Bibliometria e a Avaliação da Produção Científica: indicadores e ferramentas*. In: Actas do Congresso Nacional de Bibliotecários, Arquivistas e Documentalistas.
- Moulaert, F., Martinelli, F., Gonzáles, S., Swyngedouw, E. (2007). Introduction: Social Innovation and Governance in European Cities. *European Urban and Regional Studies*, vol. 14, iss. 3, pp. 195-209.
- Mulgan, G., Tucker, S., Sanders, B. (2007). *Social Innovation: What It Is, Why It Matters and How It Can Be Accelerated*. Skoll Centre for Social Entrepreneurship, Oxford, Said Business School, [online]. Available: <https://youngfoundation.org/wp-content/uploads/2012/10/Social-Innovation-what-it-is-why-it-matters-how-it-can-be-accelerated-March-2007.pdf>, [2016, January 25].
- Mulgan, G., Simon, S., Pulford, L. (2011). *Study on Social Innovation for the Bureau of European Policy Advisors*. Young Foundation, [online]. Available: <https://youngfoundation.org/publications/study-on-social-innovation-for-the-bureau-of-european-policy-advisors/>, [2016, January 25].
- Murray, R., Caulier-Grice, J., Mulgan, G. (2010) *The Open Book of Social Innovation*. London, NESTA/The Young Foundation. Disponível em: www.nesta.org.uk/publications/assets/features/the_open_book_of_social_innovation. Acesso em: 25/01/2016.
- Novy, A., Leubolt, B. (2005). Participatory Budgeting in Porto Alegre: Social Innovation and the Dialectical Relationship of State and Civil Society. *Urban Studies*, vol. 42, iss. 11, pp. 2023-2036.
- Oliveira, N.D.A., Silva, T.N. (2012). Inovação social e tecnologias sociais sustentáveis em relacionamentos intercooperativos: um estudo exploratório no CREDITAG-RO. *Revista de Administração da UFESM – Brazilian Journal of Management*, vol. 5, iss. 2, pp. 277-295.
- Phills Jr. J.A., Deiglmeier, K., Miller, D.T. (2008). Rediscovering Social Innovation. *Stanford Social Innovation Review*, vol. 4, iss. 4, pp. 34-43.
- Pol, E., Ville, S. (2009). Social Innovation: Buzz Word or Enduring Term?. *The Journal of Socio-Economics*, vol. 38, pp. 878-885.
- Rodrigues, A.L. (2007). Modelos de gestão e inovação social em organizações sem fins lucrativos: divergências e convergências entre Nonprofit Sector e Economia Social. *Organizações & Sociedade*, vol. 14, iss. 43, 111-128.
- Rollin, J., Vicent, V. (2007). *Acteurs et processus d'innovation sociale au Québec*. Québec: Université du Québec.
- dos Santos, A.B.A., Fazon, C.B., de Meroe, G.P.S. (2011). Inovação: Um Estudo Sobre A Evolução Do Conceito De Schumpeter. Caderno de Administração, *Revista da Faculdade de Administração da FEA*, vol. 5, iss. 1.
- Strehl, L. (2005). O fator de impacto do ISI e a avaliação da produção científica: aspectos conceituais e metodológicos, *Ciência da informação*, vol. 34, iss. 1, pp. 19-27.
- Tarapanoff, K., Miranda, D.M., Araújo Júnior, R.H. (1995). *Técnicas para tomada de decisão nos sistemas de informação*. Brasília: Thesaurus, p. 86.
- Taylor, J. (1970). Introducing Social Innovation. *The Journal of Applied Behavioral Science*, vol. 6, iss. 6, pp. 69-77.
- Westley, F. (2008). *The social innovation dynamic*. Papers on Social Innovation, Waterloo: SiG.

Marcelo T. Okano^{1*}

CPS (Paula Souza Center)
Brazil

Edgar de Souza²

CPS (Paula Souza Center)
Brazil

Eliane Simões³

CPS (Paula Souza Center)
Brazil

Marcelo Eloy Fernandes⁴

FATEC Barueri
Brazil

62. THE PROPOSAL OF A BUSINESS MODEL BASED ON CANVAS FOR ICT ANALYSIS IN SOCIAL ENTERPRISES: A STUDY IN BVSA – SOCIAL AND ENVIRONMENTAL STOCK EXCHANGE BANK

Abstract: Social enterprises, in addition to financial goals, were also charged with social objectives, thus required a greater participation of Information and Communication Technologies (ICTs) in their organizational and functional structure. The technological dependence became evident with the passage of time and increase in the demand of the services offered. The objective of this work was to present the business model based on Canvas Business Model to analyze the ICTs in a social enterprise, called ITC business Model Canvas for social enterprise, in a large Brazilian social enterprise - BVSA. In order to achieve the objective of this work, a survey was conducted with two ICT professionals from BVSA. In order to collect the necessary information, we opted to use exploratory qualitative research. It was justified to adopt the exploratory research, since there are few studies on the subject. The ICT business model for Social Enterprise enabled us to analyze how ICT helped in the creation of value of the BVSA company, which highlights all operations and transactions were made by the platform and the platform allows to mark presence in the social territory and social responsibility.

Keywords: business model, Canvas, ICT, innovation, non-governmental organization (NGO), social enterprise.

JEL Classification: M15, O35, L31

1. Introduction

Social enterprise movements, which can be defined as the use of non-governmental, market-based approaches to addressing social issues in the United States and Europe, have become increasingly important in recent decades and have become an increasingly popular means of financing and provision of social initiatives in both regions (Kerlin, 2006).

Social enterprises, in addition to financial goals, are also responsible for social objectives, thus requiring a greater participation of Information and Communication Technologies (ICT) in its organizational and functional structure. Technological dependence becomes evident with the passage of time and increases the demand for the services offered.

The use and support of ICT for companies is fundamental, in several cases, the services could not be executed without this technological apparatus. This scenario has provided a research gap, since ICTs can contribute to social enterprises to create financial and social values. A common factor in

¹ Prof. Dr. Marcelo T. Okano; Rua dos Bandeirantes 169, São Paulo, Brazil, marcelo.okano@cps.sp.gov.br

² Edgar de Souza; Rua dos Bandeirantes 169, São Paulo, Brazil, edgardesouza@gmail.com

³ Prof. Dra. Eliane Antonio Simões; Rua dos Bandeirantes 169, São Paulo, Brazil, eliane@uel.br

⁴ Prof. Dr. Marcelo Eloy Fernandes; Rua Carlos Capriotti 123, Barueri, Brazil, marceloeloyfernandes@gmail.com

* Corresponding author

these companies is that the form of organization and governance are particular to each organization, which hinders a generalization for the use of ICT and, consequently, a research on the subject.

The objective of this work is to present the business model based on Screen Business Model to analyze ICT in a social enterprise, called ITC business model for social enterprise, in a large Brazilian social enterprise – BVSA.

2. Conceptual Framework

2.1 Social Enterprise

Definitions of social entrepreneurship are usually a general process or general company culture. Definitions of social enterprises and social business, on the other hand refer to the tangible results of social entrepreneurship. Definitions of social entrepreneurs refer to the founder and leader of initiatives (Mair, Marti, 2005) or even more broadly, the term social entrepreneur often refers to these individuals who are the driving forces behind social innovation (Deraedt, 2009). Social entrepreneurship refers to a general process or behavior, so it is still possible to distinguish a broad definition encompassing several organizations. The term "social enterprise", on the other hand, refers to the tangible results of social entrepreneurship and, consequently, it is much more difficult to refer to a single description covering all existing practices (Deraedt, 2009). However, some characteristics common to all social enterprises can be distinguished:

- the main objective of a social enterprise is to deliver social value rather than maximizing profit,
- secondly, a social enterprise produces goods or services on an ongoing basis. Defourny and Nyssens (2008) are not immediately understood as defensive agencies (such as non-profit organizations) or redistribution of financial flows as their main objective.

Social enterprises have the following characteristics:

1. Business Orientation - They are directly involved in producing goods or providing services to a market.
2. Social Orientation - They have explicit social and / or environmental objectives, such as job creation, training or the provision of local services. Their ethical values may include a commitment to building competencies in local communities. Your profits are reinvested primarily to achieve your social goals.

Many social enterprises are also characterized by their social property. They are autonomous organizations whose governance and structures are usually based on the participation of interest groups (e.g. workers, users, clients, local community groups, and social investors) or managers or directors who control the company on behalf of a larger group of stakeholders. They are accountable to their stakeholders and the broader community for their social, environmental and economic impact. Profits can be distributed as profit-sharing to stakeholders or used for the benefit of the community (Social Enterprise Coalition, 2003).

2.2 Business Model

The importance of the business model can be seen in the article by Zott, Amit and Massa (2011) published in the Journal of management with the title of "The business model: recent developments and future research" with substantial attention of academics and professionals. The authors state that since 1995, there have been at least 1177 articles published in peer-reviewed academic journals, in which the notion of business model is addressed.

During the e-commerce boom in the 1990s and with the advent of the Internet, the term business model has gained prominence and has been used by managers, academics, and journalists for everything else related to the "new economy" that is driven by technologies of information and communication and accumulated since then (Goyal et al., 2017; Zott, Amit, Massa, 2011).

The business model has also been the subject of a growing number of professional-oriented studies. While there has been an explosion in the number of articles published, and an abundance of sessions and conference panels on the subject of business models, it seems that researchers (and practitioners) have not yet developed a common and widely accepted language that would allow researchers to examine the construction of the business model through different lenses to draw effectively on the work of others (Zott, Amit, Massa, 2011).

The definition of Teece (2010), emphasized the value creation function of a commercial model: A business model describes the design or architecture of employee creation, delivery, and capture mechanisms. The essence of a business model is that it crystallizes customer needs and ability to pay, defines how the company responds and delivers value to customers, attracts customers to pay value, and translates those payments into profits through the design and operation of the various elements of the value chain.

A business model is defined by three main elements: value proposition, value creation and delivery, and value capture (Figure 1). Value creation is at the heart of any business model; companies often capture value by taking advantage of new business opportunities, new markets, and new revenue streams (Beltramello, Haie-Fayle, Pilat, 2013; Teece, 2010).

Although the value proposition is typically concerned with offering products and services to generate economic return, in a sustainable business, the value proposition would provide measurable ecological and / or social value along with economic value (Boons, Lüdeke-Freund, 2013). Capture value is to consider how to earn revenues (i.e. capture value) from the supply of goods, services or information to users and customers (Teece, 2010).

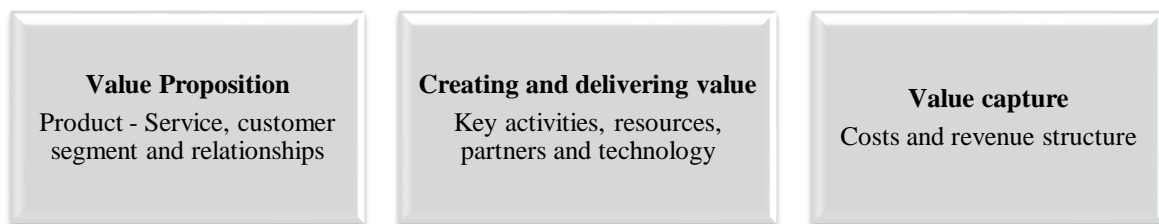


Figure 1. Structure of the conceptual business model

Source: Osterwalder, Pigneur, 2005; Bocken et al., 2014

2.3 Canvas Business Model (BMC)

The Business Model Canvas (BMC) was developed by Alex Osterwalder and Yves Pigneur, and co-created with a series of 470 practitioners from around the world. Provide a simple, visual and one-page screen about a project, innovative and dialog about our business models (Burkett, 2013).

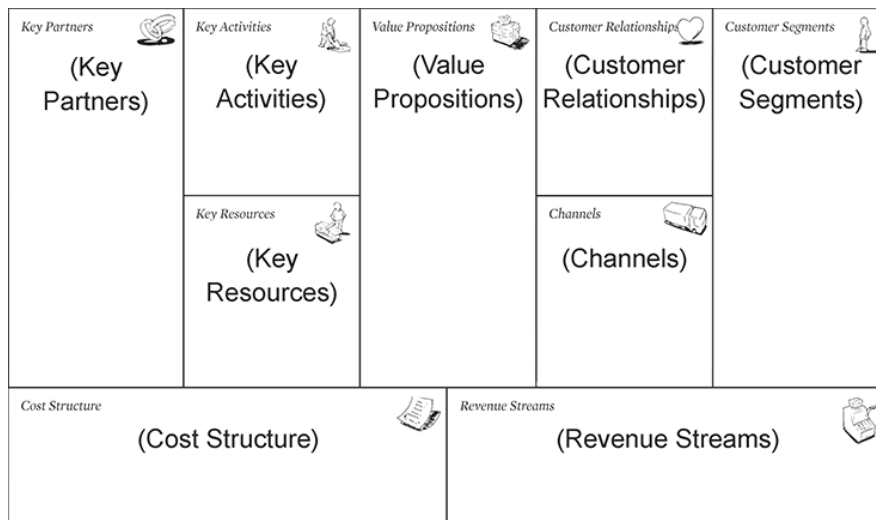


Figure 2. Canvas Business Model (BMC)

Source: Osterwanger and Pigneur, 2010

Osterwalder (2004, 2008 and 2010) introduced the canvas - business model methodology to provide an efficient means of fully capturing the particular business enterprise. The business model, represented in Figure 2, consists of nine "building blocks" that encompass a relatively complete and comprehensive set of business planning measures. Completing a screen (i.e. creating lists with bookmarks in each building block) to document how a company can approach a special opportunity, is

a business model and process of generating a series of alternative models is a business model (Osterwalder, 2004, 2008 and 2010). It is not a unique structure that was developed for Anglo-American models. Like many of the works, it was built with quality research but, unlike many others, it has also been tested and improved through the entry of many professionals (Burkett, 2013).

2.4 Proposal for an ITC framework business model Canvas for Social Enterprise

A business model describes the rationale for how an organization creates, delivers, and values the catch (Osterwalder, Pigneur, 2010). This proposal presents how a social enterprise can create, deliver and value the catches with the technological support of the TICs. Figure 3 shows the nine blocks and their functions.

Technology Partners The network of cooperation agreements with other companies or organizations (including governments) required for the execution or support of ICT services	Key Activities The main ICT actions that an organization must take to create its value proposition.	Technological Value Proposition What values are obtained with the support of ICTs. The technological values to be achieved	networks supported by ICT The networks that the organization has established or want to establish with each beneficiary supported by the ICTs	Beneficiaries The social target group (social enterprises, social affairs and NGOs) that the organization mainly intends to reach and serve
	Resources The computational and human resources of ICT for the business model to function		Communication channels supported by ICT The methods of communication, distribution and sales used by the organization to interact with its beneficiaries supported by ICT	
Costs of ICT The costs generated by ICT services, infrastructure, resources and equipment		Benefits obtained The benefits of using ICTs		

Figure 3. ICT business model Canvas for Social Enterprise

Source: Authors

3. Research Methodology

In order to achieve the objective of this work, a survey was conducted with two IT professionals from BVSA. In order to collect the necessary information, we opted to use exploratory qualitative research. It is justified to adopt the exploratory research, since there are few studies on the subject.

For Gil (2002), the exploratory research aims to provide greater familiarity with the problem, to make it more explicit. Already Zikmund (2001) considers that exploratory studies are conducted to clarify ambiguous problems, so that research is necessary to gain a better understanding of the dimensions of problems. The qualitative approach presents a reality that cannot be quantified or measured and involves subjective items for the reality of the research. It is possible to work with data without statistical treatment because the search for reality is sought (Costa, Costa, 2000).

The interviewees were two IT professionals from BVSA that are employee since BVSA has been created. The interview, for Gil (1987), "(...) is the technique in which the researcher presents himself before the investigated one and asks him questions, in order to obtain the data that interest the investigation".

The research instrument of this work is composed of a script of interviews, semi-structured, with open questions. Respondents were asked to answer the questions about BVSA based on ITC business model Canvas for social enterprise. The interview script consists of questions drawn from the business models presented in the previous chapter.

3.1 BVSA – Social and Environmental Stock Exchange Bank

The Socioenvironmental Stock Exchange (BVSA) is a pioneering initiative created by the Stock Exchange, Commodities and Futures Exchange of São Paulo (BM & FBOVESPA) in 2003 with the support of brokerage firms.

BVSA is a fundraising platform with the format of a stock exchange. Virtual environment of donations safe, practical and transparent, with full transfer of the amounts donated to the projects and complete accountability. It aims to stimulate the donation culture in Brazil, connecting two points: Brazilian organizations that need support for their socio-environmental projects and social investors.

BVSA, which has Daniela Mercury as a godmother, has support from the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the United Nations Development Program (UNDP) and has been recognized by the Global Compact as a study of case and model to be followed by other scholarships. His model has already been replicated in South Africa and Portugal. Since its inception, BVSA has already raised more than R \$ 18 million, destined to 188 projects from all over Brazil (BVSA, 2017). The partnership between BVSA and BrazilFoundation, established in 2015, increased the sum of the resources available to the selected projects. From this union, each listed socio-environmental project immediately received a contribution from BrazilFoundation of about R \$ 50 thousand, and can additionally rise up to R \$ 50 thousand with the thousands of donors from Brazil and abroad who already make their social and environmental investments through BVSA (BVSA, 2017). BrazilFoundation has sought co-investment opportunities that reduce the waste of resources in project selection, monitoring, and evaluation processes, as well as providing more robust investments, and longer, in initiatives that merit support (Brazil Foundation Annual Report, 2014).

Civil Society Organizations (CSOs) interested in participating in project selection, conducted by BrazilFoundation and BVSA, register their projects directly on the BVSA website and undergo a selection process conducted by BrazilFoundation. Once approved, the OSC will receive approximately R\$ 50 000 directly from BrazilFoundation to start its implementation immediately. This project can then be listed in the BVSA, in order to capture an additional amount of up to R\$ 50 000, thus providing for the expansion or replication of the project.

BVSA's social-environmental investors (donors) can select projects by theme, geographic region or beneficiary public. They may also choose one or more projects to invest in. The donated resource is deposited in an account of the BM & F BOVESPA Institute and passed on to the CSO in accordance with a resource utilization plan previously approved by BM&F BOVESPA and BrazilFoundation. (BVSA, 2017).

4. Results and Analysis

The interviews were transcribed and the answers to the questions are summarized in Figure 4, according to the nine blocks of the business model.

Analyzing the results in the ITC business model Canvas for Social Enterprise, we can point out the following items.

The two main values created with the support of ITCs are: all transactions and transactions are made by the platform and the platform allows marking presence in the social territory and social responsibility.

Key activities are NGO management, monitoring of NGO activities and donations. The technology partners are Microsoft and the outsourced service provider. The computational and human resources are outsourced; the expenses are with the infrastructure, development and maintenance of the platform, auditing and execution of projects of the NGOs.

The beneficiaries are NGOs and the entire relationship and follow up of the projects is done by the platform. The biggest benefit is the donations made by the public for the projects presented.

Key Activities Management Monitoring of the NGOs and projects, financial management and administration NGOs To forward and track projects, Accountability and net meeting Donation Make the donation, choose payment mode (ticket or credit card) and select Project.	Technological Partners Microsoft	Technological Value Proposition All operations and transactions control is done by the application	Relationship networks supported by ICT NGOs and BVSA using platform Donor and BVSA Using platform	Beneficiaries NGOs
	Resources Computational And Human resources are outsourced	Make the presence in social and environmental responsibility	Communication channels supported by ICT NGOs and BVSA	
Costs of ICT Hosting, development and maintenance of the platform. Screening projects, monitoring and auditing the execution of projects		Benefits obtained Donations		

Figure 4. ITC business model Canvas for Social Enterprise – BVSA

Source: Authors

Table 1 shows the selected projects for the year 2016. These projects made up the portfolio of BVSA in 2016 and captured for this platform an approximate value of US\$ 525 000.

Table 1. 2016 Selected projects by BVSA

Project name	Project Detail
Family Architect - Housing and Family Health Diagnostics	The project will promote housing improvements to improve the health and safety of slum dwellers in Niterói by solving structural deficiencies that generate health damages such as humidity, excessive heat and poor sanitary facilities.
Cement and Lipstick - Training of Trainers	The project will enable women to perform hydraulic repairs, electrical, painting, among others to expand the opportunity in the labor market, the development of autonomy and savings in the resolution of domestic repairs.
Green Cooking: Growing Organic and New Opportunities for Women	The project will train women for agricultural production, seeking to reduce the social and economic exclusion they suffer in the northern forest and the Parajo swamp area, in addition to increasing the production of nutritional foods.
Handmade design	The project will promote the development of technical and production skills, training workshops on pricing for six productive groups of women in Rio de Janeiro.
Law and Citizenship	The project will provide legal assistance and guidance to people with HIV / AIDS in the areas of labor, social security, civil and administrative law, as well as empowering leadership to raise awareness.
Music Education in Grota Cultural Space	The project will provide access to culture for children and youth in an area of vulnerability and will stimulate musical training as a possibility of income generation by developing works as a music teacher or musician.
Institutional Strengthening of the IEE	The project will offer regular sports activities in popular neighborhoods, in partnership with community spaces and public schools, and qualify teachers who work in public schools throughout Brazil.
Gira-Sol : Vital Energy Management	The project will stimulate the protagonism of young people through artistic activities, developing social leadership skills and forming multiplier educators.
Group Nodes	The Group We will guide young people who complete 18 years in the financial and emotional preparation for leaving the host service and promote partnerships that will contribute to the development of these young people.
Imagine	The project includes reading and writing workshops with children from 5 to 11 years old from the Novo Horizonte community in Jaboatão dos Guararapes / PE. These children are public school students and members of low-income families.
Kalivono	The Kalivono project will encourage the preservation of the use of the Terena language, qualify teachers from indigenous villages in use of this language and culture and promote new teaching methodologies for early childhood education.

Social Mobilization for Education	The Social Mobilization for Education project will encourage the improvement of public education in the municipalities of Chapada Diamantina by providing training for educators, social mobilization and knowledge production through workshops and seminars.
Pimp my Cart	The project will provide garbage pickers in the area of safety, health and welfare and will reform structurally safety items such as rear-view mirrors, reflective tapes and horns.
Care Project - Caregivers Agency	The project will include young people and low-income adults in the labor market through training for the care of the elderly, guaranteeing a better quality of life for the elderly and a future for young people in Cidade de Deus.
Rebuilding Lives, Strengthening Links	The project will train adolescents and young people as multipliers of the culture of peace and combat prejudice against people living with HIV / AIDS.
Productive Roça	The project will assist the small agricultural producers of the Cansação / Bahia region, orienting the creation and commercialization of productive chains of goat breeding, poultry and swine farming to contribute to the generation of family income.
Child Health - Expanding Horizons	The project aims to promote the biopsychosocial well-being of families living below the poverty line, comprising health in an integrated way and as an instrument of social inclusion.
Integral Health is Legal	The project will develop pedagogical, pediatric, nutritional, psychological work to disseminate knowledge on issues of malnutrition, hygiene, health, family budget management and other issues.
Rights Sowing	The project will promote workshops with pregnant women, young mothers and other women on self-esteem and family bonding, offer classes on human rights among others and form a reference group for the local community.
Weaving Dreams	The project will promote decent working relationships for immigrants in the fashion production chain in São Paulo and will support immigrants in entrepreneurial management through the Micro and Small Business methodology of the Entrepreneurial Alliance.

Source: Authors

The digital platform is the heart of the company, where all the main activities are carried out, all the communication and the relationship with the beneficiaries is done by it, the technology partners are responsible for the technology employed, outsourcing services and human resources. Without the platform, the BVSA would not reach all its beneficiaries and donors and the same level and service could be offered.

5. Conclusion

We were able to verify that the business model of ICT for the Social Enterprise allows analyzing the social enterprises, verifying the support of the ICTs to obtain the creation of value. The application of this model in the BVSA allowed us to analyze how ICT helps in the creation of company value, which highlights that all operations and transactions are made by the platform and the platform allows marking the presence in the social territory and social responsibility.

This platform can be an alternative for social entrepreneurs to reach the necessary resources and implement their projects. With the total transfer of funds raised and with the additional contribution of BrazilFoundation, entrepreneurs can transform the communities where they operate.

It is important to note that the electronic platform of BVSA does not present any technological sophistication, the technology used does not matter, but it is the heart of operations and transactions, because without it, it would not be possible to operate the BVSA, characterizing that the platform is not just a tool.

The BVSA is an important social enterprise since the resources destined to these projects, only in 2016, were approximately US\$ 525 000. In addition, 65% of the projects listed in the BVSA program reached 100% of the stipulated financing objective, 25% of the projects reached 60% of the target and 10% reached 50% of the target.

The contribution of this article is the business model of ICT for Social Enterprises based on the Business Model Canvas that can be used to analyze other social enterprises and the fragility is that its generalization does not explore all areas of ICT such as networks, systems, data, etc., which can be searched in a future work.

References

- Beltramello, A., Haie-Fayle, L., Pilat, D. (2013). *Why new business models matter for green growth*. Paris: OECD Publishing.
- Bocken, N.M.P., Short, S.W., Rana, P., Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, vol. 65, pp. 42-56.
- Boons, F., Lüdeke-Freund, F. (2013). Business models for sustainable innovation: state-of- the-art and steps towards a research agenda. *Journal of Cleaner Production*, vol. 45, pp. 9-19.
- Burkett, I. (2013). *Using the business model canvas for social enterprise design*, [online]. Available: http://knode.com.au/wp-content/uploads/Knode_BusModCanv4SocEntDesign_E1LR_30p.pdf. [2017, September 01].
- BVSA (2017). [online]. Available: <https://www.bvsa.org.br> [2017, September 30].
- Costa, M.A.F., Costa, M.F.B. (2001). *Metodologia da Pesquisa – Conceitos e Técnicas*. Rio de Janeiro: Ed. InterCiência.
- Defourny, J., Nyssens, M. (2008). Social Enterprise in Europe: Recent Trends and Developments, *Social Enterprise Journal*, vol. 4, iss. 3, pp. 202-228.
- Deraedt, E. (2009). *Social enterprise: a conceptual framework. Conceptual Discussion Paper for the ILO social Enterprise Developing Targeting Unemployed Youth in South Africa (SETYSA) project*. [online]. Available: <https://pdfs.semanticscholar.org/a56c/8a5d0c15287aa1772a473ed57015b0f5fd5e.pdf> [2017, September 01].
- Gil, A.C. (1987). *Métodos e Técnicas de Pesquisa Social*. São Paulo: Editora Atlas.
- Gil, A.C. (2002). *Como elaborar projetos de pesquisa*. São Paulo: Editora Atlas.
- Goyal, S., Kapoor, A., Esposito, M., Sergi, B.S. (2017). Understanding business model-literature review of concept and trends. *International Journal of Competitiveness*, vol. 1, iss. 2, pp. 99-118.
- Kerlin, J.A. (2006). Social enterprise in the United States and Europe: Understanding and learning from the differences. *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, vol. 17, iss. 3, pp. 246-262.
- Mair, J., Marti, I. (2006). Social Entrepreneurship research: A source of explanation, prediction, and delight. *Journal of World Business*, vol. 41, iss. 1, pp. 36-44.
- Osterwalder, E. (2004). *The Business Model Ontology - a proposition in a design science approach*, Lausanne: Universidade de Lausanne.
- Osterwalder, E. (2008). *O Business Model Canvas*, [online]. Available: <http://www.nonlinearthinking.typepad.com> [2011, October 29].
- Osterwalder, E., Pigneur, Y. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*, Wiley.
- Social Enterprise Coalition (2003). *There's More to Business Than You Think: A guide to social enterprise*. London: Social Enterprise Coalition.
- Teece, D. (2010). Business models, business strategy and innovation. *Long Range Planning*, vol. 43, pp. 172-194.
- Zikmund, W.G. (2000). *Business Research Methods. 6th edition*. Fort Worth: The Dryden Press.
- Zott, C., Amit, R., Massa, L. (2011). The business model: recent developments and future research. *Journal of Management*, vol. 37, iss. 4, pp. 1019-1042.

Małgorzata Okreglicka^{1*}
Czestochowa University of Technology
Poland
Anna Dunay²
Szent István University
Hungary

63. POTENTIAL FOR PROACTIVITY AS AN ANTECEDENT OF ENTREPRENEURIAL ORIENTATION

Abstract: Proactivity is equated with self-directed and future-focused actions to anticipate or initiate change in the environment. Proactivity by anticipating and creating new markets or participating in emerging ones is associated with entrepreneurship, constitutes an important dimension of entrepreneurial orientation. The main aim of the paper is a diagnosis of dependency between proactivity of students in Poland and the entrepreneurial intentions understood as an intent to start own business after graduation. To confirm the main hypothesis the questionnaire survey was conducted among 243 students in Poland. To statistical result analyze the descriptive statistics, the Pearson chi-square test and Kendall's rank correlation was applied. As a main result the statistically significant and positive correlation with moderate intensity was confirmed between proactivity of students in Poland and their entrepreneurial intentions. It allows preparing recommendations for educational system improving level of proactivity of young people as a mean of entrepreneurship development, and indirectly to create the economic growth and social welfare.

Keywords: entrepreneurial orientation, entrepreneurship, management, proactive potential, proactivity.

JEL Classification: D22, I25, L26

1. Introduction

The contemporary dynamism and complexity of the business environment has been forcing businesses to remain competitive by exploring novel opportunities. Accordingly, the concept of entrepreneurial orientation (EO), reflecting the degree to which enterprise growth objectives are driven by the identification and exploitation of emerging market opportunities has gained much attention in strategic management research (Grühn et al., 2017). Entrepreneurial activity has been identified as a major engine for the generation of employment and the creation of economic growth and social welfare (Wong, Ho, Autio, 2005). Accordingly, there is a strong interest in entrepreneurial behavior and activity, their antecedents and concrete consequences.

Entrepreneurship is a complex phenomenon involving a set of activities with human, technical, managerial and entrepreneurial characteristics, the performance of which requires a diverse set of skills (Illés, Dunay, Jelonek, 2015). Exploring and analyzing the entrepreneurial attitudes of university students represent a key focus of academic researches (see Sieger, Fueglistaller, Zellweger, 2011; Gibcus et al., 2012). An international survey among university students of the Visegrad Countries revealed that there is a strong intention of the young generation to be self-employed and they feel that they are able to acquire the appropriate skills, knowledge and motivation to start entrepreneurial life (Swadzba, Cekiara, 2015; Dunay, Vinogradov, Illés, 2017). Bahrami, Nosratabadi and Illés (2016) underlined that intellectual capital is one of the most important assets of enterprises, which may be developed gradually, while Illés, Dunay and Nosratabadi (2016) underlined the role of educators and entrepreneurship education in this process.

Organizations that want to engage in successful corporate entrepreneurship need to have EO, which refers to the strategy-making practices that enterprises use to identify and start corporate ventures. EO construct constitutes a frame of mind and a perspective about entrepreneurship which are reflected in

¹ Małgorzata Okreglicka Ph.D.; Armii Krajowej 36b, 42-201 Częstochowa, Poland, m.okreglicka@wp.pl

² Assoc. Prof. Dr. hab. Anna Dunay Ph.D.; H-2100 Gödöllő, Páter K. u. 1., Hungary, dunay.anna@gtk.szie.hu

* Corresponding author

business processes and organizational culture. It represents an organizational phenomenon that reflects a managerial capability by which organizations engage in proactive and aggressive initiatives to alter the competitive scene to their advantage (Avlonitis, Salavou, 2007). In the business context, the construct of EO is examined as a strategic posture that reflects the specific processes, practices, and behaviors that allow an enterprise to act in an entrepreneurial way (Engelen et al., 2014).

Nowadays, the interest in EO has been consistently growing and EO becomes a central concept in entrepreneurship, and one of the areas of entrepreneurship research where a cumulative body of knowledge is developing (Ferreira et al., 2017). The research covers not only the phenomenon itself but also the potential for its creation. The identifying and creating the potential towards entrepreneurial orientation should be developed by educational system, achieving the strongest intensity at university level. Identification of factors influencing the entrepreneurial orientation among students could lead to improvements in education system to be more entrepreneurial oriented.

EO is a multidimensional concept at corporate level which consists of 5 basic dimensions: proactivity, innovativeness, risk taking, competitive aggressiveness and autonomy. One of the basic and commonly analyzed EO dimensions is proactivity described as an opportunity-seeking, forward-looking perspective characterized by the launching of new products and services in advance of the competition and acting in expectation of future demand (Rauch et al., 2009). In today's turbulent economic environment, proactivity is seen as a necessary and desirable trait. Proactive people change and develop themselves and thereby change and develop their work environment (Artienwicz, 2014). The potential for proactivity should be shaped within educational system to enhance the entrepreneurial orientation of individuals in professional work. From this perspective, the main aim of the article is a diagnosis of dependency between proactivity of students in Poland and the entrepreneurial intentions understood as an intent to start own business after graduation.

2. Literature Review

Early studies in entrepreneurship identified the proactive nature of an organization as a crucial contributor to the entrepreneurial orientation of an organization (Miller, 1983). Proactivity suggests a forward-looking perspective characteristic of a market leader that has the foresight to act in anticipation of future demand and shape the environment (Lumpkin, Dess, 2001). From the dynamic point of view, it describes a particular process of action that can occur either within or beyond the boundaries of assigned employees' roles (Grant, Ashford, 2008). Proactive enterprises act on future needs actively seeking new solutions and opportunities. They are often pioneer organizations which are first to enter the new markets (DeepaBabu, Manalel, 2016). A first-mover strategy is the best strategy for capitalizing on a market opportunity and proactivity relates to efforts associated with being the pioneer. If an enterprise spots an opportunity in the market and is the first to act upon it, it can make oversized profits and benefit from brand recognition (Lumpkin, Dess, 1996; Zellweger, Sieger, 2012). Although the idea of acting in anticipation of future demand is an important component of entrepreneurship, the idea of being first to market is a bit narrowly construed. An enterprise can be novel, forward thinking, and flexible without always being first. Venkatraman (1989) suggested that proactivity refers to processes aimed at anticipating and acting on future needs by "seeking new opportunities which may or may not be related to the present line of operations, introduction of new products and brands ahead of competition, strategically eliminating operations which are in the mature or declining stages of life cycle". Thus, a proactive organization is a leader rather than a follower, because it has the will and foresight to capitalize new opportunities, even if it is not always absolutely first to do so (Lumpkin, Dess, 1996).

Proactivity by anticipating and creating new markets or participating in emerging ones is associated with entrepreneurship, constitutes an important dimension of entrepreneurial orientation (Walter, Auer, Ritter, 2006). Economics scholars since Schumpeter have emphasized the importance of initiative in the entrepreneurial processes. Thus, taking initiative by anticipating and pursuing new possibilities and by participating in emerging markets also has become associated with entrepreneurship. As such, proactivity could be crucial to an entrepreneurial orientation because it suggests a forward-looking perspective which is accompanied by innovative or new-venturing activity.

Proactivity is equated with self-directed and future-focused actions to anticipate or initiate change in the work system or work roles (Parker Williams, Turner, 2006). Examples of proactive behavior are suggesting ideas for future improvements, self-started solving of problems, initiatives to make

changes, feedback seeking, and issue selling (Grant, Ashford, 2008). Although proactivity has been conceptualized in various ways, the common characteristic is voluntarily going beyond assigned tasks and taking a long-term perspective to reduce risk of problem appearing (Shin, Eom, 2014).

The proactivity of individuals is a multiform and multidimensional construct, because it can be related to personal characteristics, attitudes and behaviors (Bateman, Crant, 1993). Proactive behavior is a particular form of motivated behavior at work. It is anticipatory action that employees take to impact themselves and their environments. Proactive behavior within organization involves self-initiating change in order to achieve a different future (Parker, Bindl, Strauss, 2010). Crant (2000) defined proactive behavior as: taking initiative in improving current circumstances or creating new reality; it involves challenging the status quo rather than passively adapting to present situation. Such behavior is argued to be especially important in uncertain and unpredictable environments where it is not possible to anticipate all contingencies and therefore to pre-specify role requirements (Strauss, Parker, O'Shea, 2017; Korombel, 2012).

Proactive behavior is not an exclusive domain of people with a proactive personality. Proactivity as a personality trait tends to induce changes in the environment (Bateman, Crant, 1993). However, this tendency is not an automatic translation into action, especially in terms of professional work. The proactive personality is distinguished by the range and orientation of the innate proactive features of the individual (Thomas, Whitman, Viswesvaran, 2010), which then translate into a variety of proactive actions and perceptions (Seibert, Crant, Kraimer, 1999). Proactive personality does not automatically connect with proactive action. Between these two elements enter proactive initiatives, as the next step on the road to organizational proactive behaviors. Proactive initiatives are a transition from the general psychological domain of study into the organizational domain. A personal initiative reflects the individual's willingness to engage in internal and external roles (Crant, 2000) and in action through the prism of organizational strategies and goals.

A personal initiative is undoubtedly an antecedent of proactive behavior, for which the general or context-specific, and by this context initiated, actions leading to active adaptation to the environment are considered (Belschak, Hartog, 2010). While personal characteristics, particularly proactive personality, are relatively constant characteristics of a given entity, proactive behavior is a variable that is subject to modifications (Chipeta, Surujlal, 2017). Creating and supporting proactive attitudes, initiatives and behaviors is undoubtedly the mean for increasing the entrepreneurship of the society. Proactive people can increase their effectiveness by engaging in a variety of instrumental behaviors such as information seeking, skills development, negotiation, resource pooling, socialization and role restructuring (Thomas, Whitman, Viswesvaran, 2010; Kot, Ślusarczyk, 2013). These advantages emphasize the role of shaping proactivity as a necessary characteristic of future entrepreneurs or organization members.

On the basis of given literature following hypothesis can be formulated:

H1: There is a positive correlation between entrepreneurial intentions and proactivity potential

Participation in entrepreneurship education exerts a positive impact on entrepreneurial orientation in professional life (Okreglicka et al., 2017). Individuals observing proactivity or training proactive behaviors may attribute desirable personal qualities to the proactive actor and see him or her as being more competent and more confident, and having more advancement potential (De Stobbeleir, Ashford, de Luque, 2010).

3. Methodology

The scope of the research was to identify the determinants and main benefits of starting own business by students, and finding dependencies between entrepreneurial intentions and proactivity of students in Poland. After in-depth literature review, a questionnaire survey in online form was realized. The research was conducted in the last quarter of 2017 among 243 Polish students.

Sampling was mixed: purposeful and random. The first stage was purposeful, as it consisted of choice university with economic/business/management departments. The next step of the research was the random selection of students from the university to improve the quality of study and insure its partial representativeness. Selected respondents completed the survey questionnaire in online form. The gender composition 26.8% male, 73.2% female.

In total, 243 full questionnaires were obtained, which were subjected to further statistical analysis. For the questions with the list of items, the multiple choices (max 3 selections for the question) were applied. For other questions the 5-point Likert scale was adopted. After data collection, data were entered into a statistical program Statistica 12. For evaluation, the descriptive statistics and the Pearson chi-square statistic were used by means of which the assumption about independence of the answers was statistically verified. For variables correlation analysis, the Kendall Tau coefficient was calculated for $p\text{-value} = 0.001$.

The research should be treated as a initial study, and was carried out to identify areas of further study rather than to generalize findings.

4. Results

The first step in entrepreneurial orientation investigation was the assessment of students' entrepreneurial intentions. It was defined as an intent to start own business after graduation. Generally, 51% of respondents declared the intent to run own business in the future, while only 15% was not interested in entrepreneurship.

The result of Chi-square independence test show that for $p < 0.05$ it is necessary to reject the null hypothesis and confirm the alternative hypothesis that there is dependency between answers of female and male students in Poland. It means, that male students are more entrepreneurial oriented than female students.

Table 1. Students entrepreneurial intentions as intent to start own business after graduation

gender	Absolutely no	Rather no	Neither yes nor no	Rather yes	Absolutely yes
Female	17	18	65	57	21
Male	0	2	18	26	19
Chi square = 19.83455; df = 9; p = 0.018964					

Source: Own research

The next step of the research was the recognition of the main benefits of starting own business in students' opinions (Figure 1). The reason for this question was the establishing the importance of the proactive causes among the most common elements, which were:

- A. You are the boss for yourself;
- B. The whole earned profit belongs to you;
- C. You set your working hours;
- D. You can build your own team of people with whom you will work;
- E. You are working on something that interests you;
- F. You can influence people / society through the work you choose;
- G. You can check yourself, you can show your abilities;
- H. Having a company would give you prestige;
- I. Having a business would give you satisfaction.

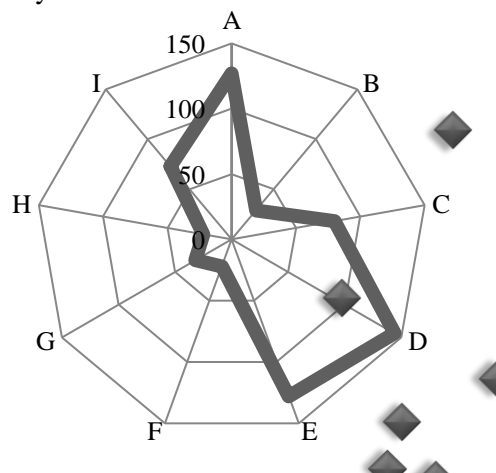


Figure 1. The main benefits of starting own business in students' opinions (%)

Source: Own research

The results emphasize the dominant role of 3 factors: being ones own boss, possibility of choice the co-workers (autonomy) and possibility of choice of interesting tasks (proactivity). Other factors seem to be much more influential or have no influence at all.

After the preliminary stage of research, the main part began with selected questions connected with proactive attitude and behaviors, evaluated in 5-point Likert scale. Table 2 shows that all elements have been rated over 3 (above average value 3,00). It allows assuming that the surveyed students have the proactive orientations, which is helpful in future career path as an entrepreneur.

Table 2. Students proactive

	Average	Median	Min.	Max.	Standard deviation
Active and self-seeking development opportunities	3,87	4,00	1,00	5,00	0,91
Current or planned search for additional courses (internships, training, lectures, etc.) that may be useful in a later career	3,91	4,00	1,00	5,00	1,11
Tracking changes occurring in the economic environment, politics, the labor market, etc.	3,12	3,00	1,00	5,00	1,14
Taking initiatives in organizing various activities /activities	3,17	3,00	1,00	5,00	1,19

Source: Own research

The last step of the research was statistical conformation of dependencies between variables: selected proactive factors and the entrepreneurial intentions of students. It allows to conclude if the proactive attitude and behaviors determine the further intentions to start own business. Using the Kendall Tau correlation coefficient, the moderate correlations were confirmed by p-value = 0,01.

Table 3. Correlations between students' proactive behaviors and intentions to start own business

	Entrepreneurial intentions	
	Kendall Tau	p-value
Active and self-seeking development opportunities	0.254	0.01
Current or planned search for additional courses (internships, training, lectures, etc.) that may be useful in a later career	0.163	0.01
Tracking changes occurring in the economic environment, politics, the labor market, etc.	0.149	0.01
Taking initiatives in organizing various activities/activities	0.218	0.01

Source: Own research

The research results confirming dependencies between entrepreneurial intents and proactivity encourage to conclusion that the proactivity should be developed within educational system to strengthen the proactive intentions and behaviors which are one of the most important determinants in entrepreneurship development.

5. Conclusion

Many universities offer courses on entrepreneurship in order to provide students the necessary theoretical and practical business knowledge. This applies not only to economic fields of study but any other fields as well. The lectures and trainings are seen as the best channel to create awareness in young people to apply their skills and knowledge as potential entrepreneurs.

One of the important skills or attitudes for future entrepreneurs is proactivity being understood as independent, future-focused actions to anticipate or initiate changes in the environment. The proactive initiatives or behaviors could be shaped and strengthened by proper education system at all its levels. Taking actions and initiatives as a feature of individuals could be considered as important determinant of setting up own business. From this perspective the area of proactive potential should be constantly analyzed to prepare constructive recommendations for educational system improvements.

This study has successfully achieved an overall understanding about the field of proactivity in attitude and behaviors of students as well as its correlations with entrepreneurial intentions. The statistically significant and positive correlation with moderate intensity was confirmed between the mentioned variables, which allowed confirming the main hypothesis (H1). It means that the more proactive the individual is the more often he declare the intent to start own business in the future.

The novelty of the paper was visible by exploring and developing the research problem in selected population of students from Poland. This study contributes to the international resources of entrepreneurial knowledge and outlines the directions of changes in educational systems, especially in shaping the proactivity of young people as a mean of entrepreneurship development, and indirectly to create the economic growth and social welfare.

Pointing the main research limitation, in the first place the lack of full representativeness of the research (study on students from economic/business/management departments on one university) and should be indicated encouraging authors or followers to design developed research in the future.

References

- Artienwicz, N. (2014). Analiza zakresu proaktywności dla poszczególnych stopni kariery zawodowej księgowego. *Journal of Management and Finance*, vol. 12, iss. 2, pp. 161-171.
- Avlonitis, G.J., Salavou, H.E. (2007). Entrepreneurial orientation of SMEs, product innovativeness, and performance. *Journal of Business Research*, vol. 60, iss. 5, pp. 566-575.
- Bahrami, P., Nosratabadi S., Illés B.Cs. (2016). Role of Intellectual Capital in Corporate Entrepreneurship. *Calitatea: Acces La Succes*, vol. 17, iss. 155, pp. 111-115.
- Bateman, T.S., Crant, J.M. (1993). The proactive component of organizational behavior. *Journal of Organizational Behaviour*, vol. 14, pp. 103-118.
- Belschak, F.D., Hartog, D.N.D. (2010). Pro-self, prosocial, and pro-organizational foci of proactive behaviour: Differential antecedents and consequences. *Journal of Occupational and Organizational Psychology*, vol. 83, pp. 475-498.
- Chipeta, E.M., Surujlal, J. (2017). Influence of Attitude, Risk Taking Propensity and Proactive Personality on Social Entrepreneurship Intentions. *Polish Journal of Management Studies*, vol. 15, no. 2, pp. 27-36.
- Crant, J.M. (2000). Proactive behavior in organizations. *Journal of Management*, vol. 26, iss. 3, pp. 435-462.
- De Stobbeleir, K.E.M., Ashford, S.J., de Luque, M.F.S. (2010). Proactivity with image in mind: How employee and manager characteristics affect evaluations of proactive behaviours. *Journal of Occupational and Organizational Psychology*, vol. 83, pp. 347-369.
- DeepaBabu, K.G., Manalel, J. (2016). Entrepreneurial Orientation and Firm Performance: A Critical Examination. *IOSR Journal of Business and Management*, vol. 18, iss. 4, 21-28.
- Dunay, A., Vinogradov, S., Illés B.Cs. (2017). Entrepreneurial attitudes of university students. The Hungarian case study. pp. 81-100. In: Swadźba U., Żak M., Cekiera R. (eds.) *Praca – konsumpcja – przedsiębiorczość: Świadomość ekonomiczna młodego pokolenia*. 384 p. Katowice: Wydawnictwo Uniwersytetu Śląskiego.
- Engelen, A., Kube, H., Schmidt, S., Flatten, T.C. (2014). Entrepreneurial orientation in turbulent environments: The moderating role of absorptive capacity. *Department Research Policy*, vol. 43, pp. 1353-1369.
- Ferreira, F.A.F., Jalali, M.S., Bento, P., Marques, C.S.E., Ferreira, J.J.M. (2017). Enhancing individual entrepreneurial orientation measurement using a metacognitive decision making-based framework, *International Entrepreneurship and Management Journal*, vol. 13, pp. 327-346.
- Gibcus, P., de Kok, J., Snijders, J., Smit, L., van der Linden, B. (2012). Effects and impact of entrepreneurship programs in higher education. Prepared in 2012 for the European Commission, DG Enterprise and Industry, Brussels
- Grant, A.M., Ashford, S.J. (2008). The dynamics of proactivity at work. *Research in Organizational Behavior*, vol. 28, pp. 3-34.
- Grühn, B., Strese, S., Flatten, T.C., Jaeger, N.A., Brettel, M. (2017). Temporal Change Patterns of Entrepreneurial Orientation: A Longitudinal Investigation of CEO Successions. *Entrepreneurship: Theory & Practice*, vol. 41, iss. 4, pp. 591-619.
- Illés, B.Cs., Dunay, A., Jelonek, D. (2015). The Entrepreneurship in Poland and in Hungary. Future Entrepreneurs Education Perspective. *Polish Journal of Management Studies*, vol. 12, no. 1, pp. 48-58.
- Illés, B. Cs., Dunay, A., Nosratabadi, S. (2016). Entrepreneurship Education Questions and Good Practices in Hungary and Central and Eastern European Countries. pp. 409-422. In: *Official Conference Proceedings of the Asian Conference on Education 2016*. 585 p. Nagoya: International Academic Forum.
- Korombel, A. (2012). Enterprise Risk Management in Practice of Polish Small Business – Own Research Results. *The 7th International Scientific Conference "Business and Management"*, vol. 2, pp. 1137-1143. 10-11 May 2012, Vilnius, Lithuania, Vilnius: VGTU Publishing House "Technika".
- Kot, S., Ślusarczyk, B. (2013). The Role of Biomass in the Energy Production in the European Union Countries. *Proceedings of the 7th International Scientific Symposium on Electrical Power Engineering (Elektroenergetika 2013)*, pp. 559-561. Kosice: Technical University of Kosice.

- Lumpkin, G.T., Dess, G.G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, vol. 21, iss. 1, pp. 135-172.
- Lumpkin, G.T., Dess, G.G. (2001). Linking Two Dimensions of Entrepreneurial Orientation to Firm Performance: The Moderating Role of Environment and Industry Life Cycle. *Journal of Business Venturing*, vol. 16, pp. 429-451.
- Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science*, vol. 29, pp. 770-791.
- Okřęglicka, M., Havierniková, K., Mynarzová, M., Lemańska-Majdzik, A. (2017). Entrepreneurial Intention Creation of Students in Poland, Slovakia and Czechia, *Polish Journal of Management Studies*, vol. 15, no. 2, pp. 162-172.
- Parker, S.K., Bindl, U.K., Strauss, K. (2010). Making things happen: A model of proactive motivation. *Journal of Management*, vol. 36, iss. 4, pp. 827-856.
- Parker, S.K., Williams, H.M., Turner, N. (2006). Modeling the Antecedents of Proactive Behavior at Work. *Journal of Applied Psychology*, vol. 91, iss. 3, pp. 636-652.
- Rauch, A., Wiklund, J., Lumpkin, G.T., Frese, M. (2009). Entrepreneurial Orientation and Business Performance: An Assessment of Past Research and Suggestions for the Future. *Entrepreneurship Theory & Practice*, vol. 33, iss. 3, pp. 761-787.
- Seibert, S.E., Crant, M.J., Kraimer, M.L. (1999). Proactive personality and career success. *Journal of Applied Psychology*, vol. 84, pp. 416-427.
- Shin, Y., Eom, C. (2014). Team Proactivity as a Linking Mechanism between Team Creative Efficacy, Transformational Leadership, and Risk-Taking Norms and Team Creative Performance. *Journal of Creative Behavior*, vol. 48, iss. 2, pp. 89-114.
- Sieger, P., Fueglistaller, U.; Zellweger, T. (2011). *Entrepreneurial Intentions and Activities of Students across the World*. International Report of the GUESSS Project 2011. University of St.Gallen.
- Strauss, K., Parker, S.K., O'Shea, D. (2017). When does proactivity have a cost? Motivation at work moderates the effects of proactive work behavior on employee job strain. *Journal of Vocational Behavior*, vol. 100, pp. 15-26.
- Swadzba, U., Cekiera, R. (2015). Entrepreneurship as a part of the socio-cultural capital a sociological analysis. *Proceedings of the 5th International Conference on Management 2015. Management, leadership and strategy for SMEs' competitiveness*, pp. 235-241. Gödöllő: Szent István University Publishing House.
- Thomas, J.P., Whitman, D.S., Viswesvaran, C. (2010). Employee proactivity in organizations: A comparative meta-analysis of emergent proactive constructs. *Journal of Occupational and Organizational Psychology*, vol. 83, pp. 275-300.
- Venkatraman, N. (1989). Strategic orientation of business enterprises: The construct, dimensionality, and measurement. *Management Science*, vol. 35, iss. 8, pp. 942-962.
- Walter, A., Auer, M., Ritter, T. (2006). The impact of network capabilities and entrepreneurial orientation on university spin-off performance. *Journal of Business Venturing*, vol. 21, pp. 541-567.
- Wong, P., Ho, Y., Autio, E. (2005). Entrepreneurship, innovation and economic growth: evidence from GEM data. *Small Business Economics*. vol. 24, pp. 335-350.
- Zellweger, T., Sieger, P. (2012). Entrepreneurial orientation in long-lived family firms. *Small Business Economics*, vol. 38, iss. 1, pp. 67-84.

Iwona Otola^{1*}

Czestochowa University of Technology
Poland

Eliane Simões²

Centro Estadual de Educação Tecnológica Paula Souza
Brazil

Marcelo T. Okano³

Centro Estadual de Educação Tecnológica Paula Souza
Brazil

64. IDENTIFICATION OF VRIN RESOURCES IN JOINT STOCK COMPANIES

Abstract: The aim of this article is to identify resources using the VRIN criteria (valuable, rare, inimitable, not substitutable) in joint stock companies. In order to achieve the objective, theoretical framework of resources according to the resource-based view was first outlined. The focus was on the main assumptions of the resource –based view and detailed characteristics of resources attributes. An essential part of this research is the presentation and analysis of the results of a survey conducted on a sample of 63 companies listed on the WSE and NC markets in Warsaw in relation to their stock base. The intention of the conducted research is to indicate how the entrepreneurs regard the resources in accordance with VRIN model. Our research indicates that VRIN criteria meet intangible assets, mainly intellectual property and human capital.

Keywords: listed companies, resource-based view, VRIN model.

JEL Classification: M21, L20

1. Introduction

Resource theory in strategic management is currently of great interest to both scientists and practitioners of economic life. The literature of the subject emphasizes that resources of the enterprise are a key factor that determines its market position. Most of the previous research on enterprise competitiveness was based on Porter's approach to strategy building, emphasizing the relation between the enterprise and its external environment. In contrast, the resource theory focuses on enterprise internal attributes as important factors that affect its competitive position (Habbershon, Williams, 1999; Pablo et al. 2007; Almarri, Gardiner, 2014). An important subject of RBV (resource-based view) discussion is the concept of resource value, which subsequently allow to generate benefits for the enterprise in order to win a lasting competitive advantage. While the theoretical model indicating resources features in enterprises was developed by Barney (1991), there is still no research allowing a better understanding of how the enterprises should configure their resource base. The literature of the subject emphasizes insufficient empirical research justifying the theoretical foundation of the discussed approach. Given the above reservations we made an attempt to conduct research on resources held by an enterprise according to VRIN model. The purpose of this paper is to show how individual resource types are perceived in an enterprise in relation to such features as valuable, rare, inimitable and non-substitutable.

2. Theoretical Assumption of Resource-Based Theory

2.1. The Concept of RBV

The origins of the resource theory can be found in the works of Penrose (1959) and Selznick (1957). One of the foundations of the resource theory are resource strategic features, which, when configure properly, allow enterprises to win competitive advantage and in consequence gain an economic rent (Barney, 1991; Krupski, 2014). The resource approach, just like any theory, is based on some

¹ Assoc. Prof. Iwona Otola Ph.D.; Armii Krajowej 19 b, 42-200 Częstochowa, Poland, iwona.otola@wz.pcz.pl

² Prof. Eliane Simões Ph.D.; Rua dos Bandeirantes 169, Sao Paulo, Brazil, eliane@iqeduc.com.br

³ Prof. Marcelo T. Okano Ph.D.; Rua dos Bandeirantes 169, Sao Paulo, Brazil, marcelo.okano@fatec.sp.gov.br

* Corresponding author

assumptions, while the two of them that distinguish it from the other are: enterprise heterogeneity and resources immobility (Barney, Arian 2001; Barney, Hesterny, 2015). According to the first assumption, resources differ significantly across competing enterprises, which is in contrast to the concept of structure-conduct-performance (SCP), where resources differ across industries or strategic groups. Also, according to the second assumption, the difference in held resources across enterprises may remain constant over some time. Thus, some resources may be impossible to substitute, as they are too expensive to purchase for competing enterprises. The two above-mentioned assumptions explain why some enterprises are more competitive than the others from the same industry. The most important in the resources theory are the resource strategic features discussed before, that decide their unique character and have a key importance for enterprise development processes. Therefore it is not important how many resources are held or controlled by the enterprise, but what is the configuration of resource base characterized by the VRIN framework. Resource criteria defined by Barney, ie. valuable, rare, inimitable and non-substitutable, allow to determine the enterprise strategic potential. Two of those attributes, ie. value and rarity of resources allow enterprises to create new economic value, while two other – inimitability and non-substitutability – provide the isolating mechanisms that lock in rents associated with those resources (Barney, 1991; Peteraf, 1993; Rumelt, 1984). The literature of the subject often indicates, that the resource theory is characterized by a prescriptive approach, where the meeting of particular criteria by resources leads to winning a lasting competitive advantage and gaining higher profits than the market average (Rugman, Verbeke, 2002), but the main drawback is the lack of guidance on how to achieve that (Bowman, Collier, 2006). It is mentioned that winning a competitive advantage is possible if strategic resources are configured and integrated in a way where they generate additional value for the customer and thus increase the effectiveness and efficiency of a given enterprise.

When analyzing the most important element of RBV, which are resources, it should be noticed, that the literature of the subject reveal numerous definitions of various degree of generality. A resource can be recognized as a cumulated source of certain own goods, both material and non-material (Grabowska, 2010). Barney (1991) defines resources in a quite wide way, as ‘all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness’. In other words the enterprise resource base include all means at the enterprise disposal, which are used to create value (De Witt, Meyer, 2010). However the modern approach to enterprise resources is more complex and insightful. Often the definition of resources itself is very detailed and refers precisely to the scientific considerations of a given author. According to Grant (1991) resources do not generate an economic rent per se, but have to be useful and in some way managed in the enterprise in order to produce this rent. It was also the contribution for the development of capabilities approach, and subsequently of dynamic capabilities approach. The identification of a separate category of ‘capabilities’ besides resources introduced some kind of confusion at a very definition level Barney and Hesterly (2015) introduced the category of capabilities, as a subset of resources. The authors clearly emphasize that capabilities themselves do not allow the enterprise to create the plan and implement the strategy. However they are necessary for the enterprise to be able to use its resources in order to develop and implement the strategy. Some other authors (Teece, Pisano, Shuen, 1997; Makadok, 2001) distinguish between resources and capabilities, where resources are able to bear the potential for success, and capabilities are necessary to transform this potential into success (Nothnagel, 2008). The resource theory emphasizes primarily the resource attributes and their base configuration, while in the case of dynamic capabilities attention is paid to the resource renewal – the resource reconfiguration to new combinations of operational capabilities (Otolá, Ostraszewska, Tylec, 2013).

2.2. Resources Criteria

Recognizing resources as a strategic potential is related to their attributes. The theoretic concept of the VRIN model developed by Barney (1991), defines what features the resources have to demonstrate in order to allow the enterprise to gain an economic rent. According to VRIN structure those should be: valuable, rare, inimitable and non-substitutable. This is where the discussion starts on the true meaning of the above-mentioned features. The literature of the subject usually argues, following Barney’s declaration that valuable resource enables the generation of significant benefits to the customer or increases effectiveness and/or efficiency of enterprise operation. Thus the

resources are valuable for the enterprise if they allow to use the opportunities and avoid threats in the environment. It can be stated that they enable an easy adaptation of the enterprise to changing environment conditions. The value of resources has to be estimated in the context of corporate strategy and the specific business environment in which the company operates (Talaja, 2012). However the resources value is the very feature that is the most criticized, referring to the tautological nature of the resource theory. The term resource value used by Barney appears both in interpretations and explanations (Kraaijenbrink, Spender, Groen, 2010), thus it is difficult to deduce what the term ‘valuable’ actually means. Bowman and Ambrosini (2007) attempted to explain the term ‘valuable’ in reference to the resource theory. The authors indicate three ways of perceiving the resource value: usage value (perception of the value by the customer), monetary value (the amount the customer is willing to pay) and exchange value (the amount that was actually paid). The resource rarity means that they are not available on the market for all enterprises. If rare resources are controlled by a small number of enterprises, then they are able to base their value creation strategy on those resources. Creating a distance from competition that way may contribute to winning the competitive advantage. On the other hand, if most of the competitors hold the same valuable resource, they will most probably use it in similar way, thus implementing the strategy of value creation (Cardeal, Antonio, 2012). Resources that are difficult to copy are about to secure the lasting competitive advantage. So called ‘isolating mechanisms’ enable the resource protection against copying and in the long term protect them against the possibility of competitor value snatching (Mazur, Kulczyk, 2013). Many different attributes may be used as a basis for the development of isolating mechanisms, above all any knowledge, physical, or legal barrier that may prevent replication of the value-creating new task, product, or service by a competitor (Lepak, Smith, Taylor, 2007). It is difficult to find a resource that will not be imitated in the long run, but it is worth ensuring that the process of its imitation by other enterprises takes a long time. If valuable and rare resources are easy to imitate they will be quickly copied by the competition and so the competitive advantage potential will be gone (Cardeal, Antonio, 2012). Another feature of the resource that gives an opportunity for a lasting competitive advantage is non-substitutability. This feature is somehow related to the before-discussed attribute of imitation barrier. Thus, if resources are inimitable they are likely to be non-substitutable as well (Talaja, 2012). Barney (1991) in his considerations emphasizes that the above-discussed attributes of resources should be considered as a whole, in an integrated way. He uses the term ‘resource bundles’ in this context. In addition he argues, that choosing only one of the features will not result in winning a lasting competitive advantage.

3. Methodology of Research

3.1. Sample and Method

As mentioned before, the literature of the subject provides numerous classifications of resources, from the simplest with the division into material and non-material, to the specification of many groups and subgroups. It is actually difficult to find a resource typology that would incorporate all their key aspects. The continuous research on enterprise resources allow to develop new, own classifications (Otolá, Tylec, 2017). In order to identify resources that meet VRIN criteria an own, author’s classification was prepared (previously used to study resources elasticity), specifying the main group and group components (Table 1).

Resources typology presented this way allows to conduct empirical research intended to obtain an answer to the question of VRIN attributes of individual resources. A survey on VRIN attributes of resources held by enterprises was conducted. The research sample included 63 companies listed on the Warsaw Stock Exchange and the New Connect in Warsaw, from various industries. The survey was conducted in April 2015, using the method of computer-assisted telephone interviewing (CATI) and computer-assisted web interviewing (CAWI).

Table 1. Typology of resources

Resource group	Components
Material assets	land, buildings, machinery, equipment, technological lines, software, information systems

Financial assets	own financial funds, cash flow, self-financing ability, debt level
Organizational capital	enterprise organizational structure, organizational culture, management methods
Intellectual property	patents, licenses, trademarks, copyrights, databases
Human capital	employee skills, employee experience, employee intellectual potential, employee specialized knowledge, management managerial skills, creativity
Relations	formal, informal; with the environment, inter-organizational relation, with customers, with suppliers
Attitudes and employee behavior	employee loyalty, employee availability, motivation and commitment at work
Positional resources	commercial brand, customer loyalty, reputation, company image, knowledge about competition

Source: Otolá and Tylec, 2017

3.2. Results

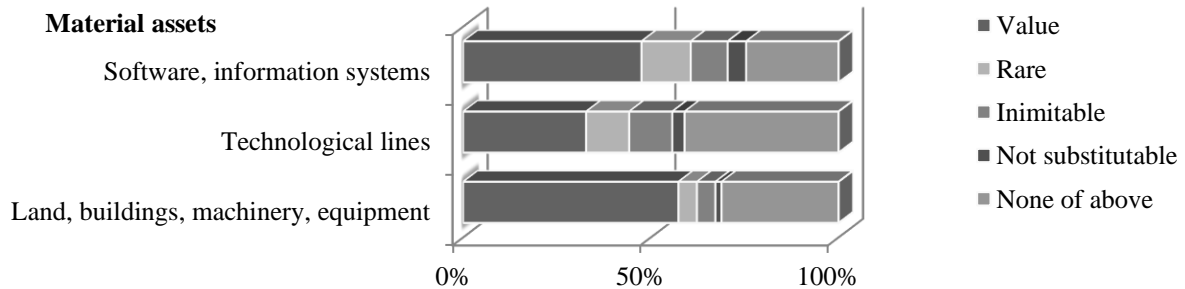
The results of the survey were presented in Table 2 and in Figure 1.

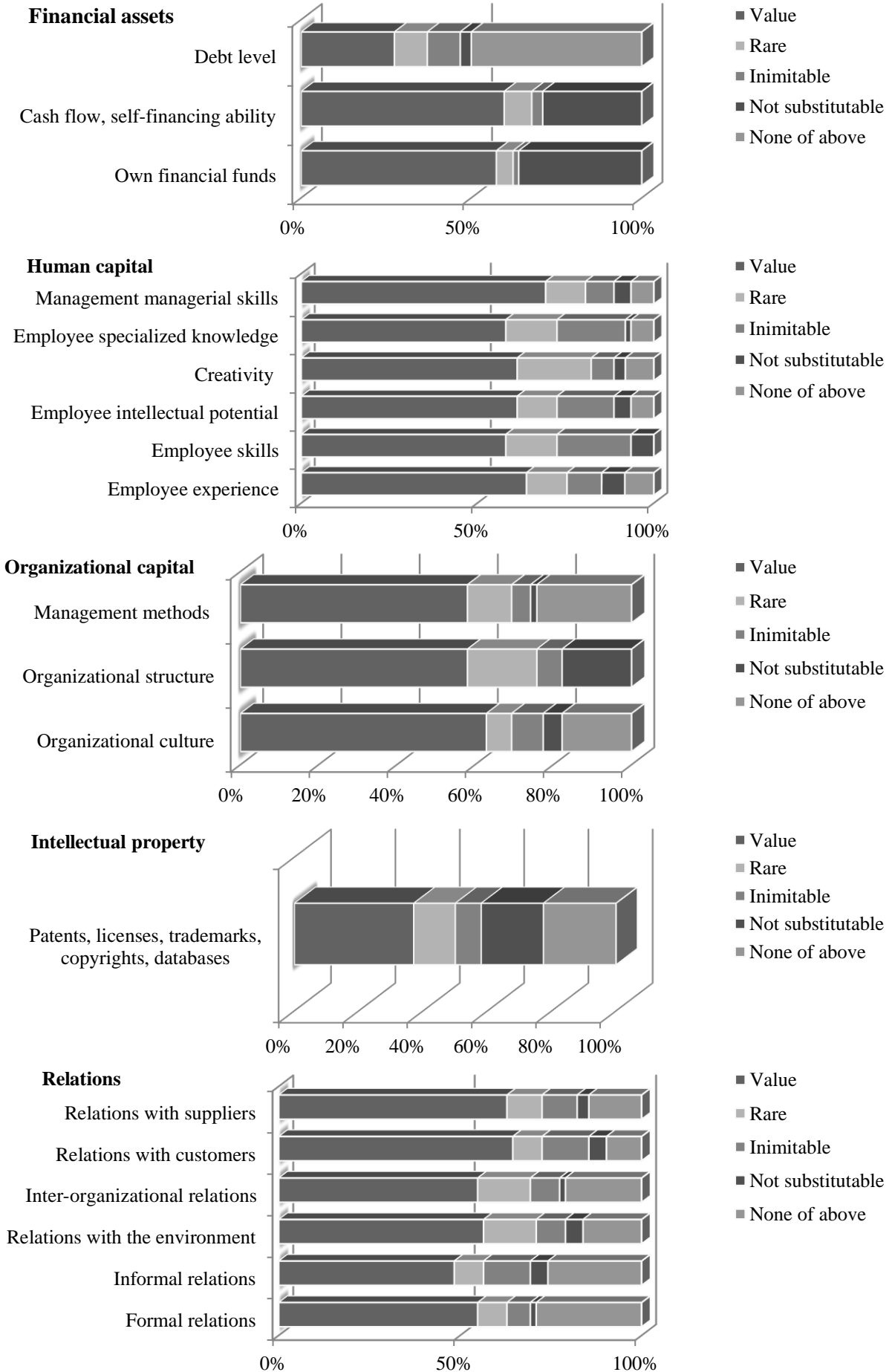
Table 2. Percentage of entrepreneurs evaluating resources according to VRIN categories – data averaged for resource groups

Resource group	Valuable	Rare	Inimitable	Not substitutable	None of above	No answer
Material assets	44.4%	9.5%	8.5%	3.2%	31.2%	3.2%
Financial assets	47.1%	7.4%	4.8%	22.2%	16.4%	2.1%
Human capital	60.8%	13.8%	13.2%	4.5%	5.8%	1.9%
Organizational capital	58.7%	11.6%	6.3%	7.9%	13.8%	1.6%
Intellectual property	36.5%	12.7%	7.9%	19.0%	22.2%	1.6%
Relations	56.1%	10.3%	9.5%	3.4%	19.0%	1.6%
Attitudes and employee behavior	64.6%	12.7%	5.8%	3.7%	11.6%	1.6%
Positional resources	57.5%	7.5%	10.3%	6.0%	16.3%	2.4%

Source: Own evaluation

The values presented in Table 2 indicate that in each group discussed the most resources held by enterprises are characterized by the ‘valuable’ feature. The most of valuable resources fall into the group of attitudes and employee behavior (64.6% of answers). It is significant that almost 1/3 of surveyed enterprises believe that material assets do not fall into any of the feature categories. It means that material assets are not used to create unique products providing unique value for the customer. Rare resources were identified by the enterprises in groups of human capital (13.8%), intellectual property (12.7%) and attitudes and employee behavior (12.7%). Resources difficult to imitate were assigned by the respondents to groups of human capital (13.2%) and positional resources (10.3%). The attribute of non-substitutability was selected only for two groups, ie. financial assets (22%) and intellectual property (19%). Such answers for the group of intellectual property should not be surprising as they are the results of creative work characterized by uniqueness. The opposite applies for the group of financial assets where the non-substitutability proves the availability of own financial funds for the requirements of the business.





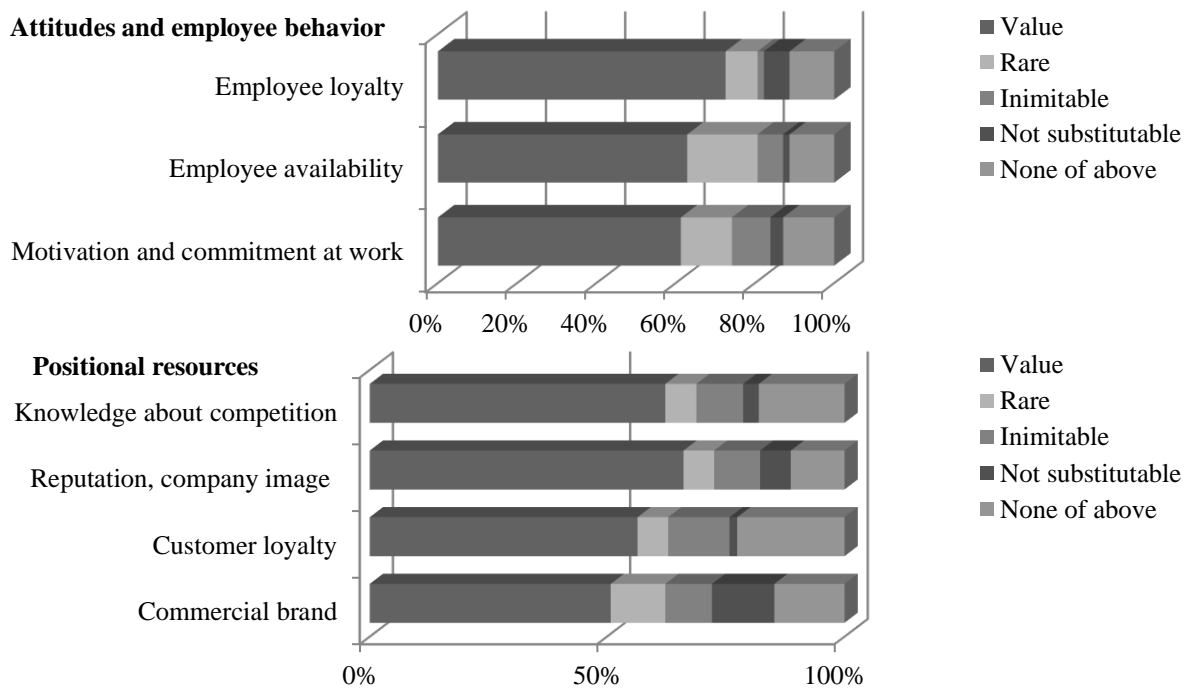


Figure 1. Resources according to VRIN categories in responses of surveyed enterprises

* Due to the insignificant percentage of 'Hard to say' answers – to keep the legibility of graphical data presentation – the Figure excludes the presentation of data for that answer.

Source: Own evaluation

Another analysis made related to resource strategic features according to VRIN framework for individual components in separate groups. When evaluating the answers given within the analyzed resource groups it is possible to notice a kind of their differentiation in the individual classification. For all discussed groups it was indicated that the components of those resources fall into 'valuable' category in over 45%. The exception were technological lines from 'material assets' group (31.7%), debt level from 'financial assets' group (27%) and patents, licenses, trademarks, copyrights, databases from 'intellectual property' group (36.5%). The lower percentage in the case of 'intellectual property' group is the result of indicating another feature – not substitutable. Because each resource was considered valuable in significant percentage, the following analysis of features of resources from individual groups will not take into account 'valuable' attribute. Within 'material assets' group, technological lines were considered also 'rare' and 'inimitable' by 11% of respondents. It should be noted here that this group recorded high values of 'none of above' answers, which should not raise any objections due to high market availability and substitutability. When analyzing 'financial assets' group: two of the resources were found non-substitutable: own financial resources by almost 35% of respondents and cash flow, self-financing ability by 28.6% of respondents. Meanwhile almost 50% of respondents indicated debt level as a resource that does not demonstrate any VRIN features. Employee skills (20.6%) and employee specialized knowledge (19%) from 'human capital' group were considered difficult to imitate. Also 20% of respondents recognize creativity of employees as a resource difficult to obtain by other market participants. In 'organizational capital' group, organizational structure was found a rare (17.5%) and not substitutable (17.5%) resource. 12.7% answered that informal relations and relations with customers are difficult to copy or create by competitors, while relations with the environment and relations within the organization have an unique character in 14.3%. Despite that, over $\frac{3}{4}$ of respondents believe that formal and informal relations do not fit into VRIN framework, and $\frac{1}{5}$ also think the same of relations within the organization. From the 'attitudes and employee behavior', employee loyalty was found the most valuable feature. 71.4% of answers prove that. In the case of availability of employees and motivation and commitment at work over 60% of respondents believe those resources are valuable from the perspective of using market opportunities and avoiding threats in the environment. In addition those features in 12.7% (employee availability) and 17.5% (motivation and commitment at work) were found rare. Interesting

results were generated for ‘positional resources’ group. The answers indicated commercial brand as rare resource in 11.1%, and as inimitable in 12.7%. Customer loyalty was recognized in 12.7% as a resource difficult to copy by competitors. It is also significant that many resources (ie. debt level, organizational culture, management methods, customer loyalty, knowledge about competition and various resources from ‘relations’ and ‘material assets’ groups) were assigned to the answer ‘none of above’ which suggests that surveyed enterprises were not able to assign features to particular resources.

4. Conclusion

The surveys carried out are one of the few presented in the literature and referred to the characteristics of resources. This initial analysis was focused on the assessment of enterprise resource characteristics by managers. The conducted survey allows us to notice that attributes of resources are variously assigned by entrepreneurs. This may be due to the specifics of their business. The analysis of the above data indicates that special attention should be paid to two groups of resources, i.e. intellectual property and human capital. In addition, it is worth to emphasize that in many cases entrepreneurs were unable to describe the characteristics of resources by choosing the answer 'none of above'. Nevertheless, the research was conducted among Polish listed companies, hence it would be expected that managers will be able to assign features to particular resources. These pilot studies have many limitations. First, the assessment issued by managers can be perceived as subjective. Secondly, it seems to us valuable to carry out a deeper analysis of enterprise resources, but with particular emphasis on the specificity of the industry and with regard to intangible assets that definitely meet the VRIN criteria to a greater extent. In further research, we would also like to compare resource bases of enterprises from developing and developed countries.

References

- Almarri, K., Gardiner, P. (2014). Application of resource-based view to project management research: supporters and opponents. *Procedia-Social and Behavioral Sciences*, vol. 119, pp. 437-445.
- Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, vol. 17, pp. 99-120.
- Barney, J.B., Arian, A.M. (2001). The resource-based view: Origins and implications. In M.A. Hitt, R.E. Freeman, J.S. Harrison (Eds.) *The Blackwell Handbook of Strategic Management* (pp. 124-188). Oxford: Blackwell.
- Barney, J.B., Hesterly, W. (2015). *Strategic management and competitive advantage concepts and cases*. Pearson.
- Bowman, C., Ambrosini, V. (2007). Identifying valuable resources. *European Management Journal*, vol. 25, iss. 4, pp. 320-329.
- Bowman, C., Collier, N. (2006). A contingency approach to resource-creation processes. *International Journal of Management Reviews*, vol. 8, iss. 4, pp. 191-211.
- Cardeal, N., Antonio, N.S. (2012). Valuable, rare, inimitable resources and organization (VRIO) resources or valuable, rare, inimitable resources (VRI) capabilities: What leads to competitive advantage? *African Journal of Business Management*, vol. 6, iss. 37, pp. 10159-10170.
- De Wit, B., Meyer, R. (2010). *Strategy synthesis: Resolving strategy paradoxes to create competitive advantage*. Cengage Learning EMEA.
- Grabowska, M. (2010). Formation of Relationships Between Share Capital and Resource Capital as a Problem of Strategy of Equity Management in Companies. In M. Grabowska (Ed.), *Equity Management. Strategy and Control* (pp.32-58). Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Grant, R. (1991). The resources-based theory of competitive advantage. *California Management Review*, vol. 33, pp. 114-134.
- Habbershon, T., Williams, M. (1999). A Resource-Based Framework for Assessing the Strategic Advantages of Family Firms. *Family Business Review*, vol. 12, iss. 1, pp.1-25.
- Kraaijenbrink, J., Spender, J.C., Groen, A.J. (2010). The resource-based view: a review and assessment of its critiques. *Journal of management*, vol. 36, iss. 1, pp. 349-372.
- Krupski, R. (2014). Cechy zasobów strategicznych: Teoria i badania empiryczne. *Prace Naukowe Wałbrzyskiej Wyższej Szkoły Zarządzania i Przedsiębiorczości*, vol. 29, pp. 5-12.
- Lepak, D.P., Smith, K.G., Taylor, M.S. (2007). Value creation and value capture: a multilevel perspective. *Academy of management review*, vol. 32, iss. 1, pp. 180-194.

- Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic Management Journal*, vol. 22, iss. 5, pp. 387-401.
- Mazur, K., Kulczyk Z. (2013). Isolating mechanisms as sustainability factors of resource-based competitive advantage. *Management*, vol. 17, iss. 2, pp. 31-46.
- Nothnagel, K. (2008). *Empirical research within resource-based theory: A meta-analysis of the central propositions*. Springer Science & Business Media.
- Otola, I., Tylec, A. (2017). Elastyczność zasobów przedsiębiorstwa w kontekście posiadanych aktywów. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, iss. 463, pp. 97-106.
- Otola, I., Ostraszewska, Z., Tylec, A. (2013). New directions of development of resource-based view in creating a competitive advantage. *Business Management Dynamics*, vol. 3, iss. 2, pp. 26-33.
- Pablo, A., Reay, T., Dewald, J., Casebeer, A. (2007). Identifying, enabling and managing dynamic capabilities in the public sector. *Journal of Management Studies*, vol. 44, iss. 5, pp. 687-708.
- Penrose, E.T. (1959). *The Theory of the Growth of the Firm*. New York: John Wiley Sons.
- Peteraf, M. (1993). The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, vol. 14, iss. 3, pp. 179-191.
- Rugman, A.M., Verbeke, A. (2002). A final word on Edith Penrose. *Journal of Management Studies*, vol. 41, iss. 1, pp. 205-217.
- Rumelt, R.P. (1984). Toward a strategic theory of the firm. In R. B. Lamb (Ed.), *Competitive strategic management* (pp. 286-300). Englewood Cliffs (NJ), Prentice-Hall.
- Selznick, P. (1957). *Leadership in administration: A sociological interpretation*. Berkeley, University of California Press.
- Talaja, A. (2012). Testing VRIN framework: resource value and rareness as sources of competitive advantage and above average performance. *Management: Journal of Contemporary Management Issues*, vol. 17, iss. 2, pp. 51-64.
- Teece, D.J., Pisano, G. Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Journal of Management Reviews*, vol. 9, pp. 31-51.

Iwona Otola^{1*}

Czestochowa University of Technology
Poland

Agnieszka Tylec²

Czestochowa University of Technology
Poland

65. RELATION BETWEEN CSR AND CFP IN POLISH STOCK EXCHANGE LISTED COMPANIES

Abstract: The purpose of this article is to examine the relations between the implementation of Corporate Social Responsibility (CSR) by companies and their financial and market performance. Today CSR is recognized as an important management instrument based on the principle of respecting all the stakeholders of the company, without sacrificing business objectives. In this context, the key issue seems to be the analysis of quality characteristics relations between CSR and financial performance of companies. The empirical research focused on the study of relations, whether the CSR report drafted in the current year will affect the future performance of the company, both market and financial, and how the specific variables affects the companies approach to CSR. The research covers the companies listed on the Warsaw Stock Exchange between 2011 and 2014. The concept of CSR should benefit the company, its environment, and stakeholders. Identifying the way CSR affects the future financial and market performance of companies can contribute to the implementation of those principles by companies, which have not done it yet, in order to achieve intended benefits.

Keywords: analysis of mass phenomena interrelations, CSR, economic performance of companies, listed companies.

JEL Classification: M14, G30

1. Introduction

Corporate Social Responsibility (CSR) has been attracting growing interest of managers, business environment institutions, investors and public administration, gradually becoming an indicator of corporate governance and an indispensable element of corporate development strategy.

Growing interest of economic life practitioners is also accompanied by the increased interest in this subject among researchers. Therefore literature of the subject can be accounted for numerous elaborations that present the nature of CSR, including the indication of its advantages and disadvantages, or so-called good practices. It is also included the discussion of issues related to the benefits resulting from the involvement in socially responsible activities, i.e. marketing/image benefits, benefits for the environment, increased interest of investors, improved relations with the community, government, public administration, employees, or increased loyalty of consumers, and thus the effect on financial performance and the enterprise value (Leoński, 2015; Lulewicz-Sas, 2013; Brendzel-Skowera, 2013). However, it should be noticed, that in Polish literature, the available publications are in most of descriptive character and generally do not include quantitative studies. But if we emphasize the fact that the implementation of CSR constitutes an additional cost, then the essential question to be asked by entrepreneurs and theoreticians should be: how the implementation of CSR principles affect the financial performance of the enterprise and how to measure such an effect. Primary scientific purpose of this paper is to analyze, in quantitative terms, obtained financial and market results of companies in reference to CSR principles used. The structure of this paper is organized as follows. Section 2 presents definitions and concepts of CSR, with a special focus on the relations between CSR and CFP. In Section 3 we describe the methodology, variables and data, as well as present the research results. And finally, Section 4 concludes the paper.

¹ Assoc. Prof. Iwona Otola Ph.D.; Armii Krajowej 19 b, 42-200 Częstochowa, Poland, iwona.otola@wz.pcz.pl

² Agnieszka Tylec Ph.D.; Armii Krajowej 36b, 42-200 Częstochowa, Poland, agnieszka.tylec@wz.pcz.pl

* Corresponding author

2. CSR and Economic Performance – Literature Review

2.1. Definitions of CSR

Undertaking studies on using CSR in enterprises, at its very beginning, requires the definition of this term. The idea of CSR was born in 1950s. The first definition, proposed by Bowen (2013) suggests that social responsibility is „*an obligation of entrepreneurs to make such policy, make such decisions, and to choose such directions of business, that are consistent with the goals and values of the society*”. Many decades have passed since the formulation of this definition and the literature of the subject witnessed the emergence of many new descriptions of this term, that are vital for the proper understanding of modern idea of CSR. CSR idea is related to running business in accordance with the law and international ethical standards, with the allowance to interests of various social groups, in a way that it contributes to the sustainable development and the improvement of the society life (Szwajca, Nawrocki, 2016). Many negative events of economic life (including financial crises and enterprises bankruptcies resulting mainly from managerial abuse) and the degradation of natural environment accompanied by the growing social awareness have led to the increase in many stakeholder groups expectations towards any organizations. Therefore it is not surprising that CSR concept became an object of interest for institutions, i.e. the European Union, World Business Council for Sustainable Development (WBCSD, 1999). Also there were associations founded, i.e. Business for Social Responsibility (BSR), established in 1992, that is supposed to provide knowledge on CSR concept to enterprises as well as become a platform for know-how exchange by the management (Dahlsrud, 2008; Carroll, Shabana, 2010).

The first mention of CSR concept in the EU emerged in Green Paper: Promoting a European Framework for Corporate Social Responsibility (2001), which defines CSR as: “*a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis*”. However, it is clearly emphasized that social responsibility is not only the fulfillment of legal requirements, but also goes beyond basis legal obligations and invests in human capital, natural environment and relations with stakeholders. A similar definition of CSR was developed by the WBCSD (1999), under which CSR ‘*is the continuing commitment by business to contribute to economic development while improving the quality of life of the workforce and their families as well as of the community and society at large*’. In 2011 the definition adopted by the EU was altered and currently CSR is ‘*the responsibility of enterprises for their impacts on society*’. Therefore it implies that ‘*enterprises should have in place a process to integrate social, environmental, ethical and human rights concerns into their business operations and core strategy in close collaboration with their stakeholders*’ (MEMO/11/730, 2011). BSR defines corporate social responsibility as ‘*achieving commercial success in ways that honor ethical values and respect people, communities, and the natural environment*’ (White, 2006). The above definitions primarily reveal key dimensions that characterize their meaning, i.e. social, economic, environmental, stakeholder and philanthropic dimensions. Studies on individual dimensions of various CSR definitions were conducted by Dahlsrud (2008). Of the 5 dimensions listed above, 4 recorded the ratio of contribution to defining CSR term above 80% and only the environmental dimension was ranked lower at the level of 59%. It should be noticed here that some definitions include those dimensions simultaneously. Thus one more definition is worth citing, not developed by an institution but by an academic researcher, which includes four of the above-presented dimensions. Carroll (1991, p. 283) argues that ‘*the social responsibility of business encompasses the economic, legal, ethical, and philanthropic expectations that society has of organizations at a given point in time*’. Allowance for various interest groups in CSR definitions is aimed at focusing entrepreneurs on such actions, that besides their traditional approach to enterprise value maximization, will contribute to the improvement of the entire society life, as well as to the sustainable social and economic development. Such perspective is based on the principles of social dialogue and finding solutions that would be beneficial to both parties, i.e. enterprises and any stakeholder group: employees, consumers, business partners, social institutions, non-government organizations and local society. In practice it means a voluntary undertaking of various activities in order to improve lives of stakeholders and the society as a whole. That results from the increasing awareness of the relation between responsible behavior and enterprise sustainable development (Szwajca, 2013).

2.2. The Concept of CSR

Modern concept of corporate social responsibility is a fashionable addition to the enterprise business model. Almost all stock exchange listed companies are socially engaged and annually publish reports on their activities for the society, natural environment, in other words a responsible business reports. A question that arises here is: is it a deliberate marketing move, or the ethics and social responsibility became a new indicator in the management activities? Finding an answer to this question is extremely difficult. The classical school of economic thought clearly indicates that the main objective of the enterprise is the maximization of its owners value. In this context it is worth quoting the Nobel Prize winner Friedman (1970) who recognizes CSR as *‘fundamentally subversive doctrine’* and *‘firmly emphasizes that „the social responsibility of business is to increase its profits’*. Therefore CSR is only to use and engage resources in a way that contributes to the profit maximization, so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud. In addition M. Friedman argues that if the free market is not able to resolve social problems then their resolution is not attributed to business but to the government that has the legislative weapon to do so. The idea of social responsibility was in contradiction with enterprise objectives and led to making of unprofitable and unbeneficial decisions, thus it was not logical in an economic sense.

M. Friedman unfavorable opinion on implementing CSR in enterprises was then seconded by other critics of the concept, i.e. Davis (1973) and Hayek (1969) (see Carroll, Shabana, 2010). The most important of the arguments they pushed forward included:

- lack of skills necessary to resolve social problems by enterprise management,
- CSR activities distract enterprises from the realization of their principal economic objectives,
- increase in CSR-related costs results in the increase of the costs of manufactured products/services and in consequence the enterprise becomes less competitive on the global market.

Many years have passed since the formulation of the above arguments questioning CSR. Currently the CSR concept is not considered in terms of using it or not, but in terms of the degree and from in which the enterprise should engage in socially responsible activities and what benefits may it get doing so (Branco, Rodrigues, 2006; Stoian, Gilman, 2017). The simplest argument for corporate social responsibility is that it is right. Some social problems were created by enterprises, such as natural environment pollution or the poverty. Corporate ethical responsibility is to make up for those errors (Saleem, Kumar, Shahid, 2016). It is being emphasized that enterprises can „do well by doing good”. It means they can achieve better financial performance, not only by concentrating on their core activity but also by being responsible for the creation of a better society (Kurucz, Colbert, Wheeler, 2008). On the one hand it is hard to disagree with Friedman. Enterprises must not engage in unprofitable and cost-intensive projects, as such actions would be wrong and lead to bankruptcy with the accompanying destruction of a social objective – workplaces. However the most important thing is that all business decisions are based on an objective ethical code. Therefore enterprises should make profits, but also obey the law, operate in accordance to ethical standards and implement CSR activities that will provide long-term benefits for the shareholders (Saleem, Kumar, Shahid, 2016).

2.3. The Impact of CSR on Firm Performance – International Researches

The relation between corporate social responsibility (CSR) and corporate financial performance (CFP), in terms of both financial standing and of market performance was widely studied, in particular for enterprises operating on mature markets. Results from empirical research are not unambiguous. There are studies confirming the positive relation between CSR and CFP, while other find this relation negative and even curvilinear (eg. U-shaped) (Galant, Cadez, 2017). It should also be noticed that the most recent studies in their majority indicate a positive relation between those analyzed features. Those studies, covering in particular emerging markets and indicating positive relation between analyzed values include: Usman and Amran (2015) Chen and Wang (2011), Maletic et al. (2015), Vitezić, Vuko and Mörec (2012), Cheng, Lin and Wong (2016). Also current studies on mature markets confirm the existence of positive relation between CSR and CFP (DiSegni, Huly, Akron, 2015; Nakamura, 2015). Meanwhile the studies revealing negative relation between the two variables are more than 10 years old and this means that changing market conditions, globalization processes and financial crises show CSR and CFP relation in a different perspective. It is also worth mentioning

here that authors of two different large-scale meta-analyses (Margolis, Walsh, 2007; Orlitzky, Schmidt, Rynes, 2003) conclude that the positive relations are more visible (Galant, Cadez, 2017). However, the publications available in domestic literature are mostly of descriptive character and usually do not include quantitative research allowing to confirm or reject the thesis of positive effect of CSR on enterprise financial performance (Otolá, Tylec, 2016). In this context it appeared worth to analyze the effect of CSR on CFP in the case of Polish enterprises operating on ever-developing market.

2.4. Studies on CSR and CFP in Poland

Objective difficulties associated with the measurement of CSR effect on the enterprise performance do not mean, however, that this subject has been completely ignored in Polish literature to date. For example in 2006 the group of Polish researchers undertook the analysis of economic benefits of using CSR principles in Polish enterprises. Analysis of the results of the above study also allowed to formulate a conclusion that enterprises implementing CSR practices had greater current liquidity, had means for timely payments, more economically used fixed assets (demonstrated higher profitability than the enterprises from the other group). At the same time enterprises of the CSR group were slightly less effective from the perspective of global product creation than the other enterprises. While recording slightly lower sales revenues they achieved higher margin on sales. The authors of the above study clearly indicate that companies using CSR principles benefited substantially – in almost the half of industries – from using those principles, in terms of greater sales, greater profit and greater investment expenditures (Bał et al., 2007).

Another authors (Bek-Gaik, Rymkiewicz, 2014) carried out the study of relations between CSR and financial performance on the sample of enterprises included in WIG30 stock index in 2001-2012. Achieved results were not as „beneficial” for enterprises of the CSR group from the above-mentioned study of 2006, while demonstrating the existence of weak correlation between financial variables and CSR of enterprises. The only statistically significant relations recorded were those between CSR and P/BV and between CSR and Operating Margin. The study, however, focused on the linear correlation, which does not exclude the existence of non-linear correlation. Also the study did not allowed for a time delay, which meant it examined correlations between economic results from current year and the report publication also from current year.

3. Methodology of Research

3.1. Sample and Method

In the literature of the subject it is indicated that the implementation of CSR principles in enterprises increases their profitability. While this studies are confirmed for enterprises of developed countries, the purpose of the authors was to study this relation in enterprises of developing countries. Companies selected for the study were listed on the Warsaw Stock Exchange across six industries, namely: energy, chemical, fuel, raw materials, automotive and construction materials. The companies for research were selected randomly. The study targeted 48 companies in total. The study covered the period of 2011-2014. The authors examined if the publication of CSR report in current year (t) has an effect on future performance of the company ($t+1$). This assumption caused the occurrence of non-measurable feature in the study, which was the publication of CSR report, therefore the method of analyzing the interrelations of mass phenomena, i.e. chi-squared test was used. Examined companies were divided into two groups: publishing CSR reports (variable 1) and not publishing CSR reports (variable 0). In addition, the significant examined variable included the variables describing the economic performance of the enterprise, such as: Return on Assets (ROA), Return on Equity (ROE), Net Margin (NM), Cash Flow from Operating Activities (CF), Total Assets (TA), Debt to Assets ratio (TL/TA), and variables relating to market performance, i.e. Price to Book Value ratio (P/BV) and Price to Sales ratio (P/S).

3.1. Analytical Results

The descriptive statistics for the variables used in the study are shown in Table 1. The total number of observations was 48 for each variable. Also CSR qualitative variable should be characterized, as it was not mentioned in the table below. So, in 2011 60% of the examined companies did not publish

CSR report. In following years there was a downward trend and as soon as in 2014 only 52% of examined companies did not publish that report.

Table 1. Descriptive Statistics

	CF	ROA	ROE	NM	TA	TL/TA	P/BV	P/S
2012								
Mean	713826592	3.37	4.37	-1432	7355765612	44.85	1.20	41.99
Std. Error	211312594	1.87	5.10	1435	2014432513	2.79	0.16	41.13
Median	74816000	4.93	8.74	4.09	982740000	41.10	0.88	0.52
Q1	12146000	2.24	3.36	1.65	297681000	35.47	0.57	0.32
Q3	543780000	7.28	13.85	8.31	3728035000	46.37	1.45	1.12
Std. Dev.	1479188158	13.08	35.73	10044	14101027588	19.56	1.11	287.89
Minimum	-58724000	-70.37	-218.83	-70302	13862000	22.36	-0.79	0.05
Maximum	7410863000	27.10	50.90	70.84	56703604000	136.12	4.79	2016.08
2013								
Mean	938368924	3.46	8.32	-5863	7621916878	45.32	1.35	10.14
Std. Error	274804992	0.93	1.92	5867	2065524597	3.77	0.16	9.28
Median	90708000	3.61	6.42	4.38	949244000	39.76	1.02	0.71
Q1	13603000	1.08	2.07	1.41	304073808	33.83	0.63	0.48
Q3	658116000	6.49	11.89	7.23	3844130000	46.44	1.64	0.98
Std. Dev.	1923634946	6.49	13.46	41070	14458672180	26.37	1.14	64.94
Minimum	-22314000	-18.77	-40.85	-287488	13223000	21.74	-0.09	0.06
Maximum	7941000000	21.29	62.16	17.34	61252000000	202.22	5.38	455.42
2014								
Mean	766437122	1.27	3.10	-49157	7926687018	49.93	1.17	79.67
Std. Error	224412524	2.23	3.46	49156	2132924913	5.85	0.16	78.99
Median	93937000	3.36	7.70	3.88	987600000	43.91	0.87	0.65
Q1	15599000	1.24	3.03	1.25	289048000	34.78	0.56	0.29
Q3	644000000	6.13	11.81	8.86	4364415000	52.43	1.29	0.90
Std. Dev.	1570887669	15.60	24.22	344091	14930474391	40.95	1.15	552.91
Minimum	-96401000	-92.83	-107.22	-2408640	9553000	22.02	-0.06	0.12
Maximum	6979000000	19.58	34.70	15.04	66201000000	312.15	6.96	3871.03

Source: Own elaboration

First a thorough analysis of companies' economic performance was conducted, with regard to the fact of publishing or not publishing CSR report. Meanwhile a rule was adopted stating that the publication of the report in current year (t) affects the economic performance in the following year (t+1). According to that rule the analysis covered CSR reports for 2011-2013, while the economic results of companies were analyzed for 2012-2014. ROA and ROE ratios were categorized into four groups: negative, 0 to 5%, 5 to 10%, and above 10%. Assuming both of those ratios are stimulants, the publication of CSR report should be reflected in higher values of the ratios, and at least the companies publishing the report should not record negative values of them. The above assumption was formulated after noticing that the negative ROA ratios in 2012 and 2013 occurred only in companies that did not publish CSR report in the previous year. In 2014 the vast majority of companies publishing CSR report recorded ROA in the range of 5-10%, while companies not publishing the report – in the range of 0-5%. The similar situation can be observed for ROE. In years 2012-2013 companies not publishing CSR report in most achieved the negative values of that ratio, and companies publishing CSR reports did not suffer the negative ROE. In addition it should be noticed that in 2012 companies not publishing CSR report demonstrated mainly extreme values of ROE, i.e. negative or above 10%. In companies publishing the report there occur no negative results neither the results indicating a low profitability, i.e. in the range of 0 to 5%. Those differences were not observed in the following years, which could be a result of the nature of this ratio, which produce worse results during the market downturn combined with a high level of the company's debt. It should be noted that the financial crisis of 2008 and the following Greek crisis adversely effected the economic performance of companies, which was still the case in Poland in 2012. Debt to Asset ratio was also divided into four groups: low debt level (up to 30%), medium debt level (30-50%), high debt level (50-70%), and very high debt level (above 70%). It should be noticed that there are no significant differences between companies publishing and not publishing CSR report in that regard. In both cases

the debt ratios in the majority of analyzed companies resulted in safe values, ie. in the range of 30% to 50%. A few companies, both publishing and not publishing CSR report demonstrated a high and very high level of debt. Conducted analysis revealed the similar behavior of net margin ratio. Companies publishing CSR report did not record the negative values of the above ratio in 2012-2013, as opposed to companies not providing that report. In addition, in 2012-2014 we can observe a significant difference in terms of achieving positive values of net margin ratio depending on the publication of CSR report by the company. A vast majority of companies not publishing CSR report recorded that ratio at low level of 0-5%, unlike the companies publishing the report. 12.5% of analyzed companies in 2012 were characterized by negative cash flow from operating activities, but as soon as in 2013 companies with negative CF accounted for only 2%. Unfortunately in the following year their number increased by 6 percentage points. Companies with negative CF were mainly those not publishing CSR reports.

When analyzing the size of the enterprise's assets four groups were distinguished: companies with assets value up to PLN 100 million, companies with assets value within the range of PLN 100 million – PLN 1 billion, companies with assets value between PLN 1 billion and PLN 10 billion, and companies with assets value above PLN 10 billion. It should be noted that all the companies with assets value above PLN 10 billion publish the CSR report, and most companies not publishing that report have total assets between PLN 100 million and PLN 1 billion.

Similarly, for the ratios of Price to Book Value and Price to Sales there were four groups identified. In the case of P/BV ratio the ranges were: below 0.5, from 0.5 to 1.0, from 1.0 to 2.0 and above 2.0. In practice, a low value of Price to Book Value ratio (below 0.5) means that the company records low current profits and its assets and not fully utilized. When analyzing the above ratio, it can be noticed that the greatest differences between companies publishing and not publishing CSR reports are visible when the ratio takes values below 0.5, which is mainly the case for companies not publishing the reports. From year to year there is ever smaller difference in the number of companies recording low P/BV value between those publishing and not publishing CSR reports. P/S ratio was categorized into the following four groups: below 0.3, from 0.3 to 0.5, from 0.5 to 1.0, and above 1.0. Low P/S values may indicate the attractiveness of the company for parties interested in buying its shares. The greatest differences between companies publishing and not publishing CSR reports are noticed in the case where P/S ratio falls within the range from 0.3 to 0.5 in years 2012-2013.

Further part of the study includes the evaluation of the question whether CSR report publication in current year (t) affects the economic performance in the following year (t+1). This relation was evaluated using chi-squared test, results of which are presented in Table 2.

Table 2. Results of chi-squared test of independence

	CSR ₂₀₁₁			CSR ₂₀₁₂			CSR ₂₀₁₃		
	Test statistics value	Critical value for $\alpha=0.05$	Critical value for $\alpha=0.01$	Test statistics value	Critical value for $\alpha=0.05$	Critical value for $\alpha=0.01$	Test statistics value	Critical value for $\alpha=0.05$	Critical value for $\alpha=0.01$
CF _{t+1}	0.6098	3.8415	6.6349	0.0071	3.8415	6.6349	0.1897	3.8415	6.6349
ROA _{t+1}	51.109	7.8147	11.3449	34.127	7.8147	11.3449	41.070	7.8147	11.3449
ROE _{t+1}	82.048			58.189			51.107		
NM _{t+1}	51.425			52.215			40.356		
TA _{t+1}	64.598			69.238			66.978		
TL/TA _{t+1}	17.236			17.004			24.993		
P/BV _{t+1}	44.238			189.867			35.791		
P/S _{t+1}	42.716			242.035			53.544		

Source: Own elaboration

Conducted studies allow to conclude that CSR variable significantly effects the variables reflecting the future economic results of enterprises, ie. Return on Assets, Return on Equity, Net Margin, Total Assets, Debt to Assets ratio. That means that the publication of CSR report translates into future economic performance defined by the above ratios. Those dependencies are significant both on $\alpha=0.05$ level and $\alpha=0.01$ level. CSR variable has no significant effect only on Cash Flow from Operating Activities variable in the following year. The only exception is CSR₂₀₁₁ variable, which significantly effects CF_{t+1} variable only on $\alpha=0.05$ level. In addition CSR variable significantly effects the variables

reflecting the future market performance of enterprises, ie. Price to Book Value ratio and Price to Sales ratio.

4. Conclusion

Conducted studies indicate that the publication of CSR report is positively received by investors and other stakeholders, and companies publishing the reports enjoy more favorable values of ratios of their financial condition. In addition, conducted studies suggest that variables reflecting market and economic performance, except for Cash Flow from Operating Activities depend on CSR variable. Of course, it could be the effect of companies in better financial condition, wishing to enhance their reputation invest in CSR. Nevertheless the image development based on CSR is perceived positively by the company's stakeholders and favorably translates into future economic performance. The advantage of the conducted research is to take into account the time shift, ie. the impact of the publication of the CSR report in the current year on the financial results in the next year. Among the limitations, it should be pointed out that CSR activities were treated as zero-single (the company publishes an activity report or not). It is worth to point in future studies the extent, level and scope of CSR activities that are the most beneficial for a company. Some practical implication are worth to notes for the companies that do not publish CSR reports. Caring for future financial results should take place in two ways. Firstly, in accordance with the art of economic efficiency of investment and operations undertaken. Secondly, by running a socially responsible enterprise. The results indicate that socially responsible activity translates into final financial results, which in turn is a contribution to building a competitive advantage.

References

- Bąk, M., Bednarz, P., Kulawczuk, P., Rataj, R., Szcześniak, A., Zając, P. (2007). *Analiza korzyści ekonomicznych ze stosowania zasad społecznej odpowiedzialności biznesu (CSR) w polskich przedsiębiorstwach*. Instytut Badań nad Demokracją i Przedsiębiorstwem Prywatnym. Warszawa, [online]. Available: <http://www.iped.pl/publikacje.html> [2017, September, 20].
- Bek-Gaik, B., Rymkiewicz, B. (2014). Społeczna odpowiedzialność przedsiębiorstw a finansowe miary dokonań. *Zeszyty Naukowe Uniwersytetu Szczecińskiego 804. Finanse, Rynki Finansowe, Ubezpieczenia*, vol. 67, pp. 137-151.
- Bowen, H. (2013). *The Social Responsibilities of Businessman*. University of Iowa Press.
- Branco, M.C., Rodrigues, L.L. (2006). Corporate social responsibility and resource-based perspectives. *Journal of Business Ethics*, vol. 69, iss. 2, pp. 111-132.
- Brendzel-Skowera, K. (2013). Społeczna odpowiedzialność biznesu a dojrzałość organizacji. In E. Skrzypek (Ed.), *Dojrzałość organizacji – aspekty jakościowe*, (pp.119-127). Lublin: Uniwersytet Marii Curie-Skłodowskiej.
- Carroll, A.B. (1991). The pyramid of corporate social responsibility: toward the moral management of organizational stakeholders. *Business Horizons*, July–August, pp. 39-48.
- Carroll, A.B., Shabana, K.M. (2010). The business case for corporate social responsibility: A review of concepts, research and practice. *International Journal of Management Reviews*, vol. 12, iss. 1, pp. 85-105.
- Chen, H., Wang, X. (2011). Corporate social responsibility and corporate financial performance in China: an empirical research from Chinese firms. *Corporate Governance: The International Journal of Business in Society*, vol. 11, iss. 4, pp. 361-370.
- Cheng, S., Lin, K.Z., Wong, W. (2016). Corporate social responsibility reporting and firm performance: evidence from China. *Journal of Management & Governance*, vol. 20, iss. 3, pp. 503-523.
- Dahlsrud, A. (2008). How corporate social responsibility is defined: an analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management*, vol. 15, iss. 1, pp. 1-13.
- Davis, K. (1973). The case for and against business assumption of social responsibilities. *Academy of Management Journal*, vol. 16, iss. 2, pp. 312-322.
- DiSegni, D.M., Huly, M., Akron, S. (2015). Corporate social responsibility, environmental leadership and financial performance. *Social Responsibility Journal*, vol. 11, iss. 1, pp. 131-148.

- Friedman, M. (1970). The Social Responsibility of Business is to Increase its Profits. *The New York Times Magazine*, September 13, [online]. Available: <https://www.colorado.edu/studentgroups/libertarians/issues/friedman-soc-resp-business.html>. [2017, November, 15].
- Galant, A., Cadez, S. (2017). Corporate social responsibility and financial performance relationship: a review of measurement approaches. *Economic research-Ekonomska istraživanja*, vol. 30, iss. 1, pp. 676-693.
- GREEN PAPER Promoting a European framework for Corporate Social Responsibility, COM (2001) 366 final, [online]. Available: <https://www.eea.europa.eu/policy-documents/com-2001-366-final-green>. [2017, November, 15].
- Hayek, F.A. (1969). The corporation in a democratic society: in whose interest ought it and will it be run? In H. Ansoff, (Ed.), *Business Strategy*. Harmondsworth: Penguin Books.
- Kurucz, E.C., Colbert, B.A., Wheeler, D. (2008). The business case for corporate social responsibility. In A. Crane, D. Matten, A. McWilliams, J. Moon, D.S. Siegel (eds.) *The Oxford handbook of corporate social responsibility*. Oxford University Press.
- Leoński, W. (2015). Wpływ CSR na wyniki finansowe przedsiębiorstw. *Zeszyty Naukowe Uniwersytetu Szczecińskiego 855. Finanse, Rynki Finansowe, Ubezpieczenia*, vol. 74, pp. 135-142.
- Lulewicz-Sas, A. (2013). Wpływ podejmowanych przez przedsiębiorstwa inicjatyw społecznie odpowiedzialnych na wartość organizacji. *Economics and Management*, vol. 2, pp. 242-254.
- Maletic, M., Maletic, D., Dahlgaard, J., Dahlgaard-Park, S.M., Gomišček, B. (2015). Do corporate sustainability practices enhance organizational economic performance? *International Journal of Quality and Service Sciences*, vol. 7, iss. 2/3, pp. 184-200.
- Margolis, J.D., Walsh, J.P. (2003). Misery loves companies: Rethinking social initiatives by business. *Administrative science quarterly*, vol. 48, iss. 2, pp. 268-305.
- MEMO/11/730 (2011). [online]. Available: http://europa.eu/rapid/press-release_MEMO-11-730_en.htm. [2017, November, 15].
- Nakamura, E. (2015). The bidirectional CSR investment–economic performance relationship. *Journal of Global Responsibility*, vol. 6, iss. 1, pp. 128-144.
- Orlitzky, M., Schmidt, F.L., Rynes, S.L. (2003). Corporate social and financial performance: A meta-analysis. *Organization studies*, vol. 24, iss. 3, pp. 403-441.
- Otoła, I., Tylec, A. (2016). Społeczna odpowiedzialność biznesu a wyniki finansowe przedsiębiorstw. *Zeszyty Naukowe Politechniki Częstochowskiej. Zarządzanie*, vol. 24, t.1, pp. 81-89.
- Saleem, S., Kumar, A., Shahid, A. (2016). Arguments against corporate social responsibility. *Imperial Journal of Interdisciplinary Research*, vol. 2, iss. 8, pp. 946-950.
- Stoian, C., Gilman, M. (2017). Corporate Social Responsibility That “Pays”: A Strategic Approach to CSR for SMEs. *Journal of Small Business Management*, vol. 55, iss. 1, pp. 5-31.
- Szwajca, D. (2013). Corporate Social Responsibility versus Marketing—theoretical and Practical Perspective. *Human Resources Management & Ergonomics*, vol. 7, iss. 1, pp. 100-114.
- Szwajca, D., Nawrocki, T.N. (2016). Możliwości oceny zaangażowania przedsiębiorstw w działania społecznie odpowiedzialne a ich polityka informacyjna w zakresie CSR. *Przegląd Organizacji*, vol. 4, pp. 44-52.
- Usman, A.B., Amran, N.A.B. (2015). Corporate social responsibility practice and corporate financial performance: evidence from Nigeria companies. *Social Responsibility Journal*, vol. 11, iss. 4, pp. 749-763.
- Vitezić, N., Vuko, T., Mörec, B. (2012). Does Financial Performance Have an Impact on Corporate Sustainability and CSR Disclosure - a Case of Croatian Companies. *Journal of Business Management*, no 5 Special Edition, pp. 40-47.
- White, A.L. (2006). Business Brief: Intangibles and CSR [online]. Available: https://www.bsr.org/reports/BSR_AW_Intangibles-CSR.pdf. [2017, November, 15].
- World Business Council for Sustainable Development, (1999). *Corporate Social Responsibility: Meeting Changing Expectations*. World Business Council for Sustainable Development: Geneva.

Lesia Petkova^{1*}

Cherkasy State Technological University
Ukraine

Dmytro Palamarchuk²

Cherkasy State Technological University
Ukraine

Nataliia Palamarchuk³

Cherkasy State Technological University
Ukraine

66. TECHNOLOGICAL EFFECTS OF EUROPEAN INTEGRATION IN THE SUSTAINABLE DEVELOPMENT CONTEXT

Abstract: The main purposes of the paper are assessment of technological changes of production structure of the countries of the European Union, comparison of structural and technological changes in general around the EU with tendencies in Poland, Czech Republic and Slovak Republic and research of the state management of technological changes in these countries. In the empirical part of the article, the dynamics of production with various technological intensities in NMS was investigated. Also, were researched changes made in the value of products structure in the process of European integration and the interrelation between the cost of products with different technological intensity structure and employment in the appropriate manufacturing industries of Poland, Czech Republic and Slovak Republic, using data for the period from 2000 to 2014. The methods of the research include systematic and comparative analysis of the scientific literature and correlation analysis. Research results showed that during 2000-2014 there were significant changes in the state innovation policy and other areas of state policy concerning the management of technological development in Poland, Czech Republic and Slovak Republic. The production structure of these countries has shifted to a higher technological level and for these countries was characteristically significant increase in the share of imported value added in the structure of the cost of manufactured products. The revealed interrelations between the number of employees and the structure of the manufactured products cost indicate a more significant positive impact of cost structure on employment for manufacturing industries of higher technological intensity. A significant consequence of the European integration for these countries became a higher level of compliance with the goals of long-term sustainable development.

Keywords: European integration, integration effects, sustainable development.

JEL Classification: F14, F16, O30

1. Introduction

The concept of sustainable development forms a basis of a paradigm of global growth in the XXI century. Sustainable development is displayed by his key idea – satisfaction of modern requirements, without worsening ability of future generations to satisfy own requirements. 17 sustainable development goals display the European values better and give a political opportunity to develop and promote the European social and economic model.

Development of science, technology and innovations is priority for achievement of the goals of sustainable and comprehensive development. Equal access to the latest developments, innovative technologies promotes increase in labor productivity, increases the level of income and increases quality of life. Technological shifts in separate economies considerably depend on intensity of integration processes. The international transfer of technologies, accelerating every year, defines the nature of technological shifts in the countries and the prospects of their economic growth.

With deepening of integration processes national politics of scientific and technological development and their interstate coordination are transformed. In the post-socialist countries which have joined the EU there are high-quality changes of economic structure, the international

¹ Prof. Lesia Petkova Doctor of Economics; 460 Shevchenko blvrd., Cherkasy, 18006, Ukraine, l_petkova@ukr.net

² Doc. Dmytro Palamarchuk Ph.D.; 460 Shevchenko blvrd., Cherkasy, 18006, Ukraine, dmytropalamarchuk@gmail.com

³ Doc. Nataliia Palamarchuk Ph.D.; 460 Shevchenko blvrd., Cherkasy, 18006, Ukraine, palamarchuk.nataliia@gmail.com

* Corresponding author

specialization, a role in the international division of labor. Studying of experience of the national technological politics under the conditions of European integration is important for Ukraine in realization of its strategy of the European choice.

2. Results of Research

2.1. Theoretical Background

Numerous scientific works are devoted to the problematics of technological results of integration, features of management of technological changes. So, the research of Berger and Steurer (2009) is devoted to studying of mechanisms of horizontal integration of policy for sustainable development. Patterns of industrial policy, particularly ecological, are considered under the conditions of integration. Authors have proved that horizontal integration is a decisive problem of management in the context of sustainable development. R&D and innovation are crucial for a long-term economic development and well-being. Innovation is a key for achievement of the Sustainable Development Goals. The achievement of the above listed goals requires international cooperation for support technology and innovative development in developing countries (Sustainable development in the European Union, 2016; Sustainable development in the European Union, 2017; Menne, 2017). Integration of European countries affects their economic growth (Eichengreen, Boltho, 2008; Henrekson, Torstens, Torstenson, 1997). Gurbiel (2002) considers innovation and technology transfer as the key drivers of economic growth CEE countries. CEE economies grow based on the interaction of domestic R&D with more advanced technology from imported equipment and inputs (Radosevic, 2017). It is agreement in the literature that the main drivers of economic growth and development are innovation and quality (Zalewski, Skawińska, 2009). Connolly (1997), Sampson (2015) discovered positive effects of free trade for developing nations due to the beneficial effects of trade on imitation and technological diffusion. In article of Perla, Tonetti and Waugh (2015) it is proved that activation of mutual trade leads to strengthening of export opportunities of the countries, attraction of new technologies and speedup of economic growth. The papers of Tvaronaviciene, Cerneviciute (2015), Blohmke (2014) are devoted to analysis of impact of technology transfer on sustainable development. When more developed country transfer technology into less developed one, in less developed country technology can be used more effective. In the work of Hafner (2011; 2014) is characterized the influence of expenses on research and development on labor productivity of the countries which are integrated, by means of diffusion of technologies through patents, trade and direct foreign investments. The research activity and extension of its technological consequences were decisive for development of technologically backward countries under the conditions of integration. The bigger technological win from integration, thus, is received by structurally backward countries, getting access to technological knowledge.

2.2. Aim and Methodology

Main objective of paper is an influence of European integration on technological development of the Member States in the sustainable development context. Task of our research is assessment of technological changes of production structure of the countries of the European Union, since 2000; comparison of structural and technological changes in general around the EU with tendencies in new members – Poland, Czech Republic and Slovak Republic; the analysis of instruments of state policy of mentioned countries concerning management of technological changes.

In the work dynamics and structure of production of the EU countries by levels of technological intensity of branches are investigated. Production branches grouped according to a technique of Eurostat.

The research is concentrated on assessment of influence of processes of the European integration on change of technological capacity of production of EU countries. Work has been aimed at studying of dynamics of manufacture of products by branches of different technological intensity in NMS (in this paper NMS means the member states that joined the EU in 2004 and later) and the EU, in general, and also on a research of change of structure of product value and employment in these branches on the example of 3 NMS (Slovak Republic, Czech Republic and Poland). For investigations of associations between number of employees, the production outputs and structure of volume of production of production branches of different technological intensity in 3 NMS during the period 2000-2014 was used correlation analysis. This correlation analysis was used for examine each pair of

measurement variables (number of employees and value added) to determine whether these measurement variables tend to move together. A positive correlation indicates the extent to which two variables change in parallel; a negative correlation indicates the extent to which first variable increases as second decreases. Correlation coefficients are expressed as values between +1 and -1; 1 is a perfect positive correlation; 0 is no correlation; -1 is a perfect negative correlation.

Sources of statistical data for a research are World Input-Output Tables (release 2016, 2017) that are published by World Input-Output Database and data by number of occupied in production branches which are published by the OECD.

2.3. Management by Technological Changes of Poland, Czech Republic and Slovak Republic

In the 1990th in economies of the countries of Central and Eastern Europe there were profound structural changes which were followed by transformations in sectoral structure of industry. Not enough attention was paid to innovative development and increase in technological level of production in the 1990th what confirm the low level of financing of research activity, insufficient human capital investments, reduction in the number of research workers (Radosevic, 2009).

The policy oriented to activation of research activity and business as important factors of economic modernization and increase in level of competitiveness of these countries began to be carried out only from the beginning of the process of integration into the EU.

The entrance of the countries of CEE in the EU caused the influence of the European policy in the sphere of innovations on national innovative systems of the countries-new members that led to activation of activity of the governments of these countries in the direction of creation of effective national innovative systems, establishment of new institutional and legal foundation of innovative activity.

The policy of all countries of CEE is directed to growth of research activity expenses up to 3% of GDP, however, instruments of achievement of noted purpose differ. Researches of the innovative NMS systems revealed a certain level of their similarity which is shown in a significant amount of similar actions concerning stimulation of innovative and research activity.

Important aspect in creation of national innovative systems of the countries of NMS is an opportunity to receive financing from Structural funds of the EU, one of the priority directions of which is a financing of research and innovative activity in regions with backward economy. Almost all NMS received financing from noted funds under implementation of developed innovative projects. Access to such sources of financing of innovations allowed to begin a number of new innovative projects and also to increase the amount of financing of already existing projects.

Programs of innovative incubators of Czech Republic deliver to the enterprises innovative, administrative, financial and advisory services. Scientific and technical parks develop in the form of rent of innovative infrastructure by educational, business and state institutions. In the country develops the program of support of clusters and general research centers which are organized on the basis of public and private participation. For development of the private innovative sector in Poland is carried out development of a system of control of intellectual property, are developed innovative institutions of business, are created conditions for development of the investment centers. Such approach laid foundation for formation of innovative business of Poland that includes preferential system for medium and small business in the sphere of innovative activity. This system of privileges includes protection of investments, trade policy, the registration procedure of property rights and crediting. All these measures allowed to raise innovative business of Poland to qualitatively new level, the international organizations and TNC that joined programs of innovative development of Poland are interested in it (Diba, Hernego, Yu, 2016). Important priority of strategy of innovative development of Slovak Republic is development of science and innovative activity on the basis of international collaboration, its main tools are the general programs, cross-border cooperation and projects of the EU (Balaz, Zifciakova, 2016).

Common problem for Czech Republic, Poland and Slovak Republic is the low level of financing of innovative activities, an inefficient cooperation of business with the universities and other research organizations (which support of activities is performed at the expense of the state financing and financing from funds of the EU). Most respondent in these countries determine public administration in the sphere of support of innovations as inefficient (Economist Intelligence Unit, 2008).

Economic growth of Poland within the last decades was based, mostly, on increase in productivity of work (it is possible to assume that this statement is fair and for other NMS). But over time these reserves of growth were exhausted, and economic shocks which were caused by crisis of 2008 specified instability of such model of growth. Further permanent economic growth needs an effective innovative policy which would provide implementation of innovative capacity of the local companies and would strengthen their cooperation with research institutions (Enhancing the Innovative Capacity of the Polish Economy, 2018). The national innovative policy of NMS has been substantially directed to import of technologies and their adaptation to local requirements. From the beginning of processes of the European integration in noted countries, the main way of innovative activity of their companies was import of more advanced foreign technologies of the equipment and materials that has allowed to increase the technological level of the countries in high gear. However, orientation to adaptation of foreign technologies is more likely the limiting factor and future economic growth is connected with producing of domestic innovations now (Radosevic, 2017).

2.4. Technological Intensity in Manufacturing Industries in the EU-28 and NMS

During 2000-2014 technological intensity of production of industrial products in the European Union has changed (all 28 countries which are the members of the EU now are meant). The most noticeable changes are a decrease in a part of high-technology manufacturing industries in a total amount of industrial production from 9.3 in 2000 to 7.5 in 2014. During this period has also decreased a part of low technology industries from 30.7 in 2000 to 28.1 in 2014. Falling of the ratio of mentioned branches was compensated by growth of medium-high technology and medium-low technology industries whose part has grown from 33.3 and 26.7 in 2000 to 35.1 and 29.2 in 2014, respectively. And if for medium-high technology industries prevails gradual growth of ratio in structure of production, and for high-technology industries – gradual decrease during the entire period which is investigated, then medium-low technology industries which showed growth and low technology till 2008 and for which prevails reduction of a part in structure of production till 2008, have changed its path dependency and their parts in structure of production remain, almost, at maintenance level from 2009 to 2014.

If to estimate dynamics of production at the EU in absolute values, then first of all it should be mentioned that the gross output of all groups of branches during 2000-2014 has increased. Compared with 2000 gross output of high-technology industries has increased in 2014 by 1.5 times to US\$663 billion, low technology industries by 1.7 times to US\$ 2,476 billion, medium-high and medium-low technology industries almost by 2 times to US\$ 3,097 billion and US\$2,575 billion, respectively. However, the increase in production during mentioned time happened rather uneven, so in 2003-2004 and 2007 all groups of branches showed high growth rates (more than 10% of gain in comparison with previous year), and in 2009 and 2011 a considerable reduction of output mix has been recorded.

The countries which became the members of the EU in 2004 and later at the beginning of the period which is investigated provided about 6% of total production of the EU-28 and until the end of the period have increased the part in twice to, almost, 12%. In particular, since 2000 to 2014 the ratio of NMS in high-technology production of the EU-28 increased from 3.9% to 10.9%, medium-high from 4.5% to 10.8%, medium-low from 6.5% to 12.7%, low technology from 7.1% to 11.9%.

In general, during the 15-year period the structure of production of NMS was displaced towards the highest technological level. A part of high and medium-high technology industry increased from 3.9% to 6.4% and from 27.1% to 34.3%, respectively, and a part of low technology decreased from 36.1% to 26.3%.

Unlike the general tendencies in the EU-28 in structure of production of NMS have been noted gradual increase in ratio of high-technology industries, from 6.3% in 2000 to 9.6% in 2010, however from 2011 to 2014 mentioned ratio decreased to 7%. Change of the ratio of other branches of production happened in line with the general tendencies in the EU-28, however growth of a part of medium-high and decrease in a part of low technology industries in NMS was much prompter, than in general in the EU-28.

In absolute measurement the production output of NMS has increased during the investigated period by 3.8 times, and high output-technology industries has increased by 4.2 times to US\$72 billion, medium-high by 4.8 times to US\$ 334.8 billion, medium-low by 4 times to US\$326.1 billion, low technology industries by 2.9 times to US\$ 293.8 billion.

2.5. Development of Manufacturing Industries of Different Technological Intensity in Poland, Czech Republic and Slovak Republic

About 60% of production of NMS was provided by 3 countries: Poland, Czech Republic and Slovak Republic (hereafter 3 NMS). For these countries during the analyzed period prevailed rather high ratio of the imported value (intermediate consumption of the relevant branches of production manufactured abroad) in structure of value of the manufactured production which increased from 2000 to 2014. This was driven by trade liberalization and increased fragmentation of production, which resulted in much higher trade volumes of intermediate inputs (International Monetary Fund, 2013). The largest growth prevails economies of Slovak Republic and Czech Republic. And, decrease of a part of the imported value added in the measure of decrease in technological intensity of production prevails one and all mentioned countries in 2014. That is, for high-technology industries prevails a highest part of foreign value added in structure of value of the manufactured production, and for low technology industries, respectively, the lowest.

Table 1. Structure of value of the manufactured production by industry groups of 3 NMS

Country/Indicator		Intermediate consumption from borders of the EU		Intermediate consumption with the EU-15		Intermediate consumption with NMS		Intermediate consumption of production of other branches of home manufacture		Value added at basic prices	
		2000	2014	2000	2014	2000	2014	2000	2014	2000	2014
Slovak Republic	High-technology	10.1	45.3	22.5	18.5	4.8	8.7	21.9	8.6	36.1	12.1
	Medium-high technology	3.2	11.1	25.7	21.7	5.2	14.4	38.9	32.9	22.7	16.2
	Medium-low technology	14.8	16.5	8.1	14.8	5.2	11.3	43.4	26.8	24.8	26.2
	Low technology	2.0	4.0	8.2	10.3	3.4	8.5	52.8	42.8	31.3	32.5
Czech Republic	High-technology	8.8	27.6	25.4	24.6	0.9	4.6	27.8	16.7	34.1	22.5
	Medium-high technology	3.4	7.8	20.9	23.0	2.9	9.0	41.7	32.9	28.1	23.7
	Medium-low technology	9.4	10.7	11.6	18.8	2.8	7.0	41.8	31.8	31.2	28.0
	Low technology	2.7	3.9	7.9	12.1	1.3	4.5	56.2	50.1	29.9	27.6
Poland	High-technology	6.9	19.2	16.6	21.3	0.6	2.7	40.1	29.5	32.3	24.3
	Medium-high technology	4.8	7.6	17.7	20.7	1.7	3.3	44.4	41.3	27.4	24.8
	Medium-low technology	11.3	15.0	10.2	12.2	1.2	2.4	43.6	41.0	29.9	26.1
	Low technology	2.4	3.9	7.6	9.1	0.8	1.6	55.4	57.7	29.2	26.9

* here and hereafter manufacturing industry are grouped in accordance with a technique of Eurostat, 2017.

Source: World Input-Output Tables, 2016 Release, 2017

Almost in all industry groups of 3 NMS (except Poland's low technology industries and Slovak Republic's medium-low technology industries) the ratio of the value added imported from abroad in structure of value of the manufactured by them products has increased.

An increase of the ratio of the imported value added took place in structure of value of the manufactured production of higher mentioned 3 NMS first of all, due to growth of intermediate consumption of the imported value added made in other NMS and extra EU.

Also, in structure of value of some industry groups of 3 NMS has taken place growth of a part of the value added imported from the EU-15. However, in structure of value manufactured by 3 NMS productions the growth of the part of the value added created in the EU-15 was significantly lower, than growth of parts of the value added created in NMS or extra-EU. That is, the process of the European integration of 3 NMS has positively influenced on growth of volumes of their trade with other NMS. Concerning increase of a part of the imported value added from the countries of the EU and extra-EU, most reliable, it has turned out to be consequence of increase of their role in world production and rather liberal policy of the EU relatively to international trade of industrial products.

2.6. Changes in Employment Volumes in Industry Groups of Different Technological Intensity

Employment is very important for achieving the Sustainable Development Goals, increasing employment is a main way to reduce poverty and inequality (Sustainable development in the European Union, 2016; *An Employment*, 2015). During 2000-2014 changes in volumes and structure of employment of above-mentioned NMS have taken place, the number of employees in manufacturing industries of Czech Republic and Slovak Republic has decreased (from 1.227 thousand persons to 1,200 thousand persons and from 463 thousand persons to 429 thousand persons, respectively), in Poland, on the contrary, increased (from 2.713 thousand persons to 2.806 thousand persons). The number of mentioned countries in manufacturing industries promptly increased during the period from 2003, 2004 to 2008 (except low technology industries, where the number of employees was, mostly, decreased during the entire investigated period). From 2009 to 2014 the number of employees in medium-high and medium-low technology industries starts again to increase unlike with high-technology industries where reduction of number of employees has lasted.

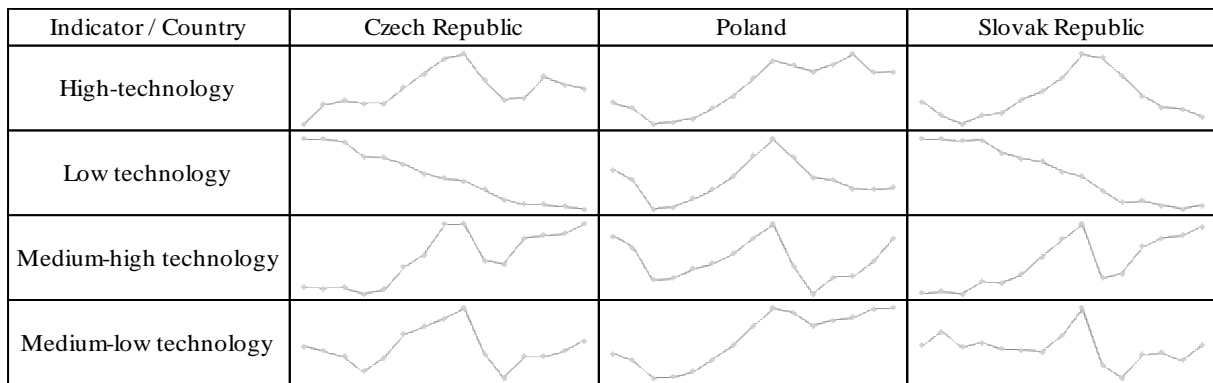


Figure 1. Dynamics of number of employees in manufacturing industries (Persons, Thousands), 2000 - 2014

Source: World Input-Output Tables, 2016; Release, 2017

In general, number of employees in low technology industries from 2000 to 2014 was decreased in all mentioned countries. And the most essential gain of employment was observed in medium-high technology industries of Czech Republic and Slovak Republic, high-technology industries of Czech Republic and Poland and medium-low technology industries of Poland, where the employment volume have increased approximately on 1/5-1/4.

Table 2. Correlation of indicators of number of employees and volumes of value added created in the country and abroad*

Indicator/ Country	High-technology		Medium-high technology		Medium-low technology		Low technology	
	Home VA	Import VA	Home VA	Import VA	Home VA	Import VA	Home VA	Import VA
Czech Republic	0.81	0.69	0.92	0.89	0.46	0.28	-0.81	-0.97
Poland	0.88	0.88	0.09	0.07	0.91	0.88	0.41	0.27
Slovak Republic	0.72	0.60	0.89	0.90	-0.03	-0.15	-0.86	-0.88

*the volume of value added created abroad is thought of as the volume of intermediate consumption of production from abroad by corresponding manufacturing industries; value added is created in the country is thought of as the sum of intermediate consumption of production of national production by the corresponding manufacturing industries and value added created by them.

Source: World Input-Output Tables, 2016; Release, 2017

However, in mentioned countries gross output of production of all industry groups as it was mentioned above, has grown, and, growth rates of gross output are much higher than growth rates of number of employees in corresponding industry groups. Such differences, most likely are predetermined by increase in productivity of the labor in NMS and essential increase of the ratio of the imported value added in structure of value of production.

Investigations of associations between number of employees, the production outputs and structure of volume of production of production branches of different technological intensity indicate that closer associations (estimated by correlation indicator size) are characteristic of branches of more high

technological level than of branches of the lowest technological level. Besides, number of employees in manufacturing industries (except low technology industries) more considerably correlates with volumes of value added created by home economy than with volumes of the imported value added.

Mentioned changes in technological intensity of production of Poland, Czech Republic, and Slovak Republic became result of structural changes in economies of the countries, development of national innovative systems, to deepening of government-industry-academia collaboration and also arrival to these countries of big TNC, first of all, European (Narula, Guimón, 2009). Activity of TNC through the system of technology transfer, venture capital funding and collaboration with local partners, significantly, influenced innovative development and technological intensity of economies of NMS.

3. Conclusion

The analysis of policy of management of technological changes and innovative development of Poland, Czech Republic, and Slovak Republic indicates their considerable similarity which is predetermined by influence on them of innovative policy of the EU and the imitating nature of their innovative systems. Though, mentioned countries could achieve considerable success in development of national innovative systems and increase of technological intensity of production, their innovative NMS systems are weaker rather innovative systems of the EU-15 that depends on features of their development and a number of the existing problems.

The policy of all NMS is aimed at increasing the cost of research, activating innovation and increasing the technological level of production; A special place in national innovation systems of NMS take TNCs, their activities are an important source of innovation, stimulate the modernization and transfer of technologies in the host country

During 2000-2014 in the EU-28 the production output of high-technology manufacturing industries grew at the lowest rates that led to decrease of ratio of this industry group in the general structure of production. NMS unlike the general for the EU-28 tendencies, showed shift in the structure of production upwards of the ratio of high-tech manufacturing.

More than 60% of production of NMS provided 3 countries: Poland, Czech Republic, and Slovak Republic (hereafter 3 NMS) for which growth of the ratio of the imported value added in structure of value of the manufactured production, first of all due to import of intermediate product from other NMS and from abroad of the EU was characteristic. That is, significant increase in volumes of trade between NMS took place that is possible to explain with positive influence of the European integration.

Differences at rates and the direction of changes in employment volumes and gross output of manufacturing industries of Poland, Czech Republic, and Slovak Republic indicate an increase of labour efficiency and growth of the ratio of the imported value added in structure of gross output. Correlation indexes point out that number of employees in high and medium-high technology manufacturing industries more considerably depends on the volume of value added of the manufactured national economy than on the volume of the imported value added (and according to gross output).

The perspective directions of research in this sphere is detection role of MNC in technological changes in NMS and their impact on structure of value of the manufactured production by levels of technological intensity.

Results of the research can be used to improve the quality control for the technological development in the national economy for the purpose of increasing the technological level of production. Precisely the system of effective public administration and ensuring optimal conditions for doing business attracts foreign investors, leads to an increase in the level of employment, allows to ensure the technological development of the country.

References

- Balaz, V., Zifciakova, J. (2016). *RIO country report 2015*. Luxembourg: Publications Office, pp. 30-41.
- Berger, G., Steurer, R. (2009). *Horizontal Policy Integration and Sustainable Development: Conceptual remarks and governance examples*. ESDN. European Sustainable Development Network. [online]. Available: http://www.sd-network.eu/?k=quarterly%20reports&report_id=13 [2017, October 02].
- Blohmke, J. (2014). Technology complexity, technology transfer mechanisms and sustainable development. *Energy for Sustainable Development*, vol. 23, pp. 237-246. [online]. Available: <http://dx.doi.org/10.1016/j.esd.2014.09.003> [2017, December 01].

- Connolly, M. (1997). Technological Diffusion Through Trade and Imitation. *SSRN Electronic Journal*. [online]. Available: <http://dx.doi.org/10.2139/ssrn.993834> [2017, December 01].
- Diba, O., Herneho, Yu. (2016). Financing of innovative development: experience of Poland and recommendation for Ukraine. *Economist*, vol. 11, pp. 11-14.
- Eichengreen, B.J., Boltho, A. (2008). The economic impact of European integration. *Centre for Economic Policy Research Discussion Paper*, vol. 6820.
- An Employment – oriented Investment Strategy for Europe*. (2015) (pp. 5-16). Geneva.
- Enhancing the Innovative Capacity of the Polish Economy*. (2018) (pp. 1-8). Luxembourg. [online]. Available: https://ec.europa.eu/info/sites/info/files/file_import/eb014_en_2.pdf [2017, December 01].
- Eurostat. (2017). *High-tech industry and knowledge-intensive services (htec)*. [online]. Available: http://ec.europa.eu/eurostat/cache/metadata/Annexes/htec_esms_an3.pdf [2017, October 02].
- Gurbiel, R. (2002). *Impact of innovation and technology transfer on economic growth: The Central and Eastern Europe experience*, [online]. Available: https://www.eadi.org/typo3/fileadmin/WG_Documents/Reg_WG/gurbiel.pdf [2017, December 09].
- Hafner, K.A (2011). Trade Liberalization and Technology Diffusion. *Review of International Economics*, vol. 19, iss. 5, pp. 963-978. [online]. Available: <http://dx.doi.org/10.1111/j.1467-9396.2011.00999.x> [2017, December 01].
- Hafner, K.A. (2014). Technology spillover effects and economic integration: evidence from integrating EU countries. *Applied Economics*, vol. 46, iss. 25, pp. 3021-3036. [online]. Available: <http://dx.doi.org/10.1080/00036846.2014.920479> [2017, December 01].
- Henrekson, M., Torstensson, J., Torstensson, R. (1997). Growth effects of European integration. *European Economic Review*, vol. 41, iss. 8, pp. 1537-1557. [online]. Available: [http://dx.doi.org/10.1016/s0014-2921\(97\)00063-9](http://dx.doi.org/10.1016/s0014-2921(97)00063-9) [2017, December 01].
- International Monetary Fund. European Dept. (2013). *German-Central European Supply Chain-Cluster Report* (pp. 3-16). Washington, D.C. 20090: International Monetary Fund. [online]. Available: https://www.imf.org/~media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/scr/2013/_cr13263.ashx [2017, December 01].
- Menne, B. (2017). The United Nations Sustainable Development Goals-SDGs: the WHO European road map on the implementation of the SDGs and global progress to-date. *European Journal Of Public Health*, vol. 27(suppl_3), pp. 202. [online]. Available: <http://dx.doi.org/10.1093/eurpub/ckx187.521> [2017, December 01].
- Narula, R., Guimón, J. (2009). *The contribution of multinational enterprises to the upgrading of national innovation system in the EU new member states: policy implications*. In VIII Global Forum on International Investment (pp. 3-19). OECD. [online]. Available: <http://www.oecd.org/investment/globalforum/44246353.pdf> [2017, December 01].
- Perla, J., Tonetti, C., Waugh, M.E. (2015). *Equilibrium technology diffusion, trade, and growth*. [online]. Available: <http://globalpoverty.stanford.edu/sites/default/files/publications/561wp.pdf> [2017, December 01].
- Radosevic, S. (2009). Research and Development, Competitiveness and European Integration of South Eastern Europe. *Europe-Asia Studies*, vol. 61, iss. 4, pp. 621-650. [online]. Available: <http://dx.doi.org/10.1080/09668130902826212> [2017, December 01].
- Radosevic, S. (2017). Upgrading technology in Central and Eastern European economies. IZA World Of Labor. [online]. Available: <http://dx.doi.org/10.15185/izawol.338> [2017, December 01].
- Sampson, T. (2015). Dynamic Selection: An Idea Flows Theory of Entry, Trade, and Growth. *The Quarterly Journal of Economics*, vol. 131, iss. 1, pp. 315-380. [online]. Available: <http://dx.doi.org/10.1093/qje/qjv032> [2017, December 01].
- Sustainable development in the European Union*. (2016) (pp. 69-85). Luxembourg.
- Sustainable development in the European Union*. (2017) (pp. 181-197). Luxembourg.
- Time for New Ideas: Innovation in Central Eastern Europe and Turkey. (2008). Economist Intelligence Unit, pp. 32-44.
- Trade in Value Added (TiVA) – Origin of value added in final demand. (2017). Stats.oecd.org. [online]. Available: http://stats.oecd.org/Index.aspx?DataSetCode=TIVA2015_C3 [2017, September 11].
- Tvaronaviciene, M., Cernevičiute, J. (2015). Technology transfer phenomenon and its impact on sustainable development. *Journal of Security and Sustainability*, vol. 5, iss. 1, pp. 87-97, [online]. Available: [http://dx.doi.org/10.9770/jssi.2015.5.1\(7\)](http://dx.doi.org/10.9770/jssi.2015.5.1(7)) [2017, December 01].
- World Input-Output Tables, 2016 Release. (2017). World Input-Output Database. [online]. Available: <http://www.wiod.org/database/wiots16> [2017, October 17].
- Zalewski, R., Skawińska, E. (2009). Impact of technological innovations on economic growth of nations. *Systemics, cybernetics and informatics*, vol. 7, iss. 6, pp. 35-40. [online]. Available: [http://www.iiisci.org/journal/CV\\$/sci/pdfs/GF914HA.pdf](http://www.iiisci.org/journal/CV$/sci/pdfs/GF914HA.pdf) [2017, December 01].

67. STRATEGY OF THE COMPANY BALANCED DEVELOPMENT

Abstract: The paper is devoted to a scientific substantiation of the company balanced development strategy as an instrument for changes that do not threaten the integrity of the enterprise as a system. Concepts of balanced development and strategy of balanced development were reviewed. The components to form a balanced development strategy were proposed. Principal approaches to the assessment of enterprise development were considered. On the example of Ukrainian energy company (DTEK) the strategy of balanced development was formulated. Equilibrium conditions by sector of activity were investigated. Balanced Scorecard as the basic system for measuring company development was taken. Using the Spearman correlation analysis, the indicators were selected as the most affective on the overall enterprise economic safety. For research the general methods were used (abstraction, content-analysis, analysis and synthesis, induction and deduction), methods of grouping and tabular. The study type was descriptive. Further research may be aligning of company balanced development strategy with opportunities for expanding potential through participation in integration structures such as the European Technology Platforms.

Keywords: balanced development, enterprise, strategy.

JEL Classification: L1, L25, M10, O20

1. Introduction

The competition, the dynamic market conditions, and transformations in the macro environment determine the imbalances at the macro and micro levels. Due to the complexity and mobility of the business environment, the number of changes, that companies need to adapt, increases. Consequently, the number of changes, which companies need to adapt, increases. The companies must be faster in warning strategies and in neutralizing the threats. The adaptation changes must be implemented efficiently, with fewer failures, have wider coverage and depth, and be balanced, that is, they should not violate the existing balance of the enterprise. That means that the enterprises are forced to ensure stability and changes at the same time. In this context, it is important to develop a comprehensive scientific and methodological approach to the strategy of the company balanced development.

The goal of the paper is a scientific substantiation of the strategy of company balanced development as an instrument for making changes that do not threaten the integrity of the enterprise as a system.

2. Literature Review

Balanced development is a field of study that addresses challenges, changes and effective strategy that do not threaten the enterprise integrity. To formulate the concept of a strategy for company balanced development the content analysis was conducted. The theoretical framework is: 1) the concept of enterprise development; 2) the concept of balanced development; 3) assessment of the balance and level of enterprise development.

In the twentieth century, the concept of development has a significant reflection in the economy, both at the macro level and at the micro level. Middlemist and Hitt (1988, p. 601), Cumming's and Huse (1989, p. 600) defined development at level of organization and emphasized that organizational development is a systematic, an ongoing process that can support organizations deal with current and potential problems, putting leaders in a proactive, rather than reactive, stance. It is quite a general definition. In fact, many differentiating terms connected with development appear in the literature. The "business development" (Becker, Gora, Michalski, 2014), "stable development", "sustainable

¹ Maryna Pichugina Ph.D.; Pugachova 4, 17, 04050 Kyiv, Ukraine, pichuginam@ukr.net

* Corresponding author

development” (Simas, Lengler, António, 2013) and so on are frequently used in today’s business papers. Kasych and Vochozka (2017) investigated theoretical position of the processes of enterprise sustainable development management, summarizes conclusions of the leading scientists in this field, and emphasized importance of the stability development management on the systematic basis in modern corporations.

Moreover, different types of development are considered at different levels of economic systems (Hudáková, Vojtech, Vrbinčík, 2016). And it is possible to conclude that the "balanced development" is not conceptually defined in the economic literature.

Gershun and Gorsky (2006, p. 416) formulated principles and methods of balanced management. The authors gave much attention to the description of a balanced system of indicators - goals, strategic maps, components of the system and examples of its application; described management based on financial indicators.

The modern management system that is capable of adequately assessing the results and managing the improvement process is considered in the work of Copeland, Koller and Murrin (2000). In their book the company's value and development had only correct criterion – the shareholder value.

The ideas of strategic management based on a system of balanced indicators, are not new. Koverha (2016) proposed methodical approach to decision-making in the field of balanced functioning and development of the based on the use of optimized models with the objective function of maximizing the integral index of the balance, which allowed to choose an optimal set and create a schedule of activities associated with emergency response to imbalances, taking into account the balance factors in decision-making and systematic increase in the enterprises balanced functioning and development. Khorolskyi, Rybalko and Khorolska (2016) developed an intelligent system with use of the balanced scorecard, the system provides managers with support for decisions in conditions of uncertainty and manages projects restructuring the production systems to adapt products to standards of the EU.

However, there is no clear concept for ensuring a balanced development of the enterprise in conditions of macro and micro imbalances.

3. Research Methodology

The theoretical and methodological basis of the research is the fundamentals of the general economic theory, the scientific works in planning and balanced management of enterprises. In solving the research tasks, the following methods were used: dialectical approach, methods of analysis and synthesis – in determining the concepts of "balanced development of the enterprise"; the method of content analysis and comparison; tabular method. As an example DTEK (the largest privately owned energy company in Ukraine) was taken. The company's indicators were analyzed for 2 years. According to proposed algorithm, a balanced scorecard was developed, the risks that have the greatest impact on the enterprise were identified, the limit for fluctuations was justified.

4. Results

4.1. The Concept of "Balanced Development"

The "balanced development" is not conceptually defined in the economic literature. What is clear, in particular, because of in transparency between balanced, steady and sustainable development. So it is worthwhile to distinguish the characteristics to compare the types of development (Table 1).

Table 1. Differences between the types of enterprise development

Characteristic	Balanced	Steady	Sustainable
Key feature	uniformity (harmony)	continuity	at one level
External influence	indirect impact	indirect impact	direct impact
Internal influence	direct impact	direct impact	indirect impact
Proportionality	harmonious	not always harmonious	not always harmonious
Time bound	depends on time	depends on time	depends on time
Adaptability to change	compliant	intractable	intractable

Source: Own generalization on the basis of literature analysis

Of course, these terms have a lot in common with each other, but differ in key characteristics, for balanced development it is uniformity (harmony), for steady – continuity, and for sustainable – to provide activity at one, selected level, which maximizes the achievement of the goals of the enterprise.

Also various approaches to the definition of balanced growth are presented. Higgins (1977) defines balanced growth as "sales growth rates that do not deplete financial resources." Palepu (2010, p. 984) clarifies: "This is the kind of growth that a firm can sustain without changing profitability and financial policies."

According to the above definitions, "growth" is identified with quantitative indicators, and development is a qualitative leap. The main characteristic of development is the disappearance of the old and the emergence of a new one; the process of transition from one state to another, more perfect, the transition from the old qualitative state to the new, higher, from simple to complex, from lower to higher. Consequently, development is a consistent change.

On the basis of systematization of approaches to the concept of development, the concept of "the enterprise balanced development" was formed as a combination of periodic, harmonious changes in the enterprise, which do not violate the integrity of the enterprise as an open system and lead to increasing its potential and achieving the enterprise goals in the long run.

Enterprise as each system has a certain structure, consisting of elements and connections between them. When the system is in equilibrium and all the relationships between the elements are stable the interaction of the elements has maximum efficiency. But an enterprise can get out of this condition. Then it should change its state, structure, or be destroyed. With an imbalance, the system will spend more resources on achieving goals than is necessary in a balanced state. Imbalance can be a result of the external factors influence, as well as management actions, which results in disproportionate development of structural elements.

In order to ensure a balanced development of the company, a certain algorithm (strategy) is needed. Forming the balanced development strategy can be presented as a system of purposeful and directed activities, related to the misbalances assessment, forecasting their negative consequences and making changes that do not threaten the integrity of the enterprise as a system. The following components are proposed to form a balanced development strategy:

- choose a corporate strategy using traditional methods of strategic analysis;
- on the basis of a corporate strategy to develop a strategic map of the enterprise, which allows the strategic goals of the development to be reconciled;
- to develop a balanced system of indicators that helps transform the objectives of the strategic map into specific indicators and strategic measures;
- to identify the risks that have the greatest impact on the enterprise as a whole;
- to justify the limit for fluctuations (deviations from the equilibrium state) which is allowed for the integrity of the system.

Management influence to enterprise balanced development requires assessment. After all, change and control the changes can only be in the quantitative or qualitative assessment.

4.2. Algorithm of Forming a Balanced Development Strategy

For over a century, researchers are searching for effective criteria for the enterprise achievements. The first models for assessing the enterprises performance emerged in the 1920s (for example, the multiplicative DuPont formula or ROI) and were based exclusively on financial indicators. Considering the task of assessing the enterprise development, it is necessary to mention the well-tested models: the models of Greiner (1972), Adizes (1972), Churchill (1983).

The system of balanced scorecard of Norton and Kaplan (1996, p. 322) is based on measuring and assessing the effectiveness of its activities by a set of indicators, selected to take into account all the essential (in terms of strategy) aspects of the organization's activities (financial, marketing, production, etc.) It transforms the mission and the overall organization's strategy into a system of interconnected scores (Letza, Nicholas, 2014).

An algorithm of forming a balanced development strategy needs the system for limiting fluctuations. In the theoretical literature there is no evaluation system that would answer the question of whether the balance achieved in the enterprise as a complex system. In our opinion, this is explained by the fact that the economic equilibrium:

- quite dynamic,
- fluctuations (deviation from equilibrium) is a prerequisite for development,

- a critical state of system (measured by a number of indicators) is associated with uncertainty – whether the integrity of the system is violated, whether it will move to a new, higher level of orderliness.

The use of some integral indicator is inappropriate, due to the multifaceted and ambiguous nature of not only the concept of "balanced development", but also the constituent elements of development that need to be evaluated.

The construction of an overly complex evaluation model will become an obstacle for practical use. So a unified model that would allow to determine the balance of enterprise development could exist only in the form of a theoretical scheme.

The best approach to assessing the development of the enterprise is probably absent, and practical using depends on the needs of the management system. The traditional Balanced Scorecard structure can be easily modified, but it is impossible to select the final benchmark, that is, the basic indicator by which one can measure the success of the strategy implementation and the effectiveness of the firm's operation. There are also some difficulties in the process of creating this system. However, in our opinion, it is appropriate to use when formulating a balanced development strategy.

4.3. Strategy of Enterprise Balanced Development on the Example of DTEK

One of the research aims was to formulate the strategy of enterprise balanced development on the real example. DTEK is the largest privately owned vertically integrated energy company in Ukraine (Table 2). The main business segments of DTEK: fossil-fuel power generation; oil and gas; renewable power generation; energy efficiency (Table 3).

Table 2. Financial indicators (uah million)

Indicators	2016 year	2015 year	Variance (+/-)	Variance (%)
Revenue	131 815	95 375	+36 440	+38,2
Cost of sales	(105 824)	(87 321)	+(18 503)	+(21.2)
Operating income	714	697	+17,0	+2,4
Operating expenses	(5 752)	(7 958)	-(2 206)	-(27.7)
EBIT	18 923	(1 875)	+20 798	+10 r.
EBITDA margin	14%	-2%	+16	-
Net loss	(1 215)	(41 890)	-(40 675)	-(97.1)
Assets	140 597	119 757	+20 840	+17.4
Capital investment	7 134	5 015	+2 119	+42.3

Source: Official site of DTEK, 2017a

DTEK exports to Poland, Russia, Moldova, Belarus, Hungary, Slovakia, Romania, Turkey, India, and the USA. DTEK is over 75 thousand people employed by 66 companies in 11 regions of Ukraine, supplying electricity and heat to over 3.3 million of household and industrial consumers. DTEK exports to Poland, Russia, Moldova, Belarus, Hungary, Slovakia, Romania, Turkey, India, and the USA.

Table 3. Key production indicators of DTEK Group

Indicators	meas. unit	1Q 2017*	1Q 2016	Variance (+/-)	Variance (%)
Coal production	ths tonnes	14 806.9	13 896.4	+910.5	+6.6
Electricity generation (net output)	mln kWh	17 120.2	17 878.9	-758.7	-4.2
Electricity transmission via networks	mln kWh	21 792.4	22 839.1	-1 046.7	-4.6
Electricity exports	mln kWh	3 059.0	2 177.7	+881.4	+40.5
Coal exports	ths tonnes	456.0	806.0	-350.0	-43.4
Coal imports	ths tonnes	654.7	-	+3 019.6	-
Gas imports	mcm	3 019.6	-	+58	-

*Since March 2017, the performance indicators of the assets located in the territories in Donetsk and Luhansk regions temporarily non-controlled by Ukraine have not been consolidated in the statements of DTEK Energy and DTEK Group due to the loss of control.

Source: Official site of DTEK, 2017b

DTEK is over 75 thousand people employed by 66 companies in 11 regions of Ukraine, supplying electricity and heat to over 3.3 million of household and industrial consumers.

DTEK's long-term strategy:

- DTEK actively develop in Ukraine with the entry into the markets of neighboring countries as a diversified and energy-fueled company,
- DTEK focus on selling electricity to all categories of consumers, maintaining high standards of service and building a strong retail brand,
- DTEK take part in reforming and modernizing the Ukrainian economy, social development of the regions and advancement of the best standards in industrial and environmental safety.

The main general corporate strategy according to Ansoff's matrix (Ansoff, 1965, p. 241) for DTEK is the market development strategy (existing product – new market). This strategy means geographic expansion, new distribution channels, and search for new consumer groups. On the basis of the general corporate strategy, a strategic map of the enterprise was developed (Table 4).

Table 4. Simplified Balanced Scorecard of DTEK

	Strategic Goal	Indicator	Target Value	Strategic Action
Finance	Getting steadily growing profits	– net profit; – profit from sales	10000 UAH mln. 120000 UAH mln.	
	Increase in sales volume	– Share of income of each type of product from consolidated income; – change in market share; – number of new clients; – the number of re-sales	Sale of energy = 40% Wholesale of energy = 40% Coal = 10% Thermal energy = 10% 33% of the electricity market > 20% 85%	
	Stability Support	– change in profit; – coefficient of economic security of the enterprise	+20% 0.7	
Customers	Observance of responsibilities	– Number of complaints; – The amount of claims settlement	0 0	Appointment of penalties in the amount of 20% of the contract for late delivery or quality of products
	Increasing customer loyalty			New system of discounts (multi-year discount)
Processes	Improve merchandise planning and inventory management	– balance of goods for each item;	Coal K = 5 mln tons Coal A = 10 mln tons Coal G = 2mln tons Carbon dioxide = 1 mln tons Coal T = 1mln. tons	Use of JIT systems, regular monitoring of current values of indicators by means of SAP R/3
	Improving product quality	– quality of products;		Go to methods of stimulating tariff
	Clear scheduling of production schedule	– deviation of the actual results from the planned;	15%	Use of JIT systems, regular monitoring of current values of indicators using SAP R/3
Development	To increase professionalism of employees	– the number of hours of training per month; – number of employees who graduated from the DTEK Academy;	40 hours 10%	Improvement of personnel qualification, purposeful training program of personnel at the Academy of DTEK
	Create a SAP-based structure	– Compliance with SAP Implementation Terms	system implementation	

Source: On base of information from Official site of DTEK, 2017c

Presented in Table 4 DTEK's Balanced Scorecard allows to ensure implementation of the proposed system of indicators simultaneously with the overall strategy. A well-balanced system helps to transform the objectives of the strategic map into specific indicators and strategic measures. The strategic actions were identified, for instance: appointment of penalties; purposeful training programs; JIT systems.

The next steps are to identify the risks (Table 5) and to justify the limit for fluctuations (deviations from the equilibrium state).

Table 5. Relative risk ratios

Coefficients	Normative	Fact	Math expect.	Dispersion
<i>Property risk</i>				
Coefficient of wear of main production assets	Reduction	0.1805	0.0864	0.0024
Updating of fixed assets	Reduction	0.1338	0.1717	0.0007
Output of fixed assets	< coefficient of fixed assets renewal	0.0027	0.0033	0.0000
<i>Liquidity risks</i>				
Coating ratio	>1	0.8033	1.0099	0.1837
Quick liquidity ratio	0,6...0,8	0.5844	0.7945	0.1638
Absolute liquidity ratio	>0, increase	0.1756	0.3849	0.0815
<i>Business Risks</i>				
Solvency ratio	> 0,5	0.6925	0.9506	0.3385
Coefficient of autonomy	>0,5, increase	0.5909	0.5133	0.0035
Financing factor	<1, reduction	1.0708	1.0262	0.0426
Coefficient of maneuverability of equity	> 0, increase	0.2488	0.2927	0.0163
Coefficient of providing own working capital	>0,1	-0.1967	0.0099	0.1837
Long-term borrowing ratio	0,4	0.1756	0.3925	0.0863
<i>Market risks</i>				
Profitability of sales	>0, increase	0.3189	1.7066	6.8641
Net Return on Sales (Profit Margin)	>0, increase	0.0976	0.0741	0.0021
Return on equity ratio	Increase	0.9747	0.8542	0.1445
Leverage coefficient	<1	0.8156	0.7211	0.0128
Return on equity	>0, increase	0.6925	0.9096	0.0752
Return on assets	>0, increase	0.1005	0.1457	0.0066
Return on investment return	>0, increase	0.0523	0.0731	0.0016

Source: Author's own research

It can be noticed from Table 5 that the most risks for DTEK are market risks. The reason for this is a rise in cost of production. Also there is a need to concern risks of business events, in particular, the long-term borrowing ratio and the funding factor. This is due to a reduction in the company's cash, which immediately invests in new projects, tax payments and new projects.

A correlation analysis of Spearman was conducted to reveal the relationship between these figures. According to it, the group of liquidity risks has the greatest impact on the activities of the company. Therefore, in order to balance business activity, it is necessary to draw attention to the indicator of the share of current assets and the coverage ratio, which allows balancing the other indicators. For DTEK, the working assets are the most important.

So, in order to balance the development, DTEK needs to pay attention to the ever-increasing cost of production. That is, to focus on less profitable segments of the company (sales of electricity and its generation) and make a plan of changes.

In accordance with the equilibrium conditions, we defined it at each level (Table 6). Four business segments of activity were considered; the balance should be stored not only within business processes themselves but also between them. The balance of the enterprise is maintained only in the innovation and strategic sectors. The imbalance in the financial sector is due to lack of working capital. To overcome this problem, the management of DTEK took 2 long-term loans.

Table 6. Equilibrium conditions by sector

Analyzed sector	Equilibrium condition	Manifestations of deviation
General economic equilibrium		
General economic sector	Expectation = Result	The presence of losses in the coal mining and processing segment (-5.3%) The supply of coal is less than demand (shortage of coal)
	Demand = Offer Income = Costs	
Marketing Balance		
Marketing sector	Products sold = Commodity products	Unsold products
Production Balance		
Manufacturing sector	Spent resources = End product	There is a shortage of resources 6 mln tons of ash slag that cannot be reused
Financial-investment balance		

Financial and investment sector	Capital inflow = Capital outflow	The deficit of working capital Incorrect investment of business segments
Innovative Balance		
Innovation sector	Traditions = Innovations	The sector is balanced
Strategic balance		
Strategic sector	Strategy coherent with tactics	Sector is balanced

Source: Author's own research by method of Hobta and Kladchenko, 2011

The first loan in the amount of 375 million dollars in the form of export financing (two tranches – for 3 and 5 years) is provided by a syndicate of banks. Also, in 2013, the company issued euro bonds with a maturity of 2018 for \$ 750 million under the coupon rate of 7.875 per annum.

The reason for the shortage of working capital is the expansion of electricity supplies to Europe. Therefore, the company is looking for an opportunity to replenish capital to maintain active operational activity. The lack of a balance in the production sector is due to the high amount of waste generated during production, as well as the availability of resource shortages.

5. Conclusion

One of the main trends is the increasing imbalances. Dynamism and uncertainty of the environment of economic systems necessitate the improvement the management mechanisms of development.

During theoretical study and systematization of the approaches to development it was proposed the concept of "balanced development of the enterprise" as a set of periodic, harmonious changes in the enterprise, which does not violate its integrity and leads to potential growth and achieving the goals.

Forming the balanced development strategy can be presented as a system of purposeful and directed activities, related to the misbalances assessment, forecasting their negative consequences and making changes that do not threaten the integrity of the enterprise as a system. The following are proposed to form a balanced development strategy: 1) choose a corporate strategy; 2) on the basis of a corporate strategy to develop a strategic map; 3) to develop a balanced scorecard; 4) to identify the risks that have the greatest impact on the enterprise; 5) to justify the limit for fluctuations.

To ensure a balanced development of the company, a model for company efficiency assessing is needed. Such a model requires the system for limiting fluctuations (deviations from the equilibrium state). It was determined that construction of a too complicated estimation model may become an obstacle for practical use. It was proposed to use Balanced Scorecard as the basic system for measuring company development, which has the following advantages: clarifies the company's basic strategic orientation and presents it in a measurable form; is a communication chain that enables employees to understand their contribution to achieving strategic goals of the company, which significantly increases the likelihood of implementing the developed strategy.

On the example of DTEK a Balanced Scorecard was made. Using the Spearman correlation analysis, 4 indicators that most affect the overall enterprise economic safety were selected. Therefore, in the future, company management will save time, tracking only the indicator of working capital, the share, capital turnover, coverage ratio and cost of production. Also business segments were considered; the balance should be stored not only within but also between them. The equilibrium conditions were defined it at each level of the enterprise. The imbalance is in the financial, marketing, manufacturing sectors. To ensure DTEK's balanced development the combination of periodic harmonious changes was proposed.

Further research is determined by limitations of this one and would be aligning of company balanced development strategy with opportunities for expanding potential through participation in integration structures such as the European Technology Platforms, one of the tasks is to settle various political issues aimed at balanced development.

Acknowledgements

The realization of the paper is supported by Jean Monnet Module «European business models: transformation, harmonization and implementation in Ukraine» № 587138-EPP-1-2017-1-UA-EPPJMO-MODULE (the joint project of National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Erasmus+ Jean Monnet Fund and Education, Audiovisual and Culture Executive Agency, supported by the EC).

References

- Adizes, I. (1972). *The Corporate Lifecycle* [online]. Available: http://www.adizes.com/corporate_lifecycle_overview.html. [2017, January 04].
- Ansoff, H.I. (1965). *Corporate Strategy: An Analytic Approach to Business Policy for Growth and Expansion*. New York: McGraw-Hill.
- Becker, L., Gora, W., Michalski, T. (2014). *Business Development Management*. Von der Geschäftsidee bis zur Umsetzung. Symposium Publishing.
- Churchill, N.C. (1983). The five stages of small business growth. *Harvard Business Review*, vol. 61, iss. 3, pp. 30-50.
- Copeland, T., Koller, T., Murrin, J. (2000). *Valuation: Measuring and Managing the Value of Companies*. New York: John Wiley & Sons, pp. 81-94.
- Cumming, T.G., Huse, E.F. (1989). *Organizational development and change*. St. Paul, MN: West Publishing.
- Gershun, A., Gorsky, M. (2006). *Technologii sbalansirovannogo upravleniya*. Olympus Business (in Russian).
- Greiner, L.E. (1972). *Evolution and Revolution as Organization Grow*, [online]. Available: <https://hbr.org/1998/05/evolution-and-revolution-as-organizations-grow>. [2017, January 04].
- Higgins, R., (1977). Yow much growth can a firm afford? *Financial management*, vol. 6, iss 3, pp. 7-16.
- Hobta, V., Kladchenko, I. (2011). Specyfika proyaviv zagal`no filofs`kogo zakonu rivnovagy na rivni okremogo pidpry`yemstva. *Bulletin of Khmelnytsky National University. Economic sciences*, no. 6, vol. 2, iss.181, pp. 300-304. (in Ukrainian).
- Hudáková, M., Vojtech, F., Vrbinčík, M. (2016). The strategy of sustainable development in the programming documents of self-governing regions of Slovakia. In M.Okřęglicka, I. Gorzeń-Mitka, A. Lemańska-Majdzik, M. Sipa, A. Skibiński, (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management, CITPM 2016*, pp. 137-142. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Kaplan, R.S., Norton, D.P. (1996). *The Balanced Scorecard: Translating Strategy into Action*. Boston: Harvard Business School Press.
- Kasych, A., Vochozka, M. (2017). Theoretical and methodical principles of managing enterprise sustainable development. *Marketing and Management of Innovations*, iss. 2, pp. 298-305.
- Koverha, S.V. (2016). Modeli ta metody pryynyattya rishen' u sferi upravlinnya zbalansovanyim rozvytkom promyslovykh pidpryemstv. *Marketing and Management of Innovations*, iss. 2, pp. 144-156.
- Khorolskyi, V., Rybalko, L.P., Khorolska, O.V. (2016). Intellektual'naya systema upravlenyya korporatyvnyim predpryatyem s yspol'zovanyem sbalansyrovannoy systemy pokazateley *Marketing and Management of Innovations*, iss. 2, pp. 188-202.
- Letza, S.R., Nicholas, C.O.E. (2014). Two decades of the Balanced Scorecard, A review of developments. *Poznan University of Economics Review*, vol. 14, iss. 1, pp. 63-75.
- Middlemist, R.D., Hitt, M.A. (1988). *Organizational behavior: Managerial strategies for performance*. St. Paul, MN: West Publishing.
- Official site of DTEK (2017) [online]. Available: <http://dtek.com/en/about/results/> [2017, November 14].
- Official site of DTEK (2017b) [online]. Available: <http://dtek.com/en/about/results/> [2017, November 14].
- Official site of DTEK (2017c) [online]. Available: <http://dtek.com> [2017, November 14].
- Palepu, K., Healy, P., Bernard, V. (2010). *Business Analysis & Valuation. Using Financial Statements*. Mason, Ohio: Thomson/South-Western.
- Simas, M.J.B.G.C., Lengler, J.F.B., António, N.J.S. (2013). Integration of sustainable development in the strategy implementation process: Proposal of a model. *Corporate Governance*, vol. 13, iss. 5, pp. 511-526.
- Spearman's Rank-Order Correlation (2017) [online]. Available: <https://statistics.laerd.com/statistical-guides/spearman-rank-order-correlation-statistical-guide.php>. [2017, November 14].

Joanna Rosak-Szyrocka^{1*}
Czestochowa University of Technology
Poland
Martina Blaskova²
University of Žilina
Slovakia

68. EMPLOYEES' INFLUENCE ON THE PERSONNEL MANAGERIAL BEHAVIOR

Abstract: The present study aims to investigate the impact of hospital employees' features on leadership styles in hospitals in Poland. The following features were taken into consideration: gender (MK), education (WE), age (WI), length of service (SC), mobility (MR), mode of employment (TR). In this study a descriptive research design was used and a quantitative research was conducted, which was based on the so-called BOST methodology associated with the management principles of Toyota and Toyotarism concept (Toyotarism is a scientific discipline dealing with the relationships between a human and a machine, and among human beings, with regard to process approach, Japanese culture, especially Toyota, aimed at continuous improvement with the use of knowledge). Surveys were conducted among department heads of 10 public hospitals of various referral systems from the Upper-Silesian Agglomeration providing various types of medical services (which shows a large variety of research sample) operating in Poland. The research findings revealed that there exists a relation between hospital employees' features and the leadership style adopted. The findings also showed that the qualifications of hospital staff affect their perception of the management style employed in their organization. The study showed that the feature which proves to affect the leadership style the most is the education (WE) which the respondents have while the features which seem to have the least impact of the leadership style are the respondents' sex (MK) and mode of employment (TR).

Keywords: BOST survey, hospital workers', leadership, management style.

JEL Classification: I12

1. Introduction

Healthcare and medical organizations in Poland have been recently making attempts to change their style of leadership and management within the scope of both material and human resources, and to also modify their company image so that it is perceived by patients as more positive. The aim of the paper is to identify the structures of leadership styles with the use of the BOST survey. The research included employees of 10 public hospitals situated in the Upper-Silesian Agglomeration representing primary, secondary and tertiary referral hospitals varying in size and providing various scopes of medical services. The results of the research include:

- characteristics of the respondents (hospital employees) related to their sex, age, qualifications, mobility, mode of employment and length of service;
- presentation of the significance of healthcare service provision issues (ZP) and human resources issues (SL) in the selected hospitals of the Upper-Silesian region;
- the influence of the respondents' features on the distribution of the pairs of ZP and SL factors' assessment.

The selection of the research sample was based on the complexity of the obtained results, which could not include fewer than 20 surveys, while in terms of the percentage share of the respondents to the number of the employees of the hospital ward it had to be more than 80%. Computer software was used to conduct an analysis of the obtained results.

¹ Joanna Rosak-Szyrocka Ph.D.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, asros@op.pl

² Doc. Ing. Martina Blaskova Ph.D.; Univerzita 8215/1, 010 26 Žilina, Slovakia, blaskova.fri@gmail.com

* Corresponding author

2. Literature Review

Healthcare organizations are complex environments that require strong, comprehensive, and collaborative leadership (Sonnino, 2016). Even though leadership is a popular term, there is still a problem with its description since it is not a scientific term with a regular normalized definition (Vroom, Jago, 2007). Bennis (2007) explained that leadership was like beauty: “it’s hard to define, but you know it when you see it.” Leadership is a social phenomenon that is found everywhere. According to some authors (Hartog, Koopman, 2011) myths and legends about what differentiates great leaders from their followers have always been found rather interesting. Intellectuals have sought for a long time to develop models for organizing and implementing leadership in the best possible way. Nevertheless, there is still no single valid theory of leadership for any case even today (Stippler et al., 2011).

A good leadership is important for healthcare organizations’ success like any other organizations’ and it affects our lives deeply (Baysaka, Yenerb, 2015). Healthcare leaders will inevitably have an impact on the lives of many people as individuals rely on physicians and nurses during some of the most critical moments in their lives (Rogers, 2012). As it is emphasised by a number of authors (Goldsmith et al., 2002; Kambil, 2010) leadership is a complex process. It plays a significant role in the success or failure of an organization. The way employees perceive organizational power is of significant importance for any organization’s success or its lack (Taucean, Tamasilaa, Negru-Strautia, 2016).

3. Methods and Hypothesis

The aim of the conducted survey was to identify the structure of management styles for the management of medical services in the conditions present in Poland. The survey was carried out based on the so-called BOST methodology. BOST methodology associated with the management principles of Toyota is proper to investigate medical service organizations. Until the present day an analysis concerned with influence of the features of medical personnel on leadership styles found in Poland based on Toyota management principles has not been the subject of wider academic research. An analysis of the literature included in the research shows that Drexel University looked into the Toyota Production System (TPS), as it had established credibility in both industry and healthcare settings (Serembus, Meloy, Posmontier, 2012; Stapleton et al., 2009). Toyota Kata methodology was used to enhance operational efficiency in an effort to optimize value (Merguerian et. al, 2015; Pervaiz, Zaheer, 2015). The Toyota Production System (TPS) has become a successful model for improving efficiency and eliminating errors in manufacturing processes. Based on the literature and recent economic developments, the problem statement of the survey is formulated as follows:

H1: There is a dependence between leadership styles used by the heads of hospital departments and the respondents’ features.

H2: Education of the respondents (hospital employees) has an impact on their perception of the leadership style employed in the healthcare organization of their employment.

BOST Methodology, connected with Toyotarism (i.e. application of Toyota Production System Principles), is a concept invented by Stanislaw Borkowski, and it is legally protected by the confirmation date (Ulewicz et al., 2013; Spinelli, 2006).

Toyotarism is a scientific discipline dealing with the relationships between a human and a machine, and among human beings, with regard to process approach, Japanese culture, especially Toyota, aimed at continuous improvement with the use of knowledge. The definition specifies two dipoles: human – machine and human – human. Within the four components of the definition, the human occurs three times. It emphasizes the importance of the human in Japanese culture, and thus, in the Toyota culture. In the basic human – machine dipole, the human pole comprises originators, initiators, investors, senior management, and leaders who plan and conduct human activity. In the second dipole i.e. human – human, one pole means management, leaders i.e. managerial staff who, while managing human teams, have a visual contact with them - one could say that they look in the eyes of those who carry out processes, i.e. those who constitute the other pole in the human – human dipole. The BOST method allows to: assess the validity of factors describing 14 Toyota management principles, determine management styles (taking into account the optimum adopted by Toyota), identify leadership qualities of managers, determine satisfaction of employees/clients, determine commanding

skills of managers, identify features of managers' influence, perform team and individual self-assessment, build a 3 x 3 matrix (competitiveness of a product/service, technological capabilities), determine the meaning of the driving forces of improvement, obtain information about the structure of human potential, taking into consideration gender, education, age, length of service, mobility, mode of recruitment. Tests were conducted among medical staff of public hospitals from the Upper-Silesian Agglomeration with different referral levels, providing various types of medical services (which shows a large variety of research sample) operating in Poland. Our survey included 10 hospitals in the Upper-Silesian Agglomeration and they were marked with symbols A÷A9. The surveyed hospitals are primary, secondary and tertiary referral hospitals. In primary care hospital (regional hospitals, city hospitals, district hospitals), emergency treatment is performed (with basic diagnostics) and so is palliative care (nursing patients). Secondary referral hospitals represent hospitals with primary care or specialist hospitals having e.g. departments of metabolism. Secondary referral hospitals (provincial, provincial polyclinic, provincial specialist hospitals, provincial hospital complexes) treat cases in which primary care hospitals do not have necessary resources to handle as well as cases in which a specialist diagnosis is required. Tertiary hospitals represent clinical hospitals (with the referral region of more than one province) in which academics are employed, and hospitals of Scientific Research Institutes of the Ministry of Health operating across Poland. Here detailed diagnostics is performed, as well as specialist tests. These hospitals are the only ones involved in treatment of hematological diseases such as leukemia. The research included the hospitals which had obtained quality certification (accreditation, ISO 9001, HACCP, GMP) as well as the hospitals without any certification. An important academic issue is to underline four management styles: the integrated style, the democratic style, the non-interfering style, and the autocratic style. The binding scale for both elements of the management map 1:9 is not divisible by 2, and therefore, there exist "blind spots" or the obtained "map quarters" contain a different number of measurement points. Thus, it is proposed to build a management map based on 1:8 scale. After such proposal all areas representing a given management style are equal, each of which has 16 measurement points. Thus, the proposed management map does not have "blind spots." The survey was planned so as to ensure gaining two independent groups, namely:

- Exogenous variables (independent) comprised the features of the respondents (age, gender, length of service, mobility, mode of recruitment).
- Endogenous variables (dependent) comprised the assessment of production and human issues in the case of the leadership/management map. Dependent variables were rated on the scale of 1÷8.

The selection of the research sample was based on the complexity of the obtained results, which could not include fewer than 20 surveys, while in terms of the percentage share of the respondents to the number of the employees of the hospital ward it had to be more than 80%. Computer software was used to conduct an analysis of the obtained results. The outcome of the study was obtained as a result of conducting the BOST survey within the following scope:

- respondents' features (hospital staff) is area E12 in the survey,
- management styles is area E9b in the survey,

The respondents provided answers to the following questions included in the abovementioned areas.

E12. Characteristics of a respondent:

- MK – Gender: 1 – man, 2 – woman.
- WE – Education: 1 – secondary medical, 2 – higher, 3 – higher with the first degree of specialization, 4 – higher with the second degree of specialization.
- WI – Age: 1 - to 25 years, 2 - 26 ÷ 30 years, 3 - 31 ÷ 35 years, 4 - 36 ÷ 40 years, 5 - 41 ÷ 45 years, 6 - 46 ÷ 50 years, 7 - 51 ÷ 55 years, 8 - 56 ÷ 60 years, 9 - 61 ÷ 65 years, 10 - over 65 years.
- SC – Length of service: 1 - to 5 years, 2 - 6 ÷ 15 years, 3 - 16 ÷ 20 years, 4 - 21 ÷ 25 years, 5 - 26 ÷ 30 years, 6 - 31 ÷ 35 years, 7 - 36 ÷ 40 years, 8 - over 41 years.
- MR – Current employment is your ____ place of work: 1 – first, 2 – second, 3 – third, 4 – fourth, 5 – fifth, 6 – more than fifth.
- TR – In the hospital I was hired in the following mode: 1 – normal, 2 – by being transferred, 3 – due to better financial conditions offered.

E9b. Rate on the scale of 1 ÷ 8 the importance in the hospital (1 – lack of interest, 8 – high interest):

- SL – of human resources issues,

– ZP – of issues related to provision of medical services.

The BOST survey characterized respondents in terms of age, education, gender, mode of employment, mobility, and length of service. In this paper, the importance of issues related to medical services should be understood as the quality of medical services and as the satisfaction of a customer/patient, where both elements are obtained through contacts of former customers/patients with the personnel of a particular ward.

4. Results and their Analysis

Our study was conducted in 10 selected public hospitals in Poland and used six respondents' features including gender, age, education, length of service, mobility and mode of employment. The surveys were carried out in hospitals in the Upper-Silesian Agglomeration which differed in terms of their referral system, provision of services, having or not having quality management systems implemented, or the number of employees.

Two factors decide about the management style of the ward head: the factor related to medical services provision (ZP) and the factor related to human resources (SL). It was therefore decided to explore the problem of the distribution of the factors' pairs on the management map. The methodology is as follows. All rating pairs contained in part A of the management map will accept weight 1 in the zone. Rating pairs included in parts B, C and D of the management map will accept weights 2, 3 and 4 respectively in the respective zones. Taking into account the elements of the Japanese management, which are always expressed in a similar manner, the respondents' characteristics should not affect the distribution of the pairs of points in particular zones. They should be impressions which people experience regardless of their personal traits (in this way the so-called organization's culture is emphasized). However, respondents have different abilities to perceive ongoing phenomena occurring in their environment. Thus, on the whole, they actually evaluate the ways in which management actions are carried out in an organization. The correlation analysis in the thesis is conducted for 3 α degrees (in the Figures 1a-1j), histograms can take the description 3, 2, 1 respectively. The sign before the numbers indicates impact direction:

- $\alpha = 0.05$;
- $\alpha = 0.2$;
- $\alpha = 0.1$.

The results of the subjective correlation analysis, regarding the ward of hospital A (Figure 1a) where gender (MK), education (WE), age (WI), length of service (SC), mobility (MR), and mode of employment (TR) indicate that two characteristics out of six produce the same impact direction at the same levels on the distribution of rating pairs in the management map zones. We find that the older the respondent (age) and the longer the service is, the more separated the management and democratic styles dominate. In their assessment since the maximum weight value of the management styles is 4 for the democratic style, also two respondents' characteristics affect management styles in hospital A1 ward. This time the impact direction as well as the impact's significance level is varied. The higher the respondents' education is, the greater the perception degree of the integrated style proves to be. Respondents' mobility affects the management styles at level $\alpha = 0.2$ and it is a positive effect, which means that the respondents' perception of the democratic style grows with an increase of the number of previous workplaces (Figure 1b). Respondents of hospital A2 ward (Figure 1c) are more sensitive to the management actions in their workplace than the staff in the previously examined wards. It is expressed by the influence of their four personal characteristics on the prevailing management styles. As Figure 1c shows education affects in the positive direction, while the other three features in the negative direction. There are rather modest results relating to the statistically significant impact of respondents' characteristics on the management styles of hospital A3 ward (Figure 1d). Only the respondents' mobility shows a negative effect and only for $\alpha = 0.2$. It means that the respondents who had worked earlier in other organizational units note that the ward head manages the ward using the integrated style. It can be assumed that in relation to the requirements of the Japanese management philosophy, in the ward of a given hospital there are conditions similar to an organization culture characteristic of Japan. From the respondents' characteristics a high sensitivity to the management styles is shown in hospital A4 ward (Figure 1e). An impact direction for all the four features is positive and for three features it is already at level $\alpha = 0.05$. We note the following relations: the growth of education, age, length of service of the respondents reduces allocation of pairs of factors

that determine management styles in the areas of the integrated style, autocratic management in favor of another style - the democratic one. The above-mentioned impact direction is also the same for the recruitment mode. It means that the normal recruitment mode ensures that the respondents perceive it as the integrated management style, whereas the recruitment mode for financial reasons is associated with the democratic management style. Interpretation of the findings concerning the impact which the respondents' characteristics have on the allocation of subjective factors' pairs in the management map zones in the case of hospital A5 ward (Figure 1f) is very simple. There is an only statistically significant correlation between the respondents' mobility and management styles. It is an effect at level $\alpha = 0.2$, which is positive. The respondents who have not previously worked in other organizations are of the opinion that it is the integrated style which predominates in the surveyed hospital ward.

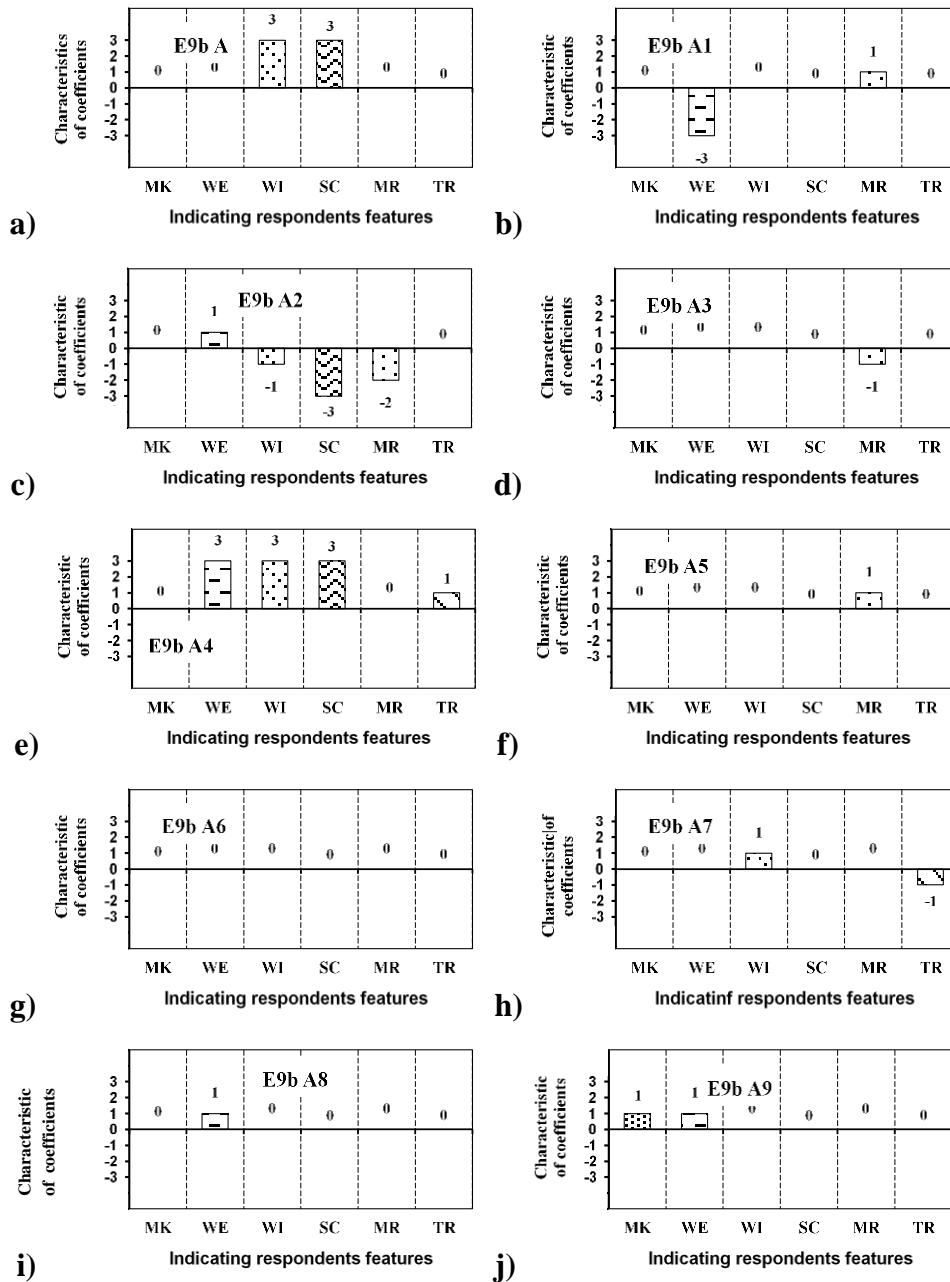


Figure 1. Impact of the respondents' characteristics on the distribution of the pairs of ratings of ZP and SL factors in the management map zones. Relates to A÷A9

Source: Own study

In the study it was found that in one out of the ten surveyed hospitals wards i.e. hospital A5 ward (Figure 1g) there is no statistically significant correlation between the respondents' characteristics and the management styles applied. On the basis of such statement it might be suggested that the so-called organizational culture of this ward is closest to the organizational culture present in Japanese organizations. In the surveyed ward of hospital A5 the following relationships were found to exist: there are two respondents' characteristics that affect the management styles, impact direction of these factors is different, α level for which the dependencies are statistically significant is the same and it is $\alpha = 0.2$, with the growth of the respondents' age, the democratic style begins to prevail over the other styles, in the case of the recruitment mode, the normal mode of recruitment triggers the perception of the integrated management style among the respondents. Research object A8 shows significant closeness of an organization's culture in its ward (Figure 1i). Only one statistically significant relation at level $\alpha = 0.2$ was noted, and it applies to the respondents' characteristic which is education. We find that the higher education the respondents have, the better they perceive the integrated management and democratic styles. In the surveyed ward of hospital A9 (Figure 1j) there are two relations between the factors that describe the management styles and the respondents' characteristics. These features are the respondents' gender and education, and they both impact direction and α level is equal for both features. An impact of the respondents' gender on the management styles appeared for the first time in a subjective analysis. The interpretation of the result is as follows. According to the accepted meaning of 1 – men, 2 – women, the correlation is positive, i.e. it is women rather than men who perceive to a greater extent in the respondents' activities the democratic management style, which *supports H1*. The analysis of Figure 2 can be expressed by the following statements: the longer the respondents' length of service, according to them, the better perception of the democratic style is in relation to the other management styles (this dependence exists for $\alpha = 0.05$), work mobility mostly affects the respondents' perception of the democratic style (dependence exists for $\alpha = 0.1$), education (positive effect) and respondents' age (negative effect – dependence for $\alpha = 0.2$) have influence at a similar α level, but in a different direction. The results of the analysis of the influence which respondents' features have on the management style (distribution of the pairs of ZP and SL factors) in the management map zones can be formulated as follows:

- 18 statistically significant dependencies were found to be present for 60 correlations possible,
- positive impact direction is found in 13 out 16 statistically significant correlations,
- seven out of sixteen correlations are already present at the level of $\alpha = 0.05$,
- the following series is obtained for the respondent's feature when we take into account the number of statistically significant factors:

$$WE > (WI ; MR) > SC > (MK ; TR) \quad (1)$$

This dependence shows that it is the respondents' education (WE) which proves to be the most active feature affecting the management styles, which supports H2. And the features which appear to have the least influence on the management styles include the gender (MK) and mode of employment (TR).

5. Conclusion

This is the first study to characterise impact of hospital employees' features on leadership styles in hospitals in Poland. Findings may guide to improve quality of medical services in hospitals.

The paper resolves the problem of the lack of clarity in the division of the leadership map based on a nine-point scale of the factors which define it, i.e. the importance of medical service provision and human resources issues. In this respect, the scale was changed for both factors from the scale 1:9 to 1:8. It was found that in terms of the respondents' characteristics the personnel of the wards is primarily comprised of women with higher medical education and the second specialization degree, aged 51 ÷ 55, with the length of service of 31 ÷ 35 years, for whom the current hospital is the first workplace and who were recruited in the normal mode. It was found that in the studied hospitals wards there is no single managing style as such, and that two styles of managing the personnel dominate i.e. the integrated style and autocratic style.

Leadership style as such is a significant tool for exerting influence as it shapes social behaviours, which is of great importance for carrying out changes introduced in the hospital and their consequences. Effective organizational behaviours can be shaped by using different leadership styles

and different ways of exerting influence on employees (Nowicka-Skowron, Ulewicz, 2015; Grabara, Grondys, Kot, 2016; Blaskova et al., 2017).

Leadership is an essential issue from both theoretical and managerial perspectives. However, success in hospital management is found in being flexible and adaptable to a variety of situations which increase quality of care. One of the best ways to ensure quality of care is to recruit and retain sufficient medical staff. The researchers recommended that hospital leaders should plan and implement effective strategies to promote medical personnel retention. This can be done through creating work environment that is caring and conducive to practising medical professions.

The research focused only on hospitals based in the Upper-Silesian Agglomeration. There is a certain likelihood that the research results could vary had the survey included hospitals based in some other parts of Poland, which is certain to become a subject of the authors' research in the future. The authors also intend to carry out research aiming at a comparison of management styles in public hospitals both in Poland and in Slovakia.

References

- Aij, K., Aernoudts R., Joosten G. (2015). Comparison of Leadership Traits among Chief Executive Officers (Ceos) in High-performing, Low-Performing and Lean-Management Hospitals in the USA. *British Journal of Education, Society & Behavioural Science*. vol. 9, iss. 2, pp. 118-130.
- Baysaka, B., Yenerb, M. I. (2015). The Relationship Between Perceived Leadership Style and Perceived Stress on Hospital Employees. *Procedia - Social and Behavioral Sciences*. vol. 207, pp. 79-89.
- Bennis, W. (2007). The Challenges of Leadership in the Modern World. Introduction to the Special Issue. *American Psychologist*. vol. 62, no. 1, pp. 2-5.
- Blaskova, M., Blasko, R., Rosak-Szyrocka, J., Ulewicz, R. (2017). Flexibility and Variability of Motivating Employees and Managers in Slovakia and Poland. *Polish Journal of Management Studies*, vol. 15, iss.1, pp. 26-36.
- Gilvaniaa, F.R., Montazeria, R., Habibia, M., Kazemianb, M. (2014). Designing A Model to Iranian Prosperous Organization Managerial Grid, *Journal of Business and Management Review*, vol. 4, iss.1, pp. 125-133.
- Goldsmith, M., Govindarajan, V., Kaye, B., Vicere, A. A. (2002). *The Many Facets of Leadership*, Publisher: Financial Times Prentice Hall.
- Grabara, J., Grondys, K, Kot, S. (2016). Mobility Of 65 + Society – Needs And Expectations of Third Age University Students. In Mandler, B., Marquez-Barja, J., Mitre, C., Miguel, E., Caganova, D., Chaouchi, H., Zeadally, S., Badra, M., Giordano, S., Fazio, M., Somov, A., Vieriu, R. L. (Eds.), *Internet of Things. IoT Infrastructures* (pp. 122-128). Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, no. 170, Springer International Publishing.
- Griffith, J.R. (2001). Developing an Outcomes Approach in Health Management Education. *Journal of Health Administration Education*, (Special Issue), pp. 125-30.
- Hartog, D.N.D., Koopman, P.L. (2011). Leadership in Organizations. In Anderson, D.S. Ones, Sinangil, K.K., Viswesvaran, C. (Eds.), *Handbook of Industrial, Work & Organizational Psychology*, vol. 2, (pp. 166-187), SAGE Publications.
- Kambil, A. (2010). Developing the Next Generation of Leaders. *Journal of Business Strategy*, vol. 31 iss. 2, pp. 43-53.
- Merguerian, P.A., Grady, R., Waldhausen, J., Libby, A., Murphy, W., Melzer, L., Avansino, J. (2015). Optimizing Value Utilizing Toyota Kata Methodology in a Multidisciplinary Clinic. *Journal of Pediatric Urology*. vol. 11, iss. 4, pp. 228.e1–228.e6.
- Mishra, M., Garg, K., Wadhawan, Ch. (2015). Analyzing Leadership Style of Managers Through Blake and Mouton's Managerial Grid. *IJABER*, vol. 13, iss. 3, pp. 1319-1332.
- Nowicka-Skowron, M., Ulewicz, R. (2015). Quality Management in Logistics Processes in Metal Branch. *24th International Conference On Metallurgy And Materials*, Metal 2015, pp.1926-1931. Brno: Technical University of Ostrava.
- Raza, A., Nisar, N., Ali, Z. (2011). Impact of Personality Traits on Leadership Styles of Secondary School Teachers. *Interdisciplinary Journal of Contemporary Research in Business*, vol. 3, iss. 3, pp. 610-617.
- Rogers, R. (2012). Leadership Communication Styles: A Descriptive Analysis of Health Care Professionals. *Journal Health Leadership*. vol. 4, pp. 47-57.
- Serembus, J.F, Meloy, F., Posmontier, B. (2012). Learning From Business Incorporating the Toyota Production System Into Nursing Curricula. *Nursing Clinics of North America*. vol. 47, iss. 4, pp. 503-516.
- Sonnino, R. (2016). Health Care Leadership Development and Training: Progress and Pitfalls. *Journal of Healthcare Leadership*, vol. 8, pp. 19-29.

- Spinelli, R. J. (2006). The Applicability of Bass's Model of Transformational, Transactional, and Laissez – Faire Leadership in the Hospital Administrative Environment. *Journal Hospital Topics. Research and Perspectives on Healthcare*, vol. 84, pp. 11-19.
- Stapleton, F.B., Hendricks, J., Hagan, P., Delbeccaro, M. (2009). Modifying The Toyota Production System for Continuous Performance Improvement in an Academic Children's Hospital. *Pediatric Clinics of North America*, vol. 56, iss. 4, pp. 799-813.
- Stippler, M, Moore, S., Rosenthal, S., Dorffer, T. (2011). *Leadership. Approaches – Developments – Trends*. Gütersloh: Verlag Bertelsmann Stiftung.
- Strong, R., Williams, J., Travis L.I., Wynn, T.J. (2013). Country Club Management and Self Directedness: Implications for Academics & Practitioners of Leadership. *NACTA Journal*. vol. 57, iss. 4, pp. 38-44.
- Taucean, I.M., Tamasilaa, M., Negru-Strautia, G. (2016). Study on Management Styles and Managerial Power Types for a Large Organization. *Procedia - Social and Behavioral Sciences*, vol. 221, pp. 66-75.
- Ulewicz, R., Selejdak J., Borkowski S., Jagusiak-Kocik, M. (2013). Process Management in The Cast Iron Foundry. *22nd International Conference On Metallurgy And Materials, Metal 2013*, pp. 1926-1931. Brno: Technical University of Ostrava.
- Vroom, H.V., Jago A.G. (2007). The role of the situation in leadership. *American Psychologist*. vol. 62, iss. 1, pp. 17-24.

69. MANAGEMENT OF THE CORPORATE IMAGE ON THE INTERNET

Abstract: Universal access to the Internet caused that consumers are increasingly looking for opinions about products and brands and buying products via the Internet. Thus, companies increasingly pay attention to their image on the web. Appropriate management of the brand image on the Internet significantly improves the company's competitiveness on the market. This article presents the possibilities of internet marketing and online sales channels on the example of one of the manufacturing enterprises. In order to discover the needs of current and potential future clients of the analyzed company, questionnaire surveys were carried out regarding the impact of online advertising on the purchase of products. For this purpose, a survey was conducted among 150 respondents. The article aims to define activities related to the proper management of the company's image on the Internet. The conducted research allowed identifying the most significant advertising and sales channels on the Internet. Inadequate management of presence on the Internet causes a decline in the competitiveness of enterprises and often contributes to the destruction of their reputation.

Keywords: internet advertising, management presence in the Internet, online shopping, social media.

JEL Classification: M03, M30

1. Introduction

Contemporary brand building cannot bypass the proper management of the presence of an enterprise on the Internet. Therefore, it is worth using the advertising possibilities and sales channels offered by the Internet. In order to meet the clients' needs, a company should identify them and should follow new market trends. An appropriately created online image of an enterprise is a way to increase the company's competitiveness.

The production process itself or factory designs can be copied by competing enterprises, but a much more difficult, often impossible, task is to copy the habits and attitudes of consumers to a given product. The same product can be assessed differently depending on how its brand is perceived. More and more enterprises realize that one of the most valuable resources is the name of the brand of manufactured products or services. American Marketing Association defines brand as "A name, term, design, symbol, or a combination of them, intended to identify the goods or services of one seller or group of sellers and to differentiate them from competitors." The brand makes it easier for consumers to make purchasing decisions and reduces the risk of buyer dissatisfaction (Keller, 2008). For consumers to see the products of a given company, it is necessary to manage the brand properly.

Reputation has a significant influence on the market position of the brand. Proper image management is one of the factors that determine market success. However, in the age of the Internet and the rise of popularity of social media, companies have lost partially control of their image. Consumers often create their own image of the company on the basis of their own opinions and the opinions of other consumers, with widespread Internet access intensifying these activities. Effective marketing actions are aimed at long-term retaining the client (Wawrosz, Mihola, 2016). A perfect method for increasing sales is marketing selling campaigns (Scherer, Smolaż, Gaweda, 2016).

One of the most important elements of business management is the management of its image on the web. The article aims to define actions leading to more effective management of the company's image on the Internet. It is difficult to imagine building a brand of a modern enterprise in isolation from the Internet. That is why we performed a questionnaire concerning the impact of online advertising on the purchase of products and the most effective advertising methods and online sales channels. In the next

¹ Ing. Magdalena Scherer Ph.D.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, magdalena.scherer@wz.pcz.pl

* Corresponding author

step, the example of a production company shows the possibilities offered by the Internet to modern enterprises. The paper is organized as follows. Next Section presents a literature review and Section 3 methodology of the research. Section 4 analyses the results and Section 5 presents a case study of the examined company. Section 6 concludes the paper.

2. Literature Review

Business development is closely related to the development of computer and communication technologies. Using the Internet gives the opportunity to inter alia, international cooperation, global reach or flexibility. Today, the Internet is a powerful tool for purchasing and selling, financial settlements, information exchange, advertising, building a company's competitiveness and increasing its productivity. In 2016 in the EU countries the percentage of companies with Internet access exceeded 92% (Eurostat, 2017a). Websites have become the first place where consumers seek information and eventually buy goods or services, both online and offline. As a result, companies increasingly take care of their online presence.

In Poland, in 2016, 67% of companies own a website (Central Statistical Office in Poland, 2017), while in the EU 77% (Eurostat, 2017b). Websites increasingly offer such features as online ordering, product directories, order tracking, product customization, and links to social media or blogs. Business websites have evolved considerably. Static websites of enterprises have become a rarity. They are replaced by dynamic pages that allow consumers to purchase products, add reviews, suggestions or queries. These websites, thanks to the Internet, enable sales of the offered products on the global market, thus expanding the scope of sales opportunities of enterprises. Often on the websites of companies there are links to blogs or their profiles in social media. Good analysis and classification of business-related Internet strategies is provided by Angehrn (1997). Internet banner features such as animation, action phrase and presence of company brand or logo are generally less effective than long messages on banners (Robinson, Wysocka, Hand, 2015). Internet presence in the case of hotel industry is investigated in Sigala, 2002 whereas general customer relations with the use of internet are researched in Bauer Grether and Leach (2002).

Social media are usually used by companies to build their image and market their products. In 2016, 45% of EU businesses used social media, such as social networks, blogs, content-sharing sites or wikis (Eurostat, 2017b). Some 18% used also online advertising (Eurostat, 2017b). Social media marketing is defined as “an interdisciplinary and cross-functional concept that uses social media (often in combination with other communications channels) to achieve organizational goals by creating value for stakeholders” (Felix, Rauschnabel, Hinsch, 2017). Honeycutt, Flaherty and benassi (1998) reports very good results of adopting Internet presence during researching industrial products marketing, whereas banking sector is investigated in Angehrn (1997). A method for evaluating corporate online presence is developed by Agarwal and Venkatesh (2002). Similarly, Drèze and Zufryden (2004) checks the impact of the online visibility on network traffic. There are also some papers on online adoption barriers for SME, e.g. Walczuch, Van Braven and Lundgren (2000). Sometimes we have to consider organizational factors that affect the online adoption (Del Aguila-Obra, Padilla-Melendez, 2006).

Social media enables businesses to share media content with prospective or existing customers, which may also be linked to blogs and other social networking sites or websites. In 2015, about 79% of enterprises in the EU used them to build an image or to promote products or services (Eurostat, 2017c). Research shows that 52% of businesses use social media to get current and future consumers to improve customer service (Eurostat, 2017c). The opinions and suggestions of current and future customers are also used to improve the product or create a brand new one. 26% of social media companies expected customers to be involved in developing existing products or presenting completely innovative solutions, representing 10% of all EU businesses (Eurostat, 2017c). Social media was also used by enterprises to recruit employees. Sometimes, brand enthusiasts gathers involuntarily in the Internet what can help in the brand value (Sicilla, 2008). Very important issue incorporating Internet ethical guidelines into organizations what is discussed in Bush, Venable and Bush, 2000.

In 2016, around 25% of EU companies employing at least 10 people used online advertising (Eurostat, 2017b). Internet advertising can be targeted to a select group of Internet users, so it is much more effective. Behavioral targeting was used by 27% of European enterprises, while geographical

targeting was used by 30% (Eurostat, 2017b). Direct addressing of content to a narrow range of customers can be positively perceived in the process of building customer relationships (Štefko, Fedorko, Bačík, 2016).

Online sales are a standard way of doing business today (Bucko, Kakalejčík, Ferencová, 2017). The percentage of e-shoppers in the year 2016 varied widely across Member States, from 18% of Internet users in Romania to 87% in the UK (Eurostat, 2017d). The number of e-shoppers is constantly increasing, with the highest growth among young people. Research conducted among Polish students shows that as many as 97% of them bought an on-line product (Ptak, Scherer, Lis, 2017). Consumers of course like the convenience of being able to shop anytime and anywhere, having access to a broader range of products, comparing prices and sharing their opinion on products with other consumers. The most popular type of goods and services purchased online in the EU was clothes and sport goods (61 % of e-buyers), followed by travel and holiday accommodation (52 %) (Eurostat, 2017d).

3. Methodology of the Research

The aim of the article was to indicate appropriate actions that enterprises should take to effectively manage their image on the web. The expectations and preferences of contemporary consumers were examined and the internet advertising and sales proposal was presented on the example of one of the manufacturing enterprises to outline the most effective online advertising and sales channels.

The research carried out in the article focused on specifying the preferences of potential customers of Grandpa's Garden. The questions focused primarily on online advertising and the sale of on-line food products. For this purpose, a survey was conducted among 150 people. The age of the people surveyed was over 25 years. This criterion arose as a result of observation of the existing customers of Grandpa's Garden. The survey was available online and completely anonymous. Respondents answered the following questions: Which advertising methods are the most effective for you? Would you be able to pay more for a similar product or service only because it has a good reputation among Internet users? Have you ever resigned from the purchase only because the product or service had negative opinions on the Internet? Where do you think the most reliable opinions about the product or service are? Do you buy food products online? How often do you buy food products in the Internet? What do you pay the most attention to when choosing food products? These questions were aimed at verifying the hypothesis: Appropriate management of the presence of an enterprise on the Internet has a positive impact on its competitiveness on the market. The conducted research also allowed determining the most significant channels of advertising and online sales. In the next stage, the company's online image of Grandpa's Garden was analyzed. The aim of the case study is to show the concept of worth copying as well as potential mistakes to be avoided. The most effective methods of online advertising and on-line sales opportunities have been presented. We showed on the example of the Grandpa's Garden company how to manage the brand on the Internet.

4. Results

According to surveys, 83.5% of respondents are able to pay more for a similar product or service because they have a good opinion among Internet users. On the other hand, 91.1% gave up purchasing only because the product or service had negative reviews on the Internet. Nowadays, corporate image management is very difficult. Leaving uncontrolled fanpage on Facebook or other portals can have negative effects. Sometimes it is better to hire a professional company that will deal with the creation of an image on the web, quickly and accurately respond to posts placed by other users, and post relevant advertising content.

Internet advertising is not only used by companies that sell their goods online, but it is mostly used by companies selling their goods or services offline. Out of 25% of EU businesses advertising on the Internet, only 7 % also made web sales to consumers (Eurostat, 2017b). The biggest advantages of online advertising are: relatively low cost, wide reach and personalization. Often, this is the only chance of advertising, for example, for micro-businesses, whose advertising budget is small (Scherer, Ptak, Lis, 2017).

Universal access to the Internet has meant that consumers are more aware of marketing activities of enterprises. According to the surveyed 150 people, the most reliable opinions about a product or service are on social networks (72%), discussion forums (60%) or price comparison websites (20%). The information provided on the manufacturer's website is of interest only to 5.3% of respondents.

The survey results are shown in Figure 1. Dominant in the question “Where do you think the most reliable opinions about the product / service are?” was the answer: Social media, which was chosen by 108 persons.

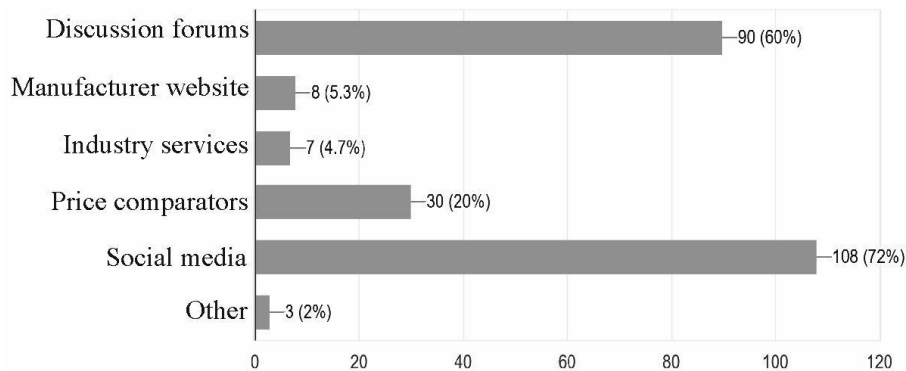


Figure 1. Answers to the question: Where do you think the most reliable opinions about the product /service are?

Source: Own study

That is why it is very important to properly manage the brand image on the Internet. The Internet offers a wide range of business advertising opportunities, such as website positioning, whispering (positive feedback), Facebook, blogging, Google Adwords (sponsored links), email marketing, sponsored articles, and banners in thematic websites. To answer the question "Which advertising methods are most effective for you, 150 people were asked. In the response, it was possible to mark several of the proposed items. The research shows that the most effective advertising channel on the Internet is Facebook, this type of advertising was indicated by as many as 78.7% of respondents. Another place was whispering marketing, which is writing positive opinions, which indicated 50% of respondents. It is also important for the respondents to position appropriate websites, which were indicated by 43.3% of respondents. 17.3% of the respondents considered the most effective e-mail marketing. The remaining methods of advertising were indicated by the following percentage of respondents: sponsored links (7.3%), corporate blog (4.7%), sponsored articles (3.3%), banners in specialized portals (3.3%). The results of the survey are presented in Figure 2. Dominant in the above question was the answer: Facebook, which was chosen by as many as 118 persons.

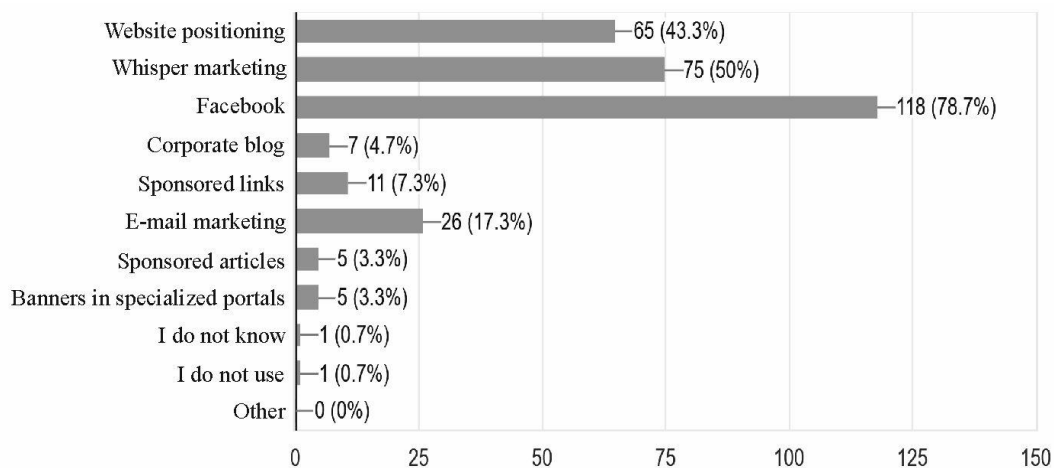


Figure 2. Answers to the question: Which advertising methods are the most effective for you?

Source: Own study

The survey was conducted for the needs of the company Grandpa’s Garden, which deals with the production and sale of processed grocery products. Therefore, people were asked about food purchases. The market for food products is different from the rest because of the characteristics of food products, so it should be considered separately. Food products are bought online 46% of respondents. Among buyers 54.5% of respondents buy food once a month, 32.2% once a year, 13.2%

once a few years, and 4.1% once a week. It can therefore be noted that online grocery shopping is not very popular. Consumers still prefer to buy groceries in stationary stores. Taking into account consumer preferences and opinions, it is possible to improve the marketing strategy (Kowalczyk, 2016).

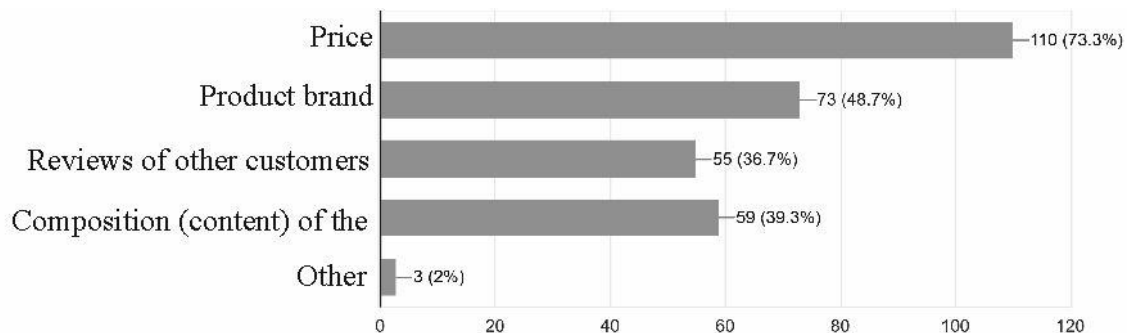


Figure 3. Answers to the question: What do you pay the most attention to when choosing food products?

Source: Own study

When choosing food products, as indicated by the survey, the price is important, 73.3% of the respondents indicated it. In the second place is the brand of the product, in favor of 48.7% of respondents. Therefore, brand building is one of the most significant factors in the way to business success. For 39.3% of consumers surveyed, the composition of the product is important. In turn, 36.7% of respondents choose to buy on the basis of opinions of other consumers. The ubiquitous Internet allows to quickly search for product reviews, which facilitates and shortens the decision-making process. The results are shown in Figure 3. Dominant in question “What do you pay the most attention to when choosing food products?” was the answer “Price”, which was chosen by 110 persons.

The research shows that social media have the greatest impact. The survey indicated them when choosing both the most effective advertisement and a credible source of information about products. Therefore, enterprises should pay special attention to the proper management of their fanpage. Leaving it unattended may result in loss of reputation and, consequently, loss of customers. It is often a profitable venture to hire a company specialized in this field for managing fanpage.

5. Case Study

Grandpa's Garden is a company dealing with fruit and vegetable processing. It has been on the market since 1991. However, its significant development began with the emergence on the Internet. Initially, the products offered by Grandpa's Garden were sold only on the local market. Nowadays thanks to the on-line offer, the Grandpa's Garden has customers not only in Poland but also in Germany, the United Kingdom, the United States and Latvia.

Grandpa's garden is a micro-enterprise, so the budget for advertising is not too high. Therefore, the company, driven by low-cost advertising expenditure, was strongly committed to creating its image online. The effort put in has resulted in increased sales and the establishment of new business contacts. The owners of the company estimate that the possibility of advertising and online sales contributed to a 50% increase in sales. Internet advertising has contributed to the increase in sales both in the online and stationary store.

At the beginning, the company ran only a static website that contained contact details and a product catalog. With the emerging questions “where can we buy your products” was the need to create an online store. In this way, it is possible to immediately direct the potential customer to the right product. They also took care of the proper positioning of the site so that it reached the largest possible customer pool.

However, the online store is not the only form of Internet sales. At the same time, products from the Grandpa's Garden offer are sold on Allegro. The company also received the Allegro 2014 Super Dealer Certificate.

The website is still being developed. Recently there has also been a blog where the customers can find recipes with the products that are on sale. It quickly became apparent that it was a great idea to attract customers. In addition to its own blog, the company has teamed up with other bloggers who publish their recipes using Grandpa's Garden products.

The next channel of sales and advertising of the company is Facebook. Currently Grandpa's Garden has 12861 fans on his fanpage. Users have the possibility to go directly to the e-shop, via the “buy now” option. In addition, Facebook is a very good channel of communication with the client, it allows an almost immediate reaction to the questions asked, or to respond to their opinions. Through communication on social media, consumers often share ideas that can later be used to develop products. In addition, customers are informed about promotions or new products. There are also provisions to be applied to the products used in the offer of Grandpa's Garden. Social marketing allows to create loyal customers and quickly acquires new ones. With sponsored ads, it is possible to fine-tune the criteria of potential customers. The research shows that women shop much more often in the store, so advertisements are targeted at them. During one of the advertising campaigns run by Grandpa's garden regarding the likes of the site, 8172 likes came. The number of ad recipients was 200,851. The results of this ad show that it is profitable and able to reach a large number of potential customers. In addition to the likes campaign, the Buy Now page was also promoted, reaching 2,844 recipients, of which 555 users clicked on the link.

Grandpa's Garden is also present on Instagram. Photos on the company profile always include the brand logo in the background. Most often they are pictures of products from the offer, dishes prepared with the use of these products, photos of received certificates and distinctions, or pictures from the promotion of the company at various fairs. Photos are accompanied by hashtags that users can search for. This is another place to advertise a company with a wide reach.

In February 2015, by filling the online application Grandpa's Garden entered the competition organized by Bank Zachodni WBK. One of the factors that allowed the company to win this contest was its presence on the Internet. Based on the information obtained from the company's website, the jury decided to choose it. Winning in the competition was a development program for companies that brought many benefits to the company. Participation in this competition also resulted in a television program, which is available online and a video visible on Youtube.

Thanks to the presence on the Internet, Grandpa's Garden gained many new clients and business partners. Thanks to customer feedback, it has improved its product range to meet their needs. The brand has been increasingly popular, and on-line sales have contributed to the company's financial performance.

6. Conclusion

The Internet is a great place to promote businesses. Internet advertising has a positive effect on sales both online and offline. Thanks to social networks, dynamic websites, blogs or industry portals, the company has the opportunity to create its image. Advertising reach a wide range of potential customers on the global market. Another advantage of online advertising is its relatively low cost, and it goes to the right place. In addition, it is a great communication channel with customers. It is possible to react almost immediately to their questions, suggestions or opinions. However, it is important to remember the dangers posed by universal access to the Internet. Improper management of the presence of an enterprise on the Internet can significantly harm the image of the brand. Assumed hypothesis: “Appropriate management of the presence of an enterprise on the Internet has a positive impact on its competitiveness on the market” has been verified positively. Both consumer surveys and the Grandpa's Garden business analysis have proved this. The conducted research has shown how important it is to properly manage the presence of an enterprise on the Internet. The example of Grandpa's Garden company presents the possibilities of online advertising and on-line sales channels, which should be used to promote other enterprises. Inadequate management of the presence or absence of the Internet causes a decrease in the competitiveness of enterprises and often contributes to the destruction of their reputation. As shown by the surveys carried out today, consumers attach great importance to the ratings posted on the Internet, both regarding the company and the products offered. In addition, they are looking for opinions about products on the web before they buy them and evaluate the purchased goods. Therefore, proper management of the presence of an enterprise on the Internet should be a prerequisite for the existence of a modern company. It is worth paying attention to the role of social

media in building a brand on the Internet. Respondents listed them as the most effective method of advertising and the most reliable source of information about products. Therefore, enterprises should attach the greatest importance to the proper conduct of their fan page. Advantages of the presented methodology was a comprehensive set of topics covered in the questionnaire allowing to fully assess the reported views. A limitation can relatively small set of respondents. Outcomes of the presented research can be applied in various companies to improve their positive visibility on the Internet.

References

- Agarwal, R., Venkatesh, V. (2002). Assessing a firm's web presence: a heuristic evaluation procedure for the measurement of usability. *Information Systems Research*, vol. 13, iss. 2, pp. 168-186.
- Angehrn, A. (1997). Designing mature internet business strategies: The ICDT model. *European Management Journal*, vol. 15, iss. 4, pp. 361-369.
- Angehrn, A.A., Meyer, J.F. (1997). Developing mature Internet strategies: insights from the banking sector. *Information Systems Management*, vol. 14, iss. 3, pp. 37-43.
- Bauer, H.H., Grether, M., Leach, M. (2002). Building customer relations over the Internet. *Industrial Marketing Management*, vol. 31, iss. 2, pp.155-163.
- Bucko, J., Kakalejčík, L., Ferencová, M. (2017). The internet and its use in pre-purchase stage in Europe and Asia – management of marketing efforts. *Polish Journal of Management Studies*, vol. 15, no. 2, pp. 16-26.
- Bush, V.D., Venable, B.T., Bush, A.J. (2000). Ethics and Marketing on this Internet: Practitioners' Perceptions of Societal, Industry and Company Concerns. *Journal of Business Ethics*, vol. 23, iss. 3, pp 237-248.
- Central Statistical Office In Poland. (2017). *Information society in Poland. Results of statistical surveys from 2012-2016*, [online]. Available: <http://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/spoleczenstwo-informacyjne/spoleczenstwo-informacyjne-w-polsce-wyniki-badan-statystycznych-z-lat-2012-2016,1,10.html>. [2017, November 23].
- Del Aguila-Obra, A.R., Padilla-Melendez, A. (2006). Organizational factors affecting Internet technology adoption. *Internet research*, vol. 16, iss. 1, pp. 94-110.
- Drèze, X., Zufryden, F. (2004). Measurement of online visibility and its impact on Internet traffic. *Journal of interactive marketing*, vol. 18, iss. 1, pp. 20-37.
- Eurostat (2017a). *Digital economy and society statistics – enterprises*, [online]. Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society_statistics_-_enterprises [2017, November 25].
- Eurostat (2017b). *Internet advertising of businesses - statistics on usage of ads*, [online]. Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Internet_advertising_of_businesses_-_statistics_on_usage_of_ads [2017, November 23].
- Eurostat (2017c). *Social media – statistics on the use by enterprises*, [online]. Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Social_media_-_statistics_on_the_use_by_enterprises [2017, November 24].
- Eurostat. (2017d). *E-commerce statistics for individuals*, [online]. Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/E-commerce_statistics_for_individuals[2017, November 25].
- Honeycutt, E.D., Flaherty, T.B., Benassi, K. (1998). Marketing industrial products on the Internet. *Industrial Marketing Management*, vol. 27, iss. 1, pp. 63-72.
- Keller, K.L. (2008). *Strategic Brand Management. Building Measuring and Managing Equity*. Pearson Education.
- Kowalczyk, I. (2016). Consumer Preferences for Sales Promotion in the Food Market, *Handel Wewnętrzny*, vol. 2, iss. 361, pp. 241-253.
- Felix, R., Rauschnabel, P., Hinsch, C. (2017). Elements of strategic social media marketing: A holistic framework. *Journal of Business Research*, vol. 70, pp. 118-126.
- Ptak, A., Scherer, M., Lis, T. (2017). Selling and purchasing over the Internet - E-commerce market in Europe. In P. Slavičková (Ed.), *Knowledge for market use 2017: people in economics – decisions, behavior and normative models*, (pp. 1162-1173). Olomouc: Palacký University.
- Robinson, H., Wysocka, A., Hand, C. (2015). Internet advertising effectiveness: the effect of design on click-through rates for banner ads. *International Journal of Advertising*, vol. 26, iss. 4, pp. 527-541.
- Scherer, M., Ptak, A., Lis, T. (2017). Management of company presence in the Internet, In P. Slavičková (Eds.), *Knowledge for market use 2017: people in economics – decisions, behavior and normative models*, (pp. 676-681). Olomouc: Palacký University.

Scherer, M., Smolaż, J., Gaweda, A. (2016). Predicting Success of Bank Direct Marketing by Neuro-fuzzy Systems, In L. Rutkowski, M. Korytkowski, R. Scherer, R., Tadeusiewicz, L.A. Zadeh, J.M., Zurada, (Eds.), *15th International Conference on Artificial Intelligence and Soft Computing. Part II (ICAISC 2016)*, (pp. 570-576), Cham: Springer International Publishing.

Sigala, M. (2002). Modelling e-marketing strategies: Internet presence and exploitation of Greek Hotels. *Journal of Travel & Tourism Marketing*, vol. 11, iss. 2-3, pp. 83-103.

Štefko, R., Fedorko, R., Bačík, R. (2016). Website content quality in terms of perceived image of higher education institution. *Polish Journal of Management Studies*, vol. 13, no. 2, pp. 153-163.

Walczuch, R., Van Braven, G., Lundgren, H. (2000). Internet adoption barriers for small firms in the Netherlands. *European Management Journal*, vol. 18, iss. 5, pp. 561-572.

Wawrosz, P., Mihola, J. (2016). Marketing based on optimalization of consumer decision, In P. Slavičková (Ed.), *Knowledge for market use 2016: Our Interconnected and Divided World*, (pp. 588-592). Olomouc: Palacký University.

Claire Seaman^{1*}
Queen Margaret University
United Kingdom
Bernie Quinn²
Queen Margaret University
United Kingdom
Trevor Laffin³
Queen Margaret University
United Kingdom

70. SELF-INITIATED EXPATRIATE ENTREPRENEURSHIP IN KATHMANDU FOOD BUSINESSES

Abstract: The research presented here is an initial and exploratory piece of research on food micro-enterprises that considers as a case study one market and the self-initiated expatriate (SIE) businesses that contribute it in Kathmandu. The foods within the market are diverse, representing food culture in a variety of regional areas within and out with Nepal and the market could reasonably be described as more expensive than those accessed by many local residents. The focus here, however, is on the businesses run by self-initiated SIEs from developed countries who have settled in Kathmandu. The paper aims to develop insight into the food micro enterprises and changing population dynamics in the introduction of new (or new to the area) foods and to consider the future of the businesses studied. Micro-enterprise is a vital source of employment and income for self-initiated expatriates. In addition, a developing food culture is important in terms of the tourist vision in Nepal and this research has implications for those associated with food tourism. The originality of this research lies in the nature of the sample group and in the relative paucity of research that looks at food micro-enterprise in Nepal.

Keywords: entrepreneurship, food business, micro-business, Nepal, self-initiated expatriates.

JEL Classification: Q13, L26

1. Introduction

Classic entrepreneurship theory describes a process whereby individuals (and many migrants fall into this group) are ‘pushed’ into starting a small business by a paucity of economic alternatives. Often unable to easily accessed salaried work, perhaps exacerbated by limited qualifications, language skills, network contacts or simply barred by local prejudice, the history of migration is linked to enterprise and small business start-up in a very fundamental sense. Much research that looks at migrant entrepreneurship, however, starts from the precept that economic necessity or political problems (including war) are the driving factors that trigger migration and set the context for business formation (Seaman, Bent, Unis, 2015; 2016). To focus on this aspect overlooks a different but distinct group of migrants for whom migration is voluntary and closely linked to a perceived quality of life in their new home. Referred to here as self-initiated expatriates (SIE) (Inkson et al., 1997; Basaiawmoit, Normann, 2013; Couchman, 2013; Efendic, Yetis, 2013), this group has a strong history of small business start-up, often running food micro-enterprises and is under-represented in research. The links between micro-entrepreneurship and the development of family business are more complex. When micro-enterprises are formed due to economic necessity, one aim is often to educate the next generation for a wider range of economic opportunities (Seaman, Bent, Unis, 2016). Where the move and the lifestyle are a matter of choice and preference, aspirations may be very different but may also depend on how successful the move has been and whether, indeed a family has travelled with them. The paper aims to develop insight into the food micro enterprises and changing population dynamics in the introduction of new (or new to the area) foods and to consider the future of the businesses studied.

¹ Prof. Claire Seaman D.B.A.; Queen Margaret Drive, Musselburgh, East Lothian, United Kingdom, cseaman@qmu.ac.uk

² Bernie Quinn Senior lecturer MBA; Queen Margaret Drive, Musselburgh, East Lothian, EH21 6UU, United Kingdom, bquinn@qmu.ac.uk

³ Trevor Laffin B.A.; Queen Margaret Drive, Musselburgh, East Lothian, United Kingdom, tlaffin@qmu.ac.uk

* Corresponding author

2. Literature Review

The present study of micro-enterprise in Kathmandu draws on a diverse literature that links to business start-up, including the emigrant (Seaman et al., 2015; 2016), expatriate (Puulman, 2011; Couchman, 2013), family business literature (De Massis et al., 2016; Pant, 2015) and the research literature that considers small business in a much wider sense (Lowik et al., 2012, Sharma, 2015). Further, the literature that does exist on SIEs tends to focus on those who move to a new country specifically to start a new business (Bessierre, 1998; Sustari, Brewster, 2000; Puulman, 2011). Nepal stands in contrast here as a country to which expatriates often move for, for example, the trekking and climbing environment and who start businesses to facilitate their wider goals (Couchman, 2013). The literature relating to self-initiated expatriates is sparse, but in general terms they are a group of individuals who have chosen to live and start businesses in a country that is not theirs by birth, without being assigned to work in that country by their employer (Inkson et al., 1997; Lee, 2005; Puulmann, 2011). In this, they stand distinct from assigned expatriates (AEs), who are assigned to work overseas by their employer, although there is some grey area between the two where the circumstances of, for example, the spouse of an AE may be found. In general terms, Suutari and Brewster (2000) identified four subgroups of EA, which include young opportunists, job seekers, ‘officials’ and localized professionals. In distinguishing between young opportunists from job seekers, who may have some career history elsewhere, and localized professionals who have an established track record overseas, Suutari and Brewster (2000) also draw attention to a further and distinct group of SAs. ‘Officials’ who work for large organisations, such as the European Union are included within the categorization of SAs here, since it is perceived the initiative for working overseas lies within the individual rather than the employing organisation (Suutari, Brewster, 2000; Puulman, 2011). While there are matters that could be discussed around the definitions provided by Suutari and Brewster (2000) and indeed the debate around the classification of ‘officials’ is highlighted by Puulman (2011), the definition used within current research is drawn directly from the work of Suutari and Brewster (2000) and Puulman (2011) and can be characterized: *“An individual, perhaps with partner, spouse or family, who chooses to start a business within a country other than their country of birth or long-term residence”*.

The question of the net worth contribution that migrant entrepreneurs make to the new societies in which they have attempted to integrate is a sometime emotional topic. Saul (2014) evaluates the immigrant inputs to the UK and claims that migrants are ‘hyper-productive net contributors to the economy (whose) contributions are breathtaking. Migrant-founded company’s represent 14% of all UK SME’s’. Flognfeldt (2006) similarly recognizes, the *in-migrants* business attributes ‘management, marketing and accounting’ whilst Sahin et al. (2011) describe ‘migrant activities as crucial to the urban economy. Cohen and Avieli (2004), Miera (2008) and Brusle (2010) confirm that ‘grocery shops, tourism or Gastronomy are normally core activities cited within migration research’. Subsequently the theme of immigrant contribution was succinctly explored within the fieldwork and questioned the rationale behind the industry. The resulting discussions illustrated a passion beyond mere financial reward.

3. Methodology

The research presented here is an initial and exploratory piece of research on food micro-enterprises that takes as its sample group one market and the SIE-run microenterprises that contribute to it. The definition of market used here draws on early work from Hinrichs (2000), who defined direct agricultural markets as being predicated on face-to-face ties between producers and consumers. The definition of food markets from Hinrichs (2000) also highlights the role of the market as a central point in a much wider food network and the social relations that commonly exist between the food market and community supported agriculture, describing effectively some of the features observed by researchers in the early stages of this work and linking to work by Hinrichs (2000) and Halbrendt et al. (2016). The market that forms the focus for this study is not a traditional market used by Kathmandu’s traditional residents. Rather, it is a source of relatively upmarket food for reasonably well off individuals., many of whom are either expatriates living in Kathmandu or restaurateurs. Developed from a social constructivist epistemology, semi-structured interviews were carried out to explore a range of topics drawn from the literature with four entrepreneurs who participated in a food market. Four individuals were interviewed, from a total population of twelve, representing a 33% sample

selected on a convenience model. The entrepreneurs were interviewed in their first language and the tapes translated (as required) and transcribed. Thematic analysis of the data allowed a variety of conclusions to be drawn, which relate back to the literature.

4. Results and Discussion

The market itself is run by an individual who had arrived in Nepal from Europe some years ago. Interestingly, the desire to improve the quality of food was very evident: this was clearly not a market running on a simple profit-ethos where high quality food and drink happened to be sold but rather a shared vision of a Nepal with access to better foods for western cooking and increasingly for Nepali food provision too. The organizer of the market himself ran a food-based micro-enterprise. This overlap between the role of one of the businesses and the organization of the market itself is not that unusual in a highly entrepreneurial society and highlights perhaps the wish of some migrant entrepreneurs to import aspects of their culture as well as the foods *per se*. From the interview with the organizer of the market, purposive, snowball sampling techniques were used to identify three regular attendees who had moved to Nepal from Europe, North America and South Africa. The businesses they now run in Nepal share some common themes: all used technology and practices from developed countries to enhance the quality of food provision. Similarly, all expressed a passion for improving the quality of food provision in Nepal for western cooking but also for Nepali cooking and considered social good to be a *de facto* part of the mission of their businesses. Further, though their businesses varied a great deal in detail, all expressed a love of Nepal and acknowledged the practical and cultural challenges inherent in achieving their goals in the Nepali business environment. The first business produced cheese and was run by the same individual who organized the market:

'well, I started eight years ago, I started making cheese and this was a way to reach customers without going to an 'in-between', a shop, who would take a commission and at that time there was a small market at the summit and I learned there and then I have been starting different markets and I think its ... I like it because it's like being back in France or Europe where people want to eat good and buy their fresh items, trade from the producers and then they have a dialogue ... so it's a social place as well as a place where I can sell the cheese' P1

Key themes that emerged included the importance of the business in terms of the owner's personal economic survival in Nepal and an aspiration for business growth that was not easily achieved in the local area. Working largely on her own, Participant one had developed a range of cheeses and believed she observed change in the food culture in Nepal that was now aware of a much wider variety of cheeses:

'....about seven years ago you really could not get anything cheese-wise, apart from what they call yak cheese so, yeah, there was (space) for foreign cheeses to come into this country but I'm mainly famous for Feta cheese, 'cos a lot of the restaurants in Pokhara and Kathmandu, they make Greek salads now. Nepal's come on a lot, in seven years, with cheese, they're starting to understand that there's thousands of different cheeses all over the world and they're getting better taste.' P2

This is important, because the interest in food business and the developing range of foods available in Nepal does seem to link directly to the development of hospitality and tourism in the region and of a wider developing culture of restaurant provision, in line with debate by Nyaupane (2009) and Reid (2015). Local residents and other 'ex-pats' were also clearly seen as a potential market, however:

'Mainly because of the expats ... there's a lot of foreigners that come to these locations for .. yeah .. (a) big gathering of good food, foreign food, organic food It's not as easy to get in local supermarkets or big mart or any of these places so doing the farmers market was, you know, obviously the ideal choice to get to the customers I needed to get to.' P2

In contrast, the third business interviewed employed around 6 people, in addition to the husband and wife team who run the business. The business itself was started by the husband, who initially arrived in Nepal from South Africa to go trekking. His background included expertise in aquaponics however and in Nepal he found a country where although the agricultural tradition was very strong in rural areas it was fading in the rapidly growing city areas of the Kathmandu valley. The farming system used by this business allows fresh food – primarily salad vegetables and herbs – to be grown indoors without access to land, offering considerable potential for both business-scale and domestic use in Kathmandu.

'My husband grew up on a wine farm in South Africa and has a sense .. we know people always need good food, so, basically, he studied aquaponics .. an aquaponics type of urban farming and that's why in an urban area you can have fresh produce, local produce, even if you don't have land, you can grow it inside, that's why he did that.' P3

The produce from aquaponics was seen as a niche market and the market a way to access customers who would be interested in buying, for example, pre-washed lettuce:

' .. even through the blockade, the earthquake, we were able to keep employing our people, we didn't have to stop because of gas and electricity, so ... yes ... we employ a lot of people in the community' P3

There was no particular intention that this business should be passed on to family members or expanded, but there was a very distinct social enterprise facet to the owners' aspirations for the business. The business already owns a training hall and plan to start training and to widen awareness and use of aquaponics essentially for the greater good of the community. It was not clear whether this process would generate income for the core business, but the general tenor of the discussion indicated that the business was doing well for the couple running it and that any further expansion would prioritize a community good.

The fourth business was started by someone who moved to Nepal from Canada around four years ago. His initial plan was to run a guest house, with a restaurant and café. Having purchased an existing business, the difficulty of obtaining good dairy produce quickly became apparent and indeed as he and his partner began to tackle this challenge, it quickly became apparent that many of the customers who came to the restaurant were choosing to buy dairy products from them because this was the only route to purchase available to them. The decision to focus the business on dairy products was therefore something that happened because they saw the potential market available, in line with commentary from Karki (2005). The guest house closed and the business innovated different yogurts, cheeses and varied fat content milks, now employing about 20 people.

Key Themes

A number of key themes can be tentatively identified from the data. 'SIEs' who move to a country for the quality of life rather than fleeing war or poverty form a very distinct group. The use of science and technology based knowledge from their home countries to develop business in their new home emerges as one theme, alongside a wish to engage local Nepali individuals and to offer training as appropriate. The challenge of providing that training were noted but so too was a spirit of social purpose – a desire to contribute to their new locale – which appears to form one driver. Early research in the area of SIE entrepreneurs in Nepal highlighted many challenges in the successful establishment of a business (Couchman, 2013). In particular, the legalities of business start-up, including the acquisition of a business visa, the challenges posed by the infrastructure (particularly electricity supply), property acquisition and interaction with the Nepali police and the huge cultural challenges that impact upon staff retention, recruitment and training appear to be key. The legalities of business start-up and indeed visas did not really emerge as a direct aspect within the data collected here, in part because the businesses who took part were already reasonably well established. The market itself, however, does appear to mitigate some of these challenges by allowing the entrepreneurs to engage directly with the customers and thus offering a direct alternative to running a shop or engaging with an intermediary to secure sales. Couchman (2013) highlighted both the importance and challenges of retail location in Nepal, as sales are often driven by word-of-mouth and footfall and there exists a ban on foreigners purchasing land which make shop ownership impossible without a Nepali partner. Notably, however, in 2012 it became legal for SIE to buy domestic flats and further changes to property laws may be forthcoming. Similarly, while Couchman (2013) notes the importance for the SIE entrepreneur of managing relationships with the local police, the market in many ways would appear to bypass this issue for the entrepreneurs who sell their products there. Couchman (2013) noted that the Nepali police often interact well with the SIE community and indeed may tolerate minor infringements of local norms, but by selling their produce through a market the businesses in many ways bypass many of the challenges such as shop opening hours. Cultural challenges, especially in the recruitment, training and retention of staff did feature within the data and appear to form a major barrier to business expansion. Similarly, the challenges inherent within the Nepali infrastructure and in particular the difficulties associated with running a food based business without a reliable electricity supply were highlighted. Developing the key themes that appear to influence SIE starting food based businesses in Kathmandu, a model emerges that can be portrayed as Figure 1.

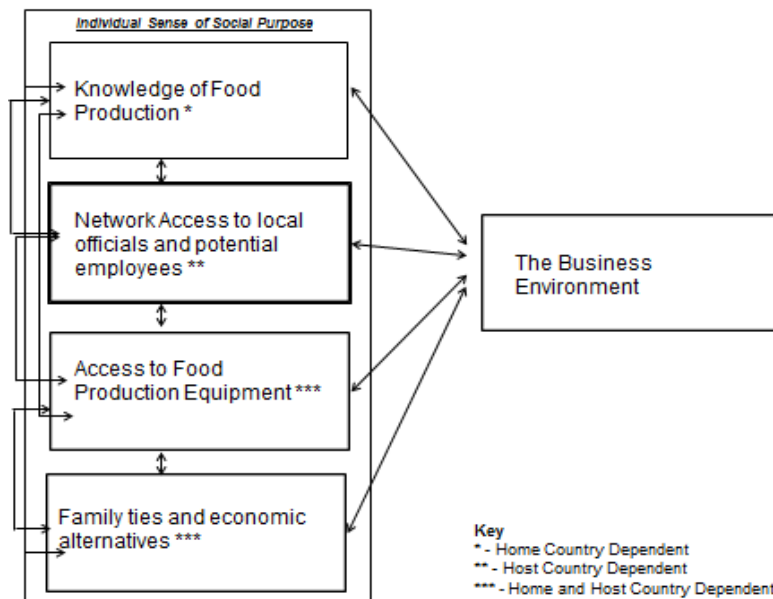


Figure 1. Themes Influencing SIE Business Start-up in Nepal

Source: Elaboration from results

5. Conclusion

The current research, based on the identification of a group of SIE entrepreneurs running a market and food-based micro-enterprises in Kathmandu, stands against a backdrop where very little is known about this group of entrepreneurs. The framework presented here stands, therefore, as a set of preliminary results for further exploration within empirical research. In summary, the research contributes to the current body of knowledge in two main ways. The idea the newly arrived expatriates often start businesses builds on an established body of knowledge from the entrepreneurship literature. Individuals who migrate to a new place to live, it is argued, often and probably rightly see starting a small business as one of the more accessible economic options. SIE entrepreneurs, by contrast, often do have economic alternatives but see a lifestyle benefit in their new country and demonstrate a clear wish to contribute to their new society. All the businesses considered here brought something new to food production in Nepal by adapting and using technology and food production processes from their country of origin. This not only forms a USP for their individual business, it also opens up new food stuffs to the local community, albeit at a price likely to be accessible only to some, and contributing to the food supply that surrounds international tourism and hospitality.

Acknowledgements

The assistance of our colleagues at Silver Mountain School of Hotel Management, Kathmandu, in the completion of this research is acknowledged, alongside their support and hospitality during our work in Nepal. Our thanks also go to all those who took part in the research.

References

- Basaiawmoit, R.V., Normann, J. (2013). *Expatriate Entrepreneurship in Denmark: Can Transnational and Cross-Cultural Practices be Unilaterally Adopted?* Cardiff: Institute for Small Business and Entrepreneurship Conference.
- Bessierre, J. (1998). Local Development and Heritage: Traditional Food and Cuisine as Tourist Attractions in Rural Areas. *Sociologica Ruralis*, vol. 38, iss. 1, pp. 21-34.
- Brusle, T. (2009-10). Nepalese Migration: introduction. *European Bulletin of Himalayan Research*, vol. 35-36, pp. 16-23.
- Cohen, E, Avieli, N. (2004). Food in Tourism. Attraction and Impediment, *Annals of Tourism Research*, vol. 31, iss. 4, pp. 755-778.
- Couchman, M.R. (2013). *Food From Foreigners: Examining SIE Entrepreneurship in the Food Sector of Nepal*. SIT Graduate Institute.
- De Massis, A., Kotlar, J., Frattini, F., Chrisman, J.J., Nordqvist, M. (2016). Family governance at work: organizing for new product development in family SMEs'. *Family Business Review*, vol. 29, iss. 2, pp. 189-213.

- Efendic, N., Yetis, Z. (2013). Exploring Expatriate Entrepreneurship. *Frontiers of Entrepreneurship Research*, vol. 33, iss. 15, Article 3, [online]. Available: <https://digitalknowledge.babson.edu/cgi/viewcontent.cgi?article=2782&context=fer> [2017, December 01].
- Flognfeldt, T. (2006). Second Homes, Work Commuting and Amenity Migrants in Norway's Mountain Areas. In: Moss L.A.G. (ed.) *The Amenity Migrants: Seeking and Sustaining Mountains and Their Cultures*. Oxfordshire: CAB International, p. 241.
- Halbrendt, J., Gray, S., Crow, S., Shariq, L., Tamang, B.B. (2016). Using Fuzzy Cognitive Mapping to Understand Farmers' Perceptions of Sustainable Agricultural Practices for Enhanced Food Security in Nepal. *Sustainable Agriculture and Natural Resource Management (SANREM) Knowledgebase*. Virginia Tech. [online]. Available: <http://hdl.handle.net/10919/69990> [2017, December 01].
- Hinrichs, C.C. (2000). Embeddedness and Local Food Systems: Notes on Two Types of Direct Agricultural Market. *Journal of Rtourismural Studies*, vol. 16, pp. 195-303.
- Inkson, K. Arthur, M.B., Pringle, J., Barry, S. (1997). Expatriate Assignment Versus Overseas Experience: Contrasting Models of International Human Resource Development. *Journal of World Business*, vol. 32, iss. 4, pp. 351-368.
- Karki, B.B. (2005). Strategic Planning in the Cooperative Sector: A Study on Dairy Cooperative. *The Journal of Nepalese Business Studies*, vol. 11, iss. 1, pp. 73-80.
- Lee, C.H. (2005). A Study of Under-employment Amongst Self-Initiated Expatriates. *Journal of World Business*, vol. 40, iss. 2, pp. 172-187.
- Lowik, S., van Rossum, D., Kraaijenbrink, J. Groen, A. (2012). Strong Ties as Sources of New Knowledge: How Small Firms Innovate through Bridging Capabilities. *Journal of Small Business Management*, vol. 50, pp. 239-256.
- Maharjan, K.L., Khatri-Chhetri, A. (2006). Household Food Security in Rural Areas of Nepal: Relationship between Socio-economic Characteristics and Food Security Status. International Association of Agricultural Economics. Annual Meeting. August 12-18. Queensland, Australia.
- Miera, F. (2008). Transnational Strategies of Polish Migrant Entrepreneurs in Trade and Small Businesses in Berlin. *Journal of Ethnic and Migration Studies*, vol. 34, no. 5, iss.753-770.
- Nyaupane, G.P. (2009). Heritage Complexity and Tourism: The case of Lumbini, Nepal. *Journal of Heritage Tourism*, vol. 4, iss. 2, pp. 157-172.
- Pant, S.K. (2015). Role of the Family in Entrepreneurship Development in Nepali Society. *The Journal of Nepalese Business Studies*. vol. IX, iss. 1, pp. 37-47.
- Puulman, A. (2011). *Self-initiated Expatriate Entrepreneurship In Denmark. What Are the Motivational Factors Influencing Them?* Saarbrucken, Germany: LMP Lambert Academic Publishing.
- Reid, J. (2015). Eating Out in Kathmandu: Restaurant Business and Nepal's Urban Middle Class. *Independent Study Project (ISP) Collection*. Paper 2199, [online]. Available: http://digitalcollections.sit.edu/isp_collection/2199 [2017, December 01].
- Sahin, M., Nijkamp, P., Stough, R. (2011). Impact of urban conditions on firm performance of migrant entrepreneurs: a comparative Dutch-US study. *Annals of Regional Science*, vol. 46, iss. 3, pp. 661-689.
- Saul, H. (2014). Migrant Entrepreneurs have set up one in seven UK companies, The Independent [online]. Available: <http://www.independent.co.uk/news/uk/home-news/migrant-entrepreneurs-have-set-up-one-in-seven-uk-companies-9169945.html> [2016, September 16].
- Seaman, C., Bent, R. Unis, A. (2015). The Future of Family Entrepreneurship: Family Culture, Education and Entrepreneurial Intent in Scottish Pakistani Communities. In K. Randerson, A. Fayolle, C. Bettinelli (eds.). *Futures. Special Issue on the Futures of Family Entrepreneurship*, [online]. Available: <http://www.sciencedirect.com/science/article/pii/S0016328715300458> [2017, December 01].
- Seaman, C., Bent, R., Unis, A. (2016). The Role of Context. South Asian Family Firms in Scotland and the Succession Paradox. *International Journal of Management Practice. Special Issue on 'The Role of Context in Family Firms'*, vol. 9, iss. 4, [online]. Available: <https://www.inderscienceonline.com/doi/pdf/10.1504/IJMP.2016.079619> [2017, December 01].
- Sharma, P.R. (2015). An Empirical Overview of Microenterprises and Micro Finance Development in Nepal. *The Journal of Nepalese Business Studies*, vol. IX, iss. 1., pp. 3-12.
- Suutari, V., Brewster, C. (2000). Making Their Own Way: International Experience Through Self-Initiated Foreign Assignments. *Journal of World Business*, vol. 35, iss. 4, pp. 417-423.

Kevin Serrem^{1*}
Szent István University
Hungary
Csaba Bálint Illés²
Szent István University
Hungary

71. BUNDLED MENUS – AN IMPEDIMENT TO HEALTHY FOOD CONSUMPTION

Abstract: Bundling is a marketing and pricing practice, that has been adapted all over the world, in various sectors of the economy. It is the practice of marketing two or more products and services in a single package for a special price. Despite the profound advantages of bundled menus to the fast food industry, many consumers are not aware of the negative impacts imposed on their health. A major contributing factor to this dilemma is the habitual consumption of high quantities of low-nutrient, high-calorie foods and beverages, mostly provided by bundled menus served to unsuspecting consumers. Most consumers do not know that they are attracted to bundled menus, partly because, bundle pricing enhances consumers' value perception, when the combined price is lower than the sum of the items' individual prices. The objective of the paper was to provide a wide literature review to explore the influence of bundled menus on healthy food consumption. The literature review was related to the marketing and consumer behavior aspects of bundling and the importance of healthy food consumption. Based on some previous experiences of different authors, it became clear that bundling might be a tool for preparing healthier menus. This review and the draft of the conceptual model gives outlines the framework of the future empirical survey, where the composition and the acceptance of bundled menus are to be surveyed in food service companies and among consumers.

Keywords: bundled menus, cognitive load, healthy food consumption, price perception.

JEL Classification: D11, I12, M30

1. Introduction

Relentless efforts by governments, food manufacturers and international organizations to provide consumers with healthy meals, have spurred unprecedented consumer demand for healthy diets from food service outlets. This in turn has led food service outlets to re-strategize their business approach to the food service industry by intensively cultivating a healthy image. Providing the different age groups of the society by healthy food is a key preference of governments all over the world. There are special age groups which are in the main focus based on their age (for example schoolchildren, elderly people, employees) or their status (patients of hospitals, special institutions) whose catering should be secured in a safe way. Public catering is a way of offering meals for these groups, which can be managed consciously, but how individual consumption could be managed? How could individuals be influenced to consume healthier food, when they are mostly price-sensitive, and time-sensitive? These questions led us to examine the topic of menu bundling, as an alternative of making catering healthier.

The ultimate goal of this paper was to build the foundations of a future research, which will focus on the composition of healthy bundled menus, the attitudes of consumers towards such menus and on the benefits of these new products and services. Thus, the main objective is to take a first step toward building a theory of healthy product bundles in catering industry, which may result the improvement of health consciousness of consumers.

2. Literature Review

2.1. Healthy Food Consumption

Habitual consumption of high fat, high sugar, and low nutrient foods has been shown to contribute to obesity, and is related to other chronic health conditions such as high blood pressure, diabetes, cardiovascular diseases and certain cancers (Just, Mancini, Wansink, 2007). A WHO report (Loring,

¹ Kevin Serrem Ph.D. Student; Péter K. u. 1, H-2100 Gödöllő, Hungary, mrkevinstem@gmail.com

² Prof. Dr. hab. Csaba Bálint Illés CSc; Péter K. u. 1., H-2100 Gödöllő, Hungary, illes.b.csaba@gtk.szie.hu

* Corresponding author

Robertson, 2014) highlighted that fighting against consumption of unhealthy food cannot be successful without formulating of taste, food choice and consumption habits of individuals. Consuming healthier food is a key issue for younger age groups, because their future health status is determined by their present consumption habits (Túróczi et al., 2015).

Intensive advertising campaigns are used by the fast food industry in order to promote pre-existing bundled menus and any new menu items. Due to public demand, the central focus of these adverts has shifted from value for money to a healthier perception, where healthy claims such as “healthy for you” or “low fat” are currently used (Chandon, Wansink, 2007).

The problem of the relations between overconsumption of unhealthy food and low costs of such food was highlighted by Drewnowski and Darmon (2005). Highly caloric but tasteful foods that are cheap and easy-to-access are often selected by people with limited economic resources. Special consumption strategies are needed to convince low-income groups to start healthier diets and the responsibility of policy makers for making nutritional interventions to reduce of food is a must in the future, which shall be connected not only to health promotion campaigns, but to educational programs, too. To alter current consumption behaviors, the first steps of such programs are to be made in the young age groups, in the framework of school catering (Tóth, Bittsánszky, 2014; Bittsánszky et al., 2015).

2.2. Bundling and Consumer Behavior

Bundling is marketing and pricing method, that has been adapted in various sectors of the economy. It refers to the practice of marketing two or more products and services in a single package for a special price (Guiltinan, 1987). Price bundling, the practice of combining multiple products or components at a set price, has become a popular marketing strategy in different industries (Estelami, 1999). In catering industry, ready-to-serve meals are bundled by food and beverage suppliers (Johnson, Hermann, Bauer, 1999). An approach to bundling was outlined by Hanson and Martin (1990), according to which the composition and price of a bundled product are optimized together.

Bundling gives profound advantages to both the consumer and the firm. For the consumer the costs of search are reduced and consumer’s choice is easier, as the items in a bundle are mutually supplemental (Dopson, Hayes, 2015). For the consumers economic benefits are represented by bundling, as the price of the bundle products is generally less than the total price of each item if purchased separately (Tanford Raab, Kim, 2012). For the firms, cost efficiencies are brought by bundling through economies of scope and transaction cost saving. In hospitality industry, where products are perishable and the demand is interdependent, the strategy of bundling is an appropriate way to generate higher profits (Guiltinan, 1987). Further research (Sharpe, Staelin, 2010) also confirmed that consumers are tended to rate bundled goods as being of an increased value due to the reduction in cognitive effort needed to mentally account for a single price versus several prices.

According to Yadav (1994), greater importance is assigned by the consumers to an anchor item of a bundle rather because the anchor item has a substantial impact on the overall evaluation of the bundle. Consumers often make their shopping under cognitive load, that means it is mentally strained meanwhile the consumers reasoning system’s ability is influenced by the habits and external powers, thus, the decision-making of consumers is regulated.

As it was summarized by Hinson, Jameson and Whitney (2003), numerous studies in economics and psychology was focused on cognitive resources and their impact on consumers’ preference and decision making. Based on psychological studies, a dual process theory was proposed by Carroll, Samek and Zepeda (2016; 2018), for analyzing food choice. These researches underlined that subjecting individuals to cognitive load increases the exertion of the reasoning system, thus restricting the system’s ability to regulate decision-making.

Dual process theory is composed of an intuitive (or impulsive) system and a thoughtful reasoning system. Subjecting individuals to cognitive load increases the exertion of the reasoning system, thus restricting the system’s ability to regulate decision-making (Mukherjee, 2010). “Dual self” influences impulse control by making it harder to select the reasonable choice when subjected to cognitive load (Fudenberg and Levine, 2006).

A three-step process of evaluating the bundles by the consumers was described by Hur and Jang (2015) which referred to a previous study of Yadav (1994). The first is scanning the items of the bundle, second is anchor selection, where anchor is the most preferred or most favored meal, and the

third step is anchoring and adjustment. Based on these steps, the menu is composed. In bundling of menus, the main dish is an anchor and a side dish is a tie-in. Research results of Hur and Jang (2015) confirmed that in designing the bundled menus, a healthy anchor and a less unhealthy tie-in might significantly improve consumers' perceptions of healthiness. This concept could be useful in further processes for formulating or developing health consciousness in food consumption of younger age groups.

It was found by Shiv and Fedorikhin (1999) that lessening cognitive resources made individuals more likely to select an unhealthy snack option, and cognitive impairment resulted in dieting individuals the consumption of more calories. It was also highlighted that cognitive load increased the selection of unhealthy snack choices when exposed to food advertising (Zimmerman, Shimoga, 2014). Food choice is determined not only by price of the food or other limitations of the customer, but also external conditions including food presentation, expectation of the food taste, the atmosphere of the place of consumption, the brand, or the context of healthy consumption, the information by others etc. (Tuorila et al., 1998; Antoine, 2014; Dunay et al., 2015).

3. Methodology

Present paper is theoretical, which provides a wide literature review and discussion about the relevance of bundled menus in healthy food consumption. It synthesizes the existing literature into a new concept: adding health-related components to the well-known bundling method for improving health consciousness of food consumers of different age groups. In order to achieve the research goals, a wide literature survey was carried out on healthy food consumption, bundling as a marketing tool and on the ways of improving healthy food consumption. The main goal of this literature survey was to lay down the theoretical background of the further studies.

The collection of literature sources was made using various databases of Scopus, Web of Science, PubMed, ScienceDirect, Google Scholar and other search tools and using the institutional library, where the most relevant literature sources were found. Keywords like “bundling”, “healthy food consumption”, “healthy catering”, “perceived healthiness” and “menu psychology” were used for achieving the relevant literature sources.

The basic pillars of the literature review were connected to two fields. At first, the importance of healthy food consumption and the problem of price sensitiveness of consumers and the cheap fast food consumption was reviewed, as the initial problem of the research. Secondly, the theory and practice of bundling – as a marketing tool – was discussed parallel to the consumer behavior aspects related to different menus, bundled products, food consumption and healthy nutrients.

As the main goal of the paper was to build the theoretical background for the future empirical research, the authors highlighted the benefits of bundled menus adding healthy consumption as a special, new focus of research, by which the conceptual model of the future survey is to be developed.

As the work was the first step of the PhD studies of one of the co-authors, the time was a main limitation of this work. Thus, this article is the result of a desk research, where literature survey and the conceptual model outlines the framework of the first step of the future research steps.

In the next step of the research the conceptual model will be applied for conducting an empirical survey to explore the reliability and the acceptance of the proposed model.

4. Results: Healthy Food and Bundled Menus

Previous studies on consumers' perceptions of healthiness regarding food consumption employed a single or sequential menu item (e.g., main dish followed by dessert) purchase context (Burton, Howlett, Tangari, 2009; Chandon, Wansink, 2007) and researches revealed that economically equivalent deals might be evaluated differently depending on the way in which the bundle is presented.

The price of the bundle is viewed by the consumer as a single monetary loss, as opposed to a series of several losses if the same items were to be purchased individually. Consumers in the food service industry are conscious about component menu prices, they compare the menus, and choose expensive items to make their meal combinations (bundles) at a given fixed price and that bundles with the highest perceptions of value are more likely to be chosen (Myung, Mattila, 2010). The study carried out by Myung and Mattila (2010) found out that, that even in a situation where multiple components

and bundle prices are provided, consumers use component price information to form a reference point, and this reference point is directly linked to value perceptions and choice decisions. The study went further to reveal that based on the behavioral aspects of consumer choice; consumer demonstrates that the perceptions of value play a significant role in consumers' bundle choice decisions. The study suggested that restaurants should consider pricing their individual menu items from a strategic viewpoint when designing bundle prices.

Preparing bundled menus from healthier components could be an appropriate tool for food providers. Knowing the consumers' preferences on timesaving fast food consumption, price sensitiveness and intention to follow the up-to-date trends may allow combining these characteristics with healthy nutrition (List, Samek, 2015).

For instance, consumers will have less consumption guilt, when they habitually consume food labeled as "low fat". Bundled menus are sold at many fast food outlets as a tool by which they can fulfill consumer related goals by combining healthy and unhealthy menu items together, which in turn may increase consumer satisfaction. Despite these active practices, the anti-health image of some food service outlets is existing, even in case of bundled menus. A major component of this problem is the habitual consumption of high quantities of low nutrient, high-calorie foods, such as those marketed and served in bundled menus (National Institute of Health, 2012).

The research results of Carroll, Samek and Zepeda. (2016) proved that food choice under cognitive load could influence one's decision to select unhealthy versus healthy foods, where a richer product set and bundled products containing fresh vegetable and fruit items were tested.

Based on the literature review we summarized the benefits of bundled menus (Figure 1), and it was highlighted then by the reconsideration of the idea of menu bundling, by focusing on healthy components and by providing the appropriate additional information towards the consumers, their consumption habits and health consciousness might be improved. This concept was chosen to be the initial point of formulating a new conceptual model that will be applied and checked in our future survey.

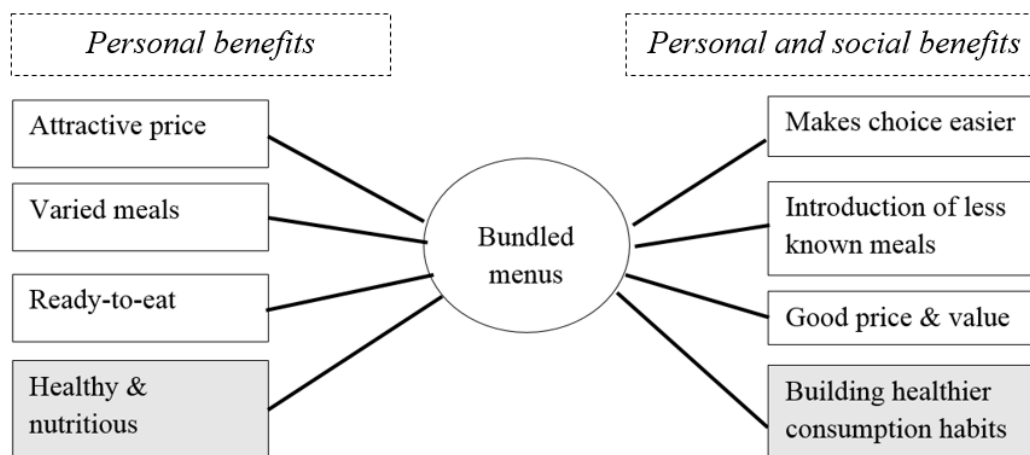


Figure 1. The main benefits of bundled menus

Source: Own concept

In this model the different elements that influence consumers individually (price, readiness, easier choice, varied meals) are displayed. Meanwhile some elements of this conceptual model have a wider impact on society (introduction of new meals, building healthier habits), by which the opportunity is given for providing more information, dissemination of knowledge and education as well.

The two grey colored boxes of Figure 1, ("Healthy & nutritious" features of food and "Building healthier consumption habits") refer to health issues, which is the main, new concept of the research. Authors agree with the opinion of Wansink and Love (2014) which suggests that restaurants and catering services – by formulating attractive and healthy bundled menus – can be able to guide customers to make healthier choices by shifting their attention, enhancing taste expectations, and by increasing perception of value.

The limitations of the present paper are represented by its theoretical nature, but the findings of the literature review showed a gap in the previous researches. Most of the researchers focused on the components of bundled menus in financial and consumers' preference aspects, or focused only on few healthy ingredients like fresh vegetables or fruits. This gap is to be filled in through the authors' idea about the formulation of a conceptual model of adding the healthy food approach to the practice of preparing bundled menus.

The new conceptual model (Figure 2) was formulated for describing the general concept of bundling, which elements are bundling, which improves the consumers' price acceptability, influences the perceived value of bundled products by which quantity of sales might be influenced, or, by an optimistic approach, sales might be increased.

The new elements proposed by us, are given in dark grey boxes ("Healthy & nutritious components" and "Healthier food consumption habits"). Preparing bundled menus from healthier components will bring the wider, personal and social benefits as it was described by Figure 1.

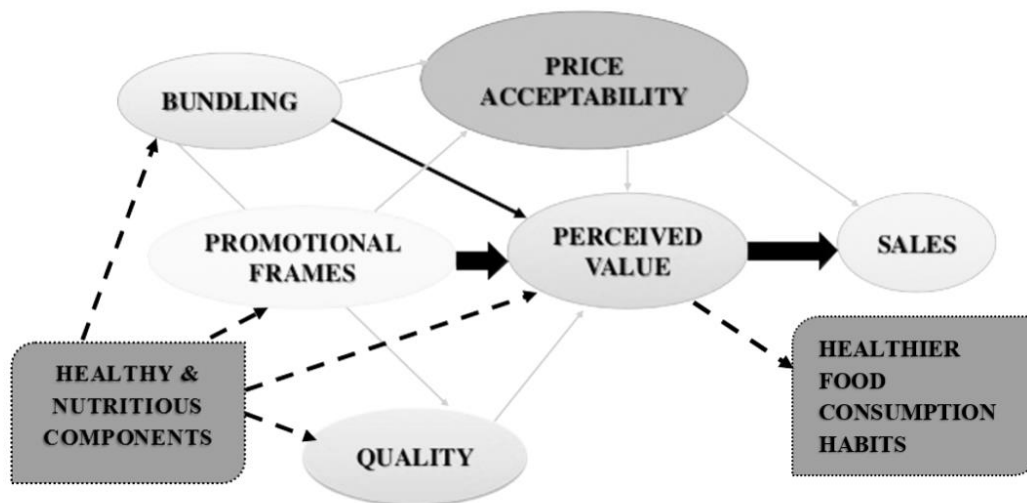


Figure 2. Conceptual model of healthy bundled menus as an impediment of healthier food consumption

Source: Own concept

The new elements of the conceptual model generate new connections between the elements. Healthy and nutritious components will serve as the basic elements of bundled menus. Healthy components are to be the promotional tool for improving health consciousness, which is as an important economic and social objective. Healthy components may refer to a higher quality, and finally these components will affect the perceived value of the bundled menus as products. The increase of perceived value will affect the sales, but, as this new model reflects, it might have impacts on the food consumption habits of the consumers, too. The new connections of the model are given by dashed-lined arrows.

The conceptual model is to be used in the new survey of the researchers in the close future.

5. Conclusion

Recognizing the increasing importance of health in food-related businesses, this paper ascertains the influence of bundled menus on healthy food consumption. Various studies suggest that menu composition in bundle context a significant factor influencing consumer perception of healthiness regarding menu items and that that even if bundles have the same calories, consumers differently evaluate the healthiness of a bundle anchored by the healthy feature of a main item, which corresponds with previous studies on anchoring and adjustment heuristics.

Bundle offered in fast food context increases purchase of calories which ultimately leads to greater consumption, consumers will always blindly believe (health claims) and consume what is in front of them, in other word what they purchase is what they consume. Hence the need to create awareness and sensitization to consumers, despite the profound advantages of bundles menus, they pose great barriers to healthy food consumption especially on the perception, believe and mind set of the consumer.

The bundle method is advantageous for both the customer and the food provider or catering service. Raw materials, preparing processes, delivery of bundled menus may be planned more easily, almost automatically. The price of menus can be calculated by a slight discount, as customers will generally spend more money than they normally would. Bundles should be simple, and new or special meals also could be inserted, which will encourage customers to try something new, and of course, order more food. The customer also wins with the meal deal, as they get to enjoy more food and taste something new because complementary items were bundled together.

This win-win situation could be improved by adding healthy items to the bundle, which – besides its economic and health issues – will represent educational aspects as well. Customers' attention, perception of value may be shifted towards healthier consumption habits that may bring wider social and health effects for the whole society.

The paper – in the present stage – is a result of a desk research, by which its limitations are outlined: at the present practical considerations could not be introduced because of its theoretical character. Nevertheless, presenting the literature review and the conceptual model is the basic point of laying down the foundations of the future research survey, by which the consumers attitude and perceptions about food components, menus and health issues are to be examined in different catering companies.

References

- Antoine, J.-M. (2014). Nutritional Trends and Health Claims. In Motarjemi, Y., Lelieveld, H. (Eds.), *Food Safety Management*, (pp. 1103-1113). Elsevier.
- Bittsánszky, A., Tóth, A.J., Illés, B.Cs., Dunay, A. (2015). Knowledge and Practice in Food Safety Processes: A Case Study on Hungarian School Catering. *International Journal of Innovation and Learning*, vol. 18, iss. 3, pp. 380-396.
- Burton, S., Howlett, E., Tangari, A. (2009). Food for thought: how will the nutrition labeling of quick service restaurant menu items influence consumers' product evaluations and purchase intentions? *Journal of Retailing*, vol. 85 iss. 3, pp. 258-73.
- Carroll, K.A., Samek, A., Zepeda, L. (2016). April. *Product Bundling as a Behavioral Nudge: Investigating Consumer Fruit and Vegetable Selection using Dual-Self Theory*. Working paper, No. 236130. 44. p. Agricultural and Applied Economics Association. Annual Meeting, July 31-August 2, 2016, Boston, Massachusetts.
- Carroll, K.A., Samek, A., Zepeda, L. (2018). Food bundling as a health nudge: Investigating consumer fruit and vegetable selection using behavioral economics. *Appetite*, vol. 121, pp. 237-248.
- Chandon, P., Wansink, B. (2007). The biasing health halos of fast-food restaurant health claims: lower calorie estimates and higher side-dish consumption intentions. *Journal of Consumer Research*, vol. 34, iss. 3, pp. 301-314.
- Dopson, L.R., Hayes, D.K. (2015). *Food and Beverage Cost Control*, 6th Edition, Wiley and Sons.
- Drewnowski, A., Darmon, N. (2005). Food choices and diet costs: an economic analysis. *The Journal of Nutrition*, vol. 135, iss. 4, pp. 900-904.
- Dunay, A., Bittsánszky, A., Tóth, A.J., Illés, B.Cs. (2015). Minőség az iskolai étkeztetésben. *Élelmiszer, Táplálkozás és Marketing*, vol. 11, iss. 2. pp. 17-22.
- Estelami, H. (1999). Consumer savings in complementary product bundles. *Journal of Marketing Theory and Practice*, vol. 7, iss. 3, pp. 107-114.
- Fudenberg, D., Levine, D.K. (2006). A dual-self model of impulse control. *The American Economic Review*, vol. 96, iss. 5, pp. 1449-1476.
- Guiltinan, J.P. (1987), The Price Bundling of Services: A Normative Framework, *Journal of Marketing*, vol. 51, iss. 2, pp. 74-85.
- Hanson, W.A., Martin, K.R. (1990). Optimal bundle pricing. *Management Science*, vol. 36, pp. 155-174.
- Hinson, J.M., Jameson, T.L., Whitney, P. (2003). Impulsive decision making and working memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, vol. 29, iss. 2, p. 298.
- Hur, J.Y., Jang, S. (2015). Consumers' inference-dynamics about healthy menu promotions in a bundle context. *International Journal of Hospitality Management*, vol. 44, iss. 1 pp. 12-22.
- Johnson, M.D., Herrmann, A., Bauer, H.H. (1999). *The effects of price bundling on consumer evaluations of product offerings*. Cornell University, School of Hospitality Administration, [online]. Available: <http://scholarship.sha.cornell.edu/articles/711>, [2017, December 12].

- Just, D.R., Mancini, L., Wansink, B. (2007). *Could behavioral economics help improve diet quality for nutrition assistance program participants?* Economic Research Report No. 43, U.S. Department of Agriculture, Economic Research Service. Available [online]. Available: <https://ageconsearch.umn.edu/bitstream/6391/2/er070043.pdf> [2017, December 12].
- List, J.A., Samek, A. (2015). The Behavioralist as Nutritionist: Leveraging Behavioral Economics to Improve Child Food Choice and Consumption. *Journal of Health Economics*, vol. 39, January 2015, pp. 135-146.
- Loring, B., Robertson, A. (2014). Obesity and inequities. Guidance for addressing inequities in overweight and obesity. World Health Organization.
- Mukherjee, K. (2010). A dual system model of preferences under risk. *Psychological review*, vol. 117, iss. 1, pp. 243-255.
- Myung, E., Mattila, A.S. (2010). Influence of price on consumer meal choice in a bundling context. *Journal of Foodservice Business Research*, vol. 13, iss. 2, pp.114-126.
- National Institute of Health (2012). *How are Overweight and Obesity Treated?* Available [online]. Available: <http://www.nhlbi.nih.gov/health/health-topics/topics/obe/treatment.html> [2016, July 13].
- Sharpe, K.M., Staelin, R. (2010). Consumption effects of bundling: consumer perceptions, firm actions, and public policy implications. *Journal of Public Policy & Marketing*, vol. 29, iss. 2, pp.170-188.
- Shiv, B., Fedorikhin, A. (1999). Heart and mind in conflict: The interplay of affect and cognition in consumer decision making. *Journal of Consumer Research*, vol. 26, iss. 3, pp.278-292.
- Tanford, S., Raab, C., Kim, Y.S. (2012). Determinants of customer loyalty and purchasing behavior for full-service and limited-service hotels. *International Journal of Hospitality Management*, vol. 31, iss. 2, pp.319-328.
- Tóth, A. J., Bittsánszky, A. (2014). A comparison of hygiene standards of serving and cooking kitchens in schools in Hungary. *Food Control*, vol. 46, pp. 520-524.
- Tuorila, H.M., Meiselman, H. L., Cardello, A.V., Leshner, L.L. (1998). Effect of expectations and the definition of product category on the acceptance of unfamiliar foods. *Food Quality and Preference*, vol. 9, iss. 6, pp. 421-430.
- Túróczy, Z. Bittsánszky, L., Fülöp, L., Dunay, A. Tóth, J.A. (2015). Examination of plate waste in school catering. In *Proceedings of the 5th International Conference on Management 2015: Management, Leadership and Strategy for SMEs' Competitiveness*, pp. 497-500. Gödöllő, Hungary.
- Wansink, B., Love, K. (2014). Slim by design: Menu strategies for promoting high-margin, healthy foods. *International Journal of Hospitality Management*, vol. 42, pp. 137-143.
- Yadav, M.S. (1994). How buyers evaluate product bundles: A model of anchoring and adjustment. *Journal of Consumer Research*, vol. 21, iss. 2, pp. 342-353.
- Zimmerman, F.J., Shimoga, S.V. (2014). The effects of food advertising and cognitive load on food choices. *BMC Public Health*, vol. 14, iss. 1, p. 342.

Liudmila Shirshikova^{1*}

South Ural State University (National Research University)
Russia

Maria Lavrova²

South Ural State University (National Research University)
Russia

Igor Lavrov³

Ural Federal University
Russia

72. THE PRODUCTION AND ECONOMIC SYSTEM OF THE ENTERPRISE AND THE OVERALL PLANNING FRAMEWORK

Abstract: Problem statement: In the conditions of the economic turbulence of the markets and at different stages of the enterprise's life cycle, it is necessary to find such an enterprise planning and management model, which would guarantee one of the Pareto optima. Main objective of the paper: Development of the corporate and strategic planning model and tools supporting this model. Research description and methods: The concept of the research was to develop the dynamic normal theory as a line of the infra-marginal analysis and planning in the modern conditions of industrial enterprises' economic activity in Russia and abroad. Considering the economic realities, the tools of the operation (marginal) analysis and planning were correlated with the infra-marginal analysis as part of the enterprise's common planned activities. In the concept of the research, a special place was given to the inversion in planning the enterprise's economic activity, which was related to the efficiency and quality of production and services in the form of its structural dynamics. The development of scientific ideas about the inversion in the model of the standard mode of the production and economic activity will allow to solve the problem of determining the enterprise's effective planning and management from out the Pareto set in the extreme conditions of the external or internal functioning environment. Main results: The model of corporate and strategic planning was developed and defined the tools supporting its functioning.

Keywords: enterprise, integrity, management, planning, training.

JEL Classification: O12

1. Introduction

Planning in the scientific literature is mainly represented as an activity and function in the enterprise management system, which is logical and justified from the perspective of the tasks solved by planning. Nevertheless, the methodology for the development of tools of internal and strategic planning at industrial enterprises presupposes a broader basis than the management theory. The research problem is that in the conditions of economic turbulence of markets, the enterprise needs to find such a management model, based on which the applied planning tools would guarantee the Pareto-optimal adaptation to the external environment. The main objective of the paper is to present the results of the development of the management and planning model and the tools that support this model. The article proposes to introduce variables that will allow the enterprise to achieve optimum.

The concept of the research is to develop the dynamically standard theory as a line of the infra-marginal analysis and planning in the modern conditions of industrial enterprises' economic activity in Russia. Considering the economic realities, the tools of the operation (marginal) analysis and planning are correlated with the infra-marginal analysis as part of the enterprise's commonly planned activities. The concept focuses on the internal training institution and the results of its functioning for the introduction and effective development of the budgeting system in the management activities of the enterprise management. The main tool of the training technology are filters that help (you don't need

¹ Assoc. Prof. Liudmila Shirshikova Ph.D. in Economics; Lenin Ave., 76, 454080, Chelyabinsk, Russia, shirshikova@gmail.com

² Maria Lavrova Master of Economics Senior Lecturer; Lenin Ave., 76, 454080, Chelyabinsk, Russia, lmi74@mail.ru

³ Assoc. Prof. Igor Lavrov Ph.D. in Philosophy; Mira street, 19, 620002, Yekaterinburg, Russia, lavrovnauka@mail.ru

* Corresponding author

to) to form and/or change the stereotypes and patterns of line managers, specialists, craftsmen and workers of the enterprise, which provides a normal overcoming of the crisis overcoming in the development of the organization and its return to the evolutionary growth.

2. Main part. Internal Training Institution as a Tool for Positive Changes Planning in the Enterprise's Internal Environment

The organizational development model created in the 1970s by Larry E. Greiner allows analyzing and solving many scientific and practical problems of the enterprise growth dynamics. One of such problems is the choice of the enterprise's internal and/or strategic planning model and the development of the tools to manage its internal and strategic development based on this model.

2.1. Theoretical Framework and Literature Review

According to the integrity concept, planning at an industrial enterprise represents the first and most important management function (Greiner, 2003; Ershova, 2016). Planning has a complex structure, which can be conditionally presented as an element and a system, as a process and a result to the same extent. This concept reveals the internal elements of the planning system and the main factors of its links with the external environment in management. It defines a new parameter (integrity) of enterprise planning and management. The concept does not consider: the qualitative and quantitative development and diversity of the planning tools. There are no standards and norms of using the planning tools in the indicators dynamics. Interactive planning comprehensively takes into account the system of factors of the external and internal environment and timely prevents the unfavorable development of the situation based on the elaboration of an abstract design model, its projections into reality and building of the actual design model (Kleiner, 2011). It does not take into account the importance of rules, norms and standards that reduce the negative impact of a lack of information. Strategic planning (supplemented by the state indicative planning at the macro-level) is an activity resulting in a set of strategies as a special kind of planning documents, respectively, tools that contribute to the future successful business activity of the enterprise (Kelchevskaya, 2017). It does not take into account the factors preventing the implementation of strategic planning and management. Normative dynamic aspects of the strategy implementation are considered to be secondary. Directive planning, including normative support of the current production planning, allows to increase the stability of performing only certain operations (Ryan, 1995). The Triple paradox model of organizational dynamism is based on the paradoxical management view in turbulent business environments. It used the assumption that human beings tend to understand the world in terms of pairs of opposites (cooperation–competition, exploration-exploitation, and conformity-agency) and dynamic capabilities. However, it does not take into account the plan implementation control functions (Ricciardi, Zardini, Rossignoli, 2016). The adaptive management model for innovative processes is considered in view of the risk. It has restrictions to material and financial resources and is determined on the basis of the history of implementing the innovative process management (Babenko et al., 2017). Khaustova (2016) integrated strategic and adaptive management into a single process to ensure effective development of the company in changing environment. The corrective measures are implemented based on the results of monitoring. However, the influence of the human factor, including motivation, is not revealed. Within the framework of the dynamic normal concept, the efficiency and quality are evaluated by the development of a special planning and control tool - standard (reference) mode of the enterprise's production and economic activity (Pogostinskaya, 2014; Syroezhin, 1980). The hypothesis of changing the reference model in the enterprise's life cycle is not developed.

2.2. Materials and Methods

Greiner's model contains restrictions of the technical and technological scales of the company output, which enables to divide the entire set of organizations into three groups: enterprises with a low production growth potential (Company in Low-Growth Industry), enterprises with a medium production growth potential (Company in Medium-Growth Industry) and enterprises with a high production growth potential (Company in High-Growth Industry). The grouping of enterprises by the growth industry feature uniquely determines the development trajectory. Accordingly, Companies in Low-Growth Industry have a smoother growth with a comparatively longer evolution period. Companies in High-Growth Industry evolve significantly (twice or more times) faster due to their high technical-economic and technological potential. Greiner (1994, p. 10) denotes the enterprise's growth

function from the variable age (Age of Organization) by the ordinate and calls it the "Size of Organization". It can be seen from Figure 1 that at all the growth stages and phases enterprises with a high technical-economic potential restructure their evolutionary and crisis problems at a significantly higher rate than those from other groups.

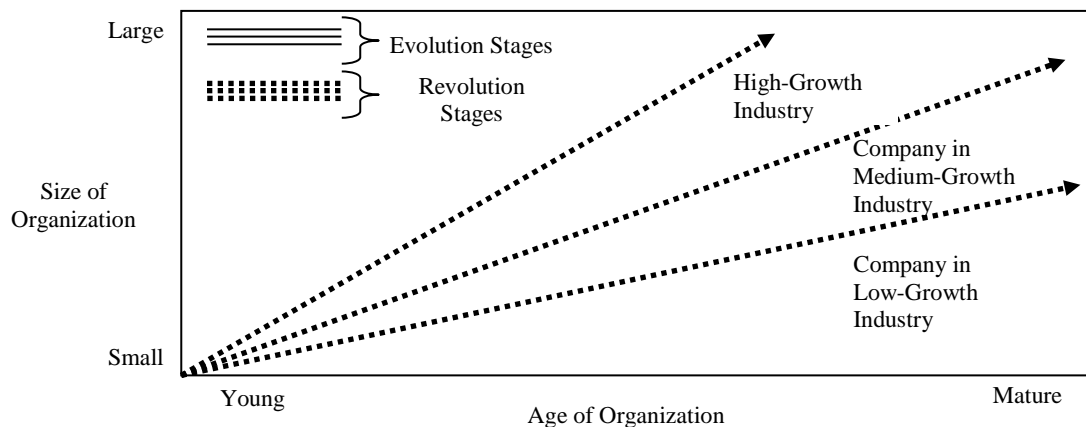


Figure 1. Greiner's organizational development model

Source: Greiner, 1994

Formally, the relations of the groups of enterprises can be expressed as a linear strictly increasing function from the equation $y = f(x)$, but, of course, in the first approximation and ignoring the discontinuities arising as a result of an acute crisis. Let us assume that the growth function of any enterprise is the Size of Organization, measured by the total number of managers, specialists and workers employed at the enterprise:

a) for Companies in Low-Growth Industry the growth function is (1)

$$SO_l = a_l^{nt} \cdot P_{t-1}; \tag{1}$$

b) for Companies in Medium-Growth Industry the growth function is (2)

$$SO_m = a_m^{nt} \cdot P_{t-1}; \tag{2}$$

c) for Companies in High-Growth Industry the growth function is (3)

$$SO_h = a_h^{nt} \cdot P_{t-1}; \tag{3}$$

where SO_l , SO_m , SO_h – growth functions; a_l^{nt} , a_m^{nt} , a_h^{nt} – growth multiplier; P_{t-1} – number of employees of the enterprise in the year preceding the current year.

Thus, the differences in the rate of changes at different enterprises dependent on the starting conditions of their development presume, in our opinion, based on the complementarity principle, the development of new tools for the already known planning models and forms at the enterprise, taking into account the specific features of the development of the enterprise groups. For example, the model of the operation (marginal) analysis in planning is supplemented with the tools of the infra-marginal analysis of the enterprise's economic and commercial activity, the organization's functional dynamics – with its structural dynamics, etc. (Favro, 2000; Kleiner, 2002; Pogostinskaya, 2014). However, the converse proposition that not all the planning and management tools, for example, typical of the most perfect model of financial planning and management model, like budgeting, can be equally applied at different enterprises, is also true. The latter requires explanations. As you know, budgeting as a management technology and a planning mechanism is a system in the working condition.

2.3. Economic and Mathematical Model of Interactive Planning

The budgeting system is a set of such elements as the budget structure, procedure for the formation, coordination and approval of budgets and control over their actual administration, regulatory

framework (limits, standards, norms, directions), standard procedures and mechanisms of management decision-making. Such a complex system cannot be rooted in the organizations' soil and function efficiently without a trained and control-prepared labor staff. On the other hand, it is obvious that as far as the enterprise grows, a special institution is needed in the organization aimed at training, education and retraining of personnel. Apart from the main issues in financial planning (a) determining the volume and composition of costs, b) ensuring that these costs are covered by financial resources from various sources), budgeting solves a number of management tasks: 1) coordination of various businesses (as types of economic activities) and structural units, 2) alignment of interests of individual workers and groups in general in the organization, 3) prompt tracking of deviations of the actual performance results from the planned ones, 4) effective control over the use of financial and material resources, 5) evaluation of the plan implementation and some other management problems. Let us pay attention to problems 1 and 2 from the list of the problems solved by the budgeting technology. In the course of time (during the mature period of its operation), the staff, personnel or, in other words, the team, is gaining more and more importance in the enterprise organization. The fifth development phase is determined by the team by the organizational structure, management style, control system and the special importance of management awards, and in the control system the budgeting technology comes to the fore from the second to the fourth phase (Greiner, 1994, p. 11). The economic aspects of training constitute an important aspect of the enterprise management content. The compliance of the enterprise's internal environment with its external environment is achieved as a result of the training-based management methodology. In the management system, it is desirable to balance the problems of the internal (Pf_1 - management tasks preconditioned by the state of the internal environment) and the external order (Pf_2 - management tasks preconditioned by the assessment of the external environment) as a condition to adapt to market fluctuations ($Pf_1 = Pf_2$), wherein for an optimal behavior strategy implementation scenario, the adaptation coefficient should exceed or be equal to 1 ($K_{adapt} = Pf_2 / Pf_1 \geq 1$). The identity coefficient is inverse to adaptation and reflects the dependences of the internal environment on the external one: the higher the company's adaptation to the macro-environment of the external environment, the lower its self-identification, and vice versa ($K_{ident} = 1 / K_{adapt}$). If we take into account the presence of a certain corporate culture in organizations, the existence of the training institution is completely justified by the results of the action - to develop standards corresponding to the company's basic objectives and then to cultivate them in the employees, changing their world perception. Perhaps, it results in the destruction of some standards and their replacement with other standards of information perception. The cultivated standards, habits, formulas and behavioral models, the accepted perception patterns, etc. constitute the essence of what Lippmann called the stereotypes that make up a new reality for a person – his/her pseudo-environment: "There is a certain pseudo-environment between a person and his environment. Human behavior is a reaction to this pseudo-environment" (Lippmann, 2004, p. 38; Siminica, Motoi, Dumitru, 2017). But a person acts in a real environment, and the consequences of his/her reaction occur precisely in it. Stereotypes change the human consciousness, which in case of a successful vaccination results in a change of the visual perception itself - his eyes see differently (Lippmann, 2004, p. 101).

By the objective function, the pseudo-environment consisting of stereotypes is an individual filter for the flow of information from the external environment. However, such filter has an important useful meaning for people: stereotypes save our efforts, on the one hand, and, on the other hand, they are a core of the personal tradition and a way to protect our public position (Lippmann, 2004, p. 109). Thus, as a result of training, filters are formed in a person in the corporate environment, the inversion/self-organization process is activated, which is modeled according to Bayes-Nalimov formula (Nalimov, 1979, pp. 147-185) (4):

$$P(\mu / \gamma) = kP(\mu) \times P(\gamma / \mu), \quad (4)$$

where $P(\mu)$ – initial probability function of the state μ , k – normalization constant, $P(\gamma / \mu)$ – probability of appearance in the situation γ of the filter (γ / μ) multiplicatively interacting with the initial function $P(\mu)$, $P(\mu / \gamma)$ – new organization of elements, new order of their structuring, new structure.

The training institution at the enterprise forms "correct" and necessary stereotypes for an effective transition from the crisis to the evolution. Actually, a rapid progress in solving crisis situations at any stage of the life cycle of different enterprises is, in our opinion, due to new stereotypes and filters that are developed or borrowed and rooted in the internal environment. The converse is also true - a collapse and bankruptcy of enterprises are largely preconditioned by the underestimation of cognitive and social factors in the development, especially at the crisis, revolution and chaos stage. Ultimately, management efforts are aimed at achieving an optimum in the enterprise's economic and commercial activities (Williamson, 1996). The optimization is established by the Pareto optimum criterion. Pareto optimum (Pareto conditions) consists of observing the three conditions (rules) for production, distribution and consumption in the economy: 1) the marginal rate of the replacement in consumption between any two benefits should be the same for all the consumers, while the ratio of the replacement of benefits does not worsen or improve the consumer's standing ($MRS_{xy} = -\partial Y / \partial X$, at $U = const$); 2) the marginal rate of the technical replacement between any two production factors should be the same at any time and in any place of their use, the ratio of the factors substitution means that they are mutually replaced without a significant change in the production level ($MRST_{kl} = -\partial L^\alpha / \partial K^{1-\alpha}$, at $Q = const$); 3) the marginal rate of the transformation for any two benefits should be equal to the marginal rate of the replacement in the consumption of these benefits, since in the national economy the ratio of the increase in the production of one benefit is achieved through the sacrifice of a certain amount of another benefit ($MRST_{Rxy} = MRS_{xy} = -\partial Q_Y / \partial Q_X$, at $U = const$).

The formalization of these Pareto optimum conditions in connection with the overall competitive equilibrium is as follows:

$$\forall x^* (x^* \in X) \exists x (x \in X) \Rightarrow f_i(x) \geq f_i(x^*), i = 1, \dots, n \quad (5)$$

The Pareto optimality condition, unlike the conditions for maximizing objective functions $f_i(x)$ from the set of the economic agent's decisions X , where $x \in X$, is less strict, whereas Pareto improvements are achievable for all the states save one, wherein one of the functions in the movement by the points of Pareto set decreases. Pareto set is a set of points, in which the enterprise's production volume, its revenue and profit are optimal: for the manufacturer Pareto optimum is reached when there is such a distribution of resources and finished products, at which there is no redistribution option improving at least the standing of one enterprise and not worsening the standing of other enterprises (Syroezhin, 1980; Ryan, 1995; Maevsky, 2005). From condition 1 this rule implies the following for the consumer: Pareto optimum is reached when there is such a distribution of finished products, at which there is no redistribution option improving at least the standing of one individual and not worsening the standing of other individuals. The competitive overall and partial Pareto equilibrium, as well as the "second best" state of the economy, is regulated on the basis of the institutions and institutional structures either spontaneously (by the so-called "invisible hand" of the market) or purposefully (consciously) (Popov, 2005; Eggertsson, 2001). The proof of the general theorem of second best was presented by Lipsey and Lancaster (2004, p.123-126). Hence it appears that the growth function and the equilibrium are realized at any restrictions of the optimum conditions: the improvement can be ineffective under the conditions of the only Pareto optimum, but comparatively effective, equilibrium and correspond to conditional Pareto optimum, i.e. second best. Along with planning, the functions of organization, motivation, and control are often referred to management (Ershova, Krylatkov, 2010). There are horizontal direct and feedback links of one level between the management functions, the functions are linearly ordered. The control function in enterprise management is separate and independent of other functions, whereas qualitative and quantitative values of the model's feedback parameter are associated with control.

In general, the management function (MF) can be analytically presented, in our opinion, in the equation (6):

$$MF = \sum (f(PL), F(ORG), f(MOT), f(CONT)) \quad (6)$$

where $f(PL)$ – planning function; $f(ORG)$ – organization function; $f(MOT)$ – motivation function; $f(CONT)$ – control function.

Accordingly, the functions in the equation (6) have a structural-logical expression. The planning function can be defined as a process of determining the desired future state of the organization and developing action programs to achieve it. In the simplest form, planning answers the following questions: 1. What is the current state of affairs? 2. What should it be in the future? 3. What can interfere? 4. What should be done? The order of questions determines the order of implementing the planning stages: 1. Analytical evaluation stage (situation assessment). 2. Goal-setting (definition of goals). 3. Analysis and evaluation of restrictions in the enterprise's external and internal environment (identification of restrictions). 4. Making a management decision on the development of programs to achieve the goals, the convergence of the situation and the enterprise's goals through the elimination of problems (development of action programs).

So, despite the revealed order of implementing the planning stages, goal-setting is a stage determining the entire planning process. The division of goals by their content, orientation, time horizon, levels, subjects, objects of implementation, subordination, methods of their definition and development forms the basis for classifying the types of planning—these are strategic, current (tactical) and operational planning (Kleiner, 2011). The nature of the objectives, accordingly, unambiguously determines the types of planning, which, in their turn, specify the nature of the actions of the subjects—persons (shareholders, owners, managers, labor staff), structures, centers, shops, departments of the enterprise—decision making, change the order of accounting the factors, which influence the external and internal environment in terms of correlation, for example, primary and secondary, basic and dependent factors. It is evident that it is essential to take into account the environmental factors when developing the enterprise's strategy and policies, its life cycle, profile and development matrix, etc. Following the concept of the enterprise integrity, the logic of the correlation between a part and a whole, an element and a system, planning can be considered as an element (a part) in the management system and as a relatively isolated system (a whole) (Ershova, Mineeva, Cherepanov, 2016).

As an element of the industrial enterprise management system, the organization of planned work includes the three main tasks: 1) to reduce the uncertainty of the future in terms of determining the permissible prospects for the enterprise's development, taking into account the external and internal influence factors; 2) to facilitate control through a detailed distribution of powers, rights and obligations in the context of the plan implementation, its temporary, quantitative and qualitative concretization; 3) minimization of costs for the planning process itself. On the other hand, if we connect the industrial enterprise's integrity parameter with the planning function, we obtain a planning system (a subsystem of the management system), which includes at least three external factors and three internal elements. The factors of the external environment directly related to planning include informational support, organizational support and decision-making system. The elements of the internal environment of the planning system include planning management, planning process and planning result (Sirotkin, Kelchevskaya, 2014).

When we compare the importance of the system elements, the highest importance (importance and relevance for an effective functioning of the planning and management system as a whole) is given to the planning process. Therefore, the process indicators and indices: subjects, states, stages, order (connectivity), tools, transitions, time, planning space, are of primary importance in planning, and then in management (in the decision-making system, their implementation and control) (Sirotkin, Kelchevskaya, 2008).

Thus, the concept of the industrial enterprise's integrity as a basis for assessing its structure and functions, competitiveness, efficiency of industrial and commercial activities, management and planning in the scientific research leads to a number of consequences that, in our opinion, have both advantages and disadvantages and limitations. Their important comparative advantage is the theoretical approach oriented towards a consistent development of the integrity principle as an analogue of the systematic concept. A consequence of the integrity approach is the representation of the property of a whole as a special control parameter of a complex object, its functional property, which has an important difference from other properties, consisting of an emergent or integral nature, which can strengthen or, conversely, weaken up to a complete disappearance. Emergence can be also understood in this respect as a uniqueness of the property. Accordingly, in a more concrete methodological expression, the concept can be reduced to a rule of integrity, which, in our view, should be formulated as follows: the norm "to be both an element and a system" is equally applicable to any object, property, and to any part of the system object (in this case the enterprise). The norm defines the standards of the control integrity parameter in the form of a separate functional property (emergent, integral property) both at the level of the whole

object (the enterprise as a sole property complex) and at the level of its constituent units. In other words, the emergent property will be different at different levels of the enterprise integration as an integral whole, complex, systemic object. The task of analysis, evaluation and management will be to choose the right parameter, which most precisely represents the system (subsystem).

Another important parameter of the planning types classification used in the industrial enterprise management is elasticity E_x of the objective function $S(x)$ by indices x_i of the plan X , the changes in elasticity E_x are calculated by the formula (7) in the values of the elasticity coefficient E_x^S :

$$S(x) = \sum x_i \equiv X (i = 1, \dots, n); E_x^S = \partial S(x) \cdot 100\% / \partial(x_i) \cdot 100\% = b (b > 0) \quad (7)$$

Considering the substantial economic and organizational characteristics, directive ($0 < E_x^S < 1$), indicative ($E_x^S = 1$) and interactive planning ($1 < E_x^S < \infty$) should be outlined by the values of the elasticity coefficient E_x^S of the objective function $S(x)$. All the three types of planning correspond to the three varieties of modern management in the field of enterprise management: traditional (production), strategic and project-oriented management. It is evident that by the sensitivity interactive planning is the most flexible response to the factors of changing the behavior of objects of the external and internal environment, and it constitutes the specificity of planning in project management. A peculiar feature of interactive planning is, firstly, its project quality – the correlation with the reality based on the system of direct and feedback links, and secondly, interactive planning is the development of target values in the management and decision-making system, like any planning in general, and at the same time the designing of the necessary institutional changes in the external and internal management environment based on the alignment of interests and consolidation of preferences of the project subjects, agents and actors. It is the latter property that makes it an effective tool for developing a solution based on project management of generating the enterprise's revenue, costs and profits (Kelchevskaya et al., 2016; Kelchevskaya, Chermenko, Vladimorova, 2017; Machlup, 1999). If the variable elasticity of the objective function is added to the interactive model according to the plan indicators, as well as the previously introduced variables (identification and adaptation coefficients, etc.), there will be a more effective integrative model. The integrated management and planning model represents the equation (6) with an increased number of independent variables (8):

$$MF_{\text{int}} = \sum (PL_{\text{int}}(X, E_x^S), f(ORG), f(MOT), f(CONT), SO, AO, P(\gamma / \mu), K_{\text{ident}}, K_{\text{adapt}}) \quad (8)$$

where MF_{int} – integral management function; PL_{int} – integral planning function; $f(ORG)$ – organization function; $f(MOT)$ – motivation function; $f(CONT)$ – control function; SO – growth function; AO – age function; $P(\gamma / \mu)$ – probability of the appearance in the filter (γ / μ) contributing to the enterprise restructuring in the situation γ ; K_{ident} – identification coefficient; K_{adapt} – adaptation coefficient; E_x^S – elasticity of the objective planning function $S(x)$; $X = \sum x_i, i = 1, \dots, n$ – plan.

3. Conclusion

As a result of studying various aspects of planning, planning tools and its correlation as a function with management, an integrative management and planning model was built, taking into account the previous analysis of the enterprise growth factors. According to our estimate, an effective direct and feedback relationship between managerial decisions making and the effectiveness of enterprise management was represented by the integrative management and planning model. The parameters of the links between managerial decisions making and management included: a) number of significant exogenous variables presented in the target planning and management function; b) speed of the decision-maker's response to the changes in the enterprise's external environment; c) sustainability of the planning and management functions during the enterprise's internal environment changes; d) readiness of the enterprise personnel and management for changes. The research resulted in: increased number of variables of the integrated management function and, consequently, increased activity and the speed in managerial decision making, while a high functional sustainability of management and readiness of the enterprise personnel for changes was maintained. A stable comparative advantage was reached utilizing these parameters, the integrative model concerning the abilities of the marginal, infra-marginal analysis and management, budgeting and

interactive planning. The essential limitations of the practical application of the integrative model was represented by misalignment, i.e. lack of consensus and trust between the enterprise's shareholders and management, by which the implement ability of the integrative model was significantly reduced.

The practical use of the model in corporations is recommended in the conditions of reorganization and division of ownership and management.

References

- Babenko, V., Romanenkov, Y., Yakymova, L., Nakisko, O. (2017). Development of the model of minimax adaptive management of innovative processes at an enterprise with consideration of risks. *Eastern-European Journal of Enterprise Technologies*, vol. 5/4, iss. 89, pp. 49-56.
- Greiner, L.E. (1994). Evolution and Revolution as Organizations Grow. In L. Mainiero, C. Tromley (Eds.), *Developing Managerial Skills in Organizational Behavior: Exercises, Cases, and Readings* (pp. 322-329). Englewood Cliffs, NJ: Prentice Hall.
- Greiner, L.E., Bhambri, A., Cummings, T.G. (2003). Searching for a Strategy to Teach Strategy. *Academy of Management Learning and Education*, vol. 2, iss. 4, pp. 402-420.
- Eggertsson, T. (2001). *Economic Behavior and Institutions*. Moscow: Delo.
- Ershova, I.V., Krylatkov, P.P. (2010). Problems and Methods of Management and Analysis of Enterprise Integrity. *Organizator Predpriyatiya*, vol. 3, pp. 51-60.
- Ershova, I.V., Mineeva, T.A., Cherepanov, E.V. (2016). *Operativno-Proizvodstvennoe Planirovanie*. Yekaterinburg: Publishing house of the Ural University.
- Favro, O. (2000). *Ekonomika Organizacij. Voprosy Ekonomiki*, vol. 5, pp. 4-17.
- Kelchevskaya, N.R., Altushkin, I.A., Korol, Yu.A., Bondarenko N.S. (2016). Peculiarities and importance of price formation in non-ferrous metallurgy (on example of copper concentrate production). *Tsvetnye Metally*, vol. 8, iss. 884, pp. 13-19.
- Kelchevskaya, N.R., Chernenko, I.M., Vladimirova, P.E. (2017). The Impact of Corporate Social Responsibility on the Investment Attractiveness of the Russian Companies. *Economy of Region*, vol. 13, iss. 1, pp. 157-169.
- Khaustova, K.M. (2016). Theoretical aspects of strategic adaptation management of enterprises. *Economic Processes Management: International Scientific E-Journal*, vol. 3 [online]. Available: http://epm.fem.sumdu.edu.ua/download/2016_3/epm2016_3_1.pdf. [2017, December, 20].
- Kleiner, G.B. (2002). Sistemnaya Paradigma i Teoriya Predpriyatiya. *Voprosy Ekonomiki*, vol. 10, pp. 47-69.
- Kleiner, G.B. (2011). Problemy Strategicheskogo Gosudarstvennogo Planirovaniya i Upravleniya v Sovremennoj Rossii. *Materials of the scientific seminar*, iss. 5 (43), Moscow: Nauchnyi expert, pp. 5-37.
- Lippmann, W. (2004). *Public Opinion*. Moscow: Institute of the Public Opinion Foundation.
- Lipsey, R.G., Lancaster, K. (2004). The General Theory of Second Best. In A.P. Zaostrovtssev (Eds.). *Vexi Ekonomicheskoy Mysli. Ekonomika Blagosostoyaniya i Obshhestvennyy vybor*, vol. 4, pp. 95-134. St. Petersburg: Economic School.
- Maevsky, V. (2005). Ekonomicheskie Izmereniya i Fundamentalnaya Teoriya. *Voprosy Ekonomiki*, vol. 10, pp. 25-39.
- Nalimov, V.V. (1979). *Veroyatnostnaya Struktura Yazyka. O Sootnoshenii Estestvennykh I Iskusstvennykh Yazykov*. Moscow: Nauka.
- Pogostinskaya, N.N., Pogostinskiy, Yu.A. (2014). Golden Rule of an Enterprise Management. *International Banking Institute*, vol. 8-1, pp. 242-251.
- Popov, E.V. (2005) *Instituty miniekonomiki*. Moscow: Ekonomika Publishing House CJSC.
- Ricciardi, F., Zardini, A., Rossignoli, C. (2016). Organizational Dynamism and Adaptive Business Model Innovation: The Triple Paradox Configuration. *Journal of Business Research*, vol. 69, pp. 5487-5493.
- Ryan, B. (1995). *Strategic Accounting for Management*. London: The Dryden Press.
- Siminica, M., Matoi, A.G., Dumitru, A. (2017). Financial management as component of tactical management. *Polish Journal of Management Studies*, vol. 15, iss. 1, pp. 206-217.
- Sirotkin, S.A., Kelchevskaya, N.R. (2008). The Problems of Using Economic Indices in Calculation of the Economic Value Added. *Russian journal of non-ferrous metals*, vol. 49, iss. 5, pp. 379-382.
- Sirotkin, S.A., Kelchevskaya, N.R. (2014). *Metodologiya Ocenki Effektivnosti Korporativnoy Strategii Promyshlennogo Predpriyatiya*. Yekaterinburg: UrFU.
- Syroezhin, I.M. (1980). *Sovershenstvovanie sistemy pokazatelej effektivnosti i kachestva*. Moscow: Ekonomika.
- Williamson, O.E. (1996). *The Economic Institutions of Capitalism: Firms, Markets and Relational Contracting*. St. Petersburg: Lenizdat.

Liudmyla Shulgina^{1*}

National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"

Ukraine

University of Bielsko-Biala

Poland

Anna Lemańska-Majdzik²

Czestochowa University of Technology

Poland

73. MARKETING AUDIT AS A BASIS FOR REAL ESTATE PROJECTS BRAND DEVELOPMENT

Abstract: The main objective of this article was to define the essence of marketing audit as an independent regular monitoring of the brand condition on the market in relation to competing brands. To achieve this goal, appropriate methods were used: comparative analysis and content analysis of scientific and popular sources; logical analysis, induction and deduction to formulate the necessary conclusions and suggestions. All these methods were used for the analysis of secondary information obtained mainly from English-language scientific sources with a high citation index. We are developed the blocks of questions to assess the following: the external environment of the brand on a commercial real estate market; its goals and strategies; its marketing management structure and major systems; the efficiency of the marketing budget and the effectiveness of the marketing mix. In contrast to the general recommendations existing in the literature, the blocks proposed by us take into account the specifics of the investigated market and together form an marketing audit of brands integral system just for projects in the real estate market. The study was conducted in 2016-2017.

Keywords: brand positioning, commercial real estate, marketing audit of the brand, marketing objectives and strategies.

JEL Classification: M31, M37, M42

1. Introduction

The formation of a strategy for positioning brands of commercial properties requires significant costs, the volume of which depends on the features of the functional segment, the brand and the operator's goals, who brings the property to the market. Focusing on achieving the effect of positive synergy, it is necessary to plan the activities of the brand positioning system primarily to identify the key information for the brand. For this, the optimal method is the implementation of a group of actions for marketing audit.

Since the issue of marketing audit and brand audit in the commercial property market is relatively unexplored, we examined the existing scientific approaches to explaining the tasks, methods, stages and results of such kind of audit, and proposed the main definitions and algorithm for applying the methodology on the commercial property market with the aim of forming effective marketing information strategy.

Analysis of the latest market trends shows that the Ukrainian commercial property market is developing in the direction of harmonizing market indicators with international standards for commercial property, which determines the need for audit of the company's marketing strategy on the market under investigation. It is important, in our opinion, to distinguish audit of marketing strategy and brand audit, and apply appropriate marketing audit techniques to them.

2. Definition of Marketing Audit

In the scientific literature, the definition of marketing audit is defined as comprehensive, systematic independent regular research of the company's marketing environment and tasks, strategies and operational activity aimed at identifying problems that may arise, as well as providing possible recommendations for improving the marketing strategy of the company under investigation (Aaker, 2003).

¹ Doctor of Economics Prof. Liudmyla Shulgina; Voskresenska-Str. 12b, 177, Kyiv-02125, Ukraine, shulm@ukr.net

² Eng. Anna Lemańska-Majdzik Ph.D.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, lemanska@zim.pcz.pl

* Corresponding author

Such an audit is an important component of the marketing management of the company, as it is responsible for adjusting the overall marketing strategy, thus ensuring the company's competitiveness on the market. Typically, the purpose of marketing audit is precisely to ensure the company's high competitiveness by being able to meet legal requirements, adhere to the company's vision, allocate the company in a competitive environment and at the same time meet the needs and expectations of the relevant target audience (Zozulev, Solntsev, 2008).

We propose in the formation of a marketing information system on the commercial property market to consider *the marketing audit* as an independent regular monitoring of the brand's status on the market in relation to competing brands, its perception by the target audience, staff and management of the enterprise in the commercial property market, its partners and media (Shulgina, Leo, 2011).

Proceeding from the definition that we proposed, the subject of marketing audit can be all elements, which compose marketing, but primarily the following: the company's goals and strategies in marketing; the effectiveness of the company's pricing policy; the state of the established system of providing goods and services, the direction of its development; changes in the range of goods and services; forms of advertising and brand promotion on the market; reliability of forecasts on sales of goods and services; correct selection of the target segment; condition and prospects of brand development (Hadrian, 2005).

Marketing audit, in our opinion, can be applied to any functional segments of the commercial property market since the methodological foundations of marketing audit do not differ for types of property objects or strategies for positioning their brands.

3. Methodology of the Research

The main objective of this article was to define the essence of marketing audit as an independent regular monitoring of the brand condition on the market in relation to competing brands.

To achieve this goal, we considered expedient to apply such methods: comparative analysis and content analysis of scientific and popular sources – in order to determine the marketing audit essence interpretation which is existing in the scientific literature; logical analysis – to create the goals and objectives of marketing audit; induction and deduction to formulate the necessary conclusions and suggestions about assessment of the external environment of economic management, audit of objectives and strategies in the field of marketing, assessment of the structure of marketing management and its main systems, assessment of the effectiveness of the marketing budget and the effectiveness of 4P. All these methods were used for the analysis of secondary information obtained mainly from English-language scientific sources with a high citation index. We are developed the blocks of questions to assess the following: the external environment of the brand on a commercial real estate market; its goals and strategies; its marketing management structure and major systems; the efficiency of the marketing budget and the effectiveness of the marketing mix. The study was conducted in 2016-2017.

4. Goals and Objectives of Marketing Audit

The purpose of the marketing audit is to demonstrate the following information to the company's managers, potential investors or partners (in case of creating a new business or developing an investment project).

- Features of the overall economic situation (in the city, region, and industry) are such that the analysed enterprise has prospects for dynamic development (including from the point of view of protecting the external environment, local and state legal norms, political and socio-economic situation).

There is a really unmet need on the market and the comparative competitive advantages of the product most meet this need (at price, quality, manufacturability, rate of placement, location, quality of service, etc.).

- The existing market potential of the product (whether the market capacity is sufficient, whether the demand of the consumers is growing or at least stable, whether the forecasts are reliable about the possibilities of selling the project, whether the competitive environment is correctly judged, whether the location of the object is correctly chosen, whether all barriers to entering the market can be overcome).

- How effective are brand positioning tools on the market, how relevant are the company's operational plans, whether the strategy, forms and level of funding for marketing activities are properly chosen.
- Comparative competitive advantages of the company, namely why a certain team of managers and entrepreneurs performs the functions of developing and promoting the project in the best way (taking into account the strength of experience and historical features of the previous economic activities of the company, partner companies, experience and qualifications of managers and specialists working on a commercial property project) (Czubała, Niestrój, Wiktor, 2012).

Important for conducting a correct and effective audit of marketing strategy is the rational definition of tasks and requirements that determine the results of such an audit. As evidenced by the analysis of recent research, unlike the financial or accounting audit, there is no single list of tasks that determine the audit, and the company should focus primarily on their own needs and general recommendations (Churchill, 2004). However, we can offer a generalized list of tasks, including consideration of the following items:

- Definition of the company's requirements for its own marketing strategy, including the values and competencies of the company, its positioning, the signs that differentiate the company in a competitive environment, the service and communication functions of the company's personnel, its style, products offered on the market, as well as external and internal communications of the company.
- Consider the current state of marketing of the company and the issues associated with its inconsistency with the above requirements.
- Development an action plan for adapting the marketing strategy to the company's requirements.

This list of tasks forms the main methodological method for marketing audit, which is a list of questions, the search for answers to which is the purpose of such an analysis. Depending on how complete and correct this list will be, the effectiveness of the audit procedure depends significantly. We propose to group the questions according to the scheme presented in Figure 1, which contains six main categories of evaluation. We propose to consider each set of questions for each of the evaluation categories.

5. Assessment of the External Environment of Economic Management

The assessment of the external environment of economic management is carried out in two aspects: analysis of the parameters of the macroeconomic environment and analysis of the external environment of the enterprise (by the parameters of microeconomics).



Figure 1. The main categories of assessment in the marketing audit

Source: Own preparation on the base of Rimarenko, 2008

Among the parameters of the macroeconomic environment, the most important are demographic, economic, environmental, legal, political and cultural factors. We have developed a set of questions, the answers to which must be obtained foremost (by groups of factors) (Table 1). The inclusion of issues is connected with the need to identify possible risks during the implementation of the commercial property project and the opportunities for the company to overcome them. The analysis of factors of the macroeconomic plan allows also defining new opportunities for development, re-profiling or diversification of commercial property projects.

Table 1. Questions for assessment of external environment of economic management

Demographic	<ul style="list-style-type: none"> – Which demographic factors and trends can pose the greatest threat or, on the contrary, open the greatest opportunities for the project? – What has been or will be done by the company to improve the opposition to certain threats or the use of open opportunities?
Economic	<ul style="list-style-type: none"> – What are the main trends and changes in the price level, income of the population, the conditions for granting or receiving loans, which can influence the future of the project? – What has been or will be implemented by the company in relation with such trends?
Environmental	<ul style="list-style-type: none"> – What are the projections regarding the availability and cost in the future of the natural and energy resources needed to service the project? – Is there any way expressed (in the media, analyst predictions, and statements by representatives of the local community) concern about the impact of a commercial property on the environment? – What has been or will be done by the company to win the commitment of the local community and authorities to protect the environment?
Political and legal	<ul style="list-style-type: none"> – Which of the proposed or adopted legislative and regulatory acts can affect the project, the strategy and tactics of marketing? – What actions of the government, local authorities can influence the project, and whether it is necessary to obtain permits?
Cultural	<ul style="list-style-type: none"> – What is the public's attitude towards the project? – What changes in the life of consumers and the system of their values can affect the project?

Source: Own preparation on the base of Hajli, 2014; Purnawirawan, De Pelsmacker, Dens, 2012.

In any case, marketing audit enables the operator of the commercial property market and its projects to adapt to the existing market conditions in any region. For a more accurate analysis, in our opinion, it is also necessary to assess more specific parameters of the macroeconomic environment of the enterprise, to determine the range of tasks facing it.

The list of questions here is determined by groups of parameters (Table 2).

Table 2. Questions for assessment of macroeconomic condition of commercial property project

Markets	<ul style="list-style-type: none"> – What happens to the capacity of the market (in the property sector and in the region), the demand for services and products, its trends and dynamics, income level in the region? – Main segments of the market and the dynamics of their changes.
Consumers	<ul style="list-style-type: none"> – Existing and potential consumers and their relationship to the project and its competitors. Rate, which the project fall into, the level of prices and services, the reputation and status of the company-developer. – Peculiarities of making decisions regarding the purchase/rent of premises in this segment of the market.
Competition	<ul style="list-style-type: none"> – Major competitors, existing and announced projects. – Goals and strategies of competitors, their strengths and weaknesses, market shares and status. – Market trends and a competitive environment that can affect the status of independent companies and projects.

Source: Own preparation on the base of Naylor, Lamberton, West, 2012; von Oppeln-Bronikowski, Hagenkort-Rieger, Joao Santos, 2017; Wu, Chen, Chung, 2010

Answers to the proposed questions allow us to outline the risks that the company may face, and the opportunities that enable it to function on the market. Such an analysis may be necessary to identify problems for which an integrated marketing plan will be required.

6. Audit of Objectives and Strategies in the Field of Marketing

For this part of the analysis, we also developed a set of questions that can be used in the questionnaire to implement the marketing audit (Table 3).

Table 3. Questions for assessment of marketing objectives and strategies of the enterprise on property market

Assessment of the main objective (mission)	<ul style="list-style-type: none"> – How clear pose the company's main goal in reference to marketing? – Do you consider the mission of the company (project) achievable and possible for implementation in practice?
Marketing Objectives	<ul style="list-style-type: none"> – Are the general goals of the company (the project) and the goals of their marketing formulated in the form of clearly defined indicators and norms that can be used to draw up a marketing plan and assess the results of the economic activities of the enterprise and its projects? – How appropriate are marketing goals? – Do these objectives give the enterprise and its projects the opportunity to truly strengthen their competitiveness, take advantage of the opportunities offered, and effectively manage the available resources?
Marketing Strategies	<ul style="list-style-type: none"> – Does the management of the company (project) have an accurate and clearly articulated strategy to achieve their marketing goals? – Is this strategy being implemented? – Does this strategy measure up the stages of the life cycle of the company and its projects, the actions of competitors, the state of the economy? – Is the company correctly identifying market segments (by characteristics and methods of segmentation)? – Are the criteria for the target segment correctly defined? – How accurately is the customer profile defined for each segment? – Are the marketing resources of the company correctly distributed among the main elements of marketing (analysis and improvement of projects, advertising and promotion)? – Does the marketing budget meet its goals?

Source: Own preparation on the base of Grubor, Milovanov, 2017; Li et al., 2008; Rimarenko, 2008; Wang, Yu, Wei, 2012

We believe that this analysis is primarily intended to demonstrate the following: the main objective of the enterprise or any commercial property project (mission), along with the main achievable marketing goals, and determine whether the company's chosen direction is right and to what extent its strategies meet the set goals.

7. Assessment of the Structure of Marketing Management and its Main Systems

This assessment allows to draw conclusions about the correct distribution of marketing functions, authorities and responsibilities in the company, necessary for their effective implementation, the effectiveness of interrelation between structural divisions dealing with different aspects of marketing work (Table 4).

Table 4. Questions for assessment of marketing management structure

Structure	<ul style="list-style-type: none"> – Is the status of the marketing officer sufficiently high in the company to ensure an appropriate level of customer satisfaction? – Are the types of marketing work optimally distributed between the line and functional divisions and services of the company (project)?
Efficiency	<ul style="list-style-type: none"> – Is there interaction between the market research service and realtors of the company? – Is it necessary to use various services involved in marketing, additional stimulation, training administrative influence or more strict control?
Service interrelation	<ul style="list-style-type: none"> – Are there serious problems in the interrelation between the market research department, on the one hand, and the engineering, constructive, technological building, financial, accounting departments, on the other?

Source: Own preparation on the base of de Vries, Gensler, Leeftang, 2012; Best Global Brands. Rankings, 2017; Dryl, 2010

In the framework of such an analysis, it is necessary to evaluate the effectiveness of marketing information systems in the company, planning systems and monitoring the implementation of the marketing plan. The questions suggested by us can have the following form (Table 5).

Table 5. Questions for assessment of marketing major systems

Information systems	<ul style="list-style-type: none"> – How quickly does the information about the market state (customer needs and demands, prospects for implementation of areas and efficiency from use, actions of competitors, the attitude of partners to the company under study, etc.) be received promptly? – Do managers of all levels of management use the results of marketing research during preparing and making decisions? – Does the company (the project) use the most advanced technologies for market research and market forecasting?
Planning systems	<ul style="list-style-type: none"> – How accurate are the results of forecasting the implementation of areas and the effectiveness of their use? – Is there an integral marketing plan for the company? – Do the objectives of the marketing plan have a clear quantitative expression?
Monitoring systems	<ul style="list-style-type: none"> – Is there a clear regulation and procedure for periodic monitoring and reporting on the implementation of the marketing plan activities? – Are market research conducted continuously, or solely when problems arise, or by accident? – Is the marketing budget and the effectiveness of its individual assets evaluated periodically, the cost-effectiveness of individual marketing plan activities?
Development of new projects	<ul style="list-style-type: none"> – Is the company organized in such a way as to collect, generate, support and implement new ideas and developments? – Has there sufficient analytical and preparatory work been done before the decision is made regarding investments in new projects? – Is the company paying sufficient attention to the test studies of the project and the market before the construction (reconstruction) begins?

Source: Own preparation on the base of Grębosz, 2017; Esmaeilpour, Hoseini, 2017; Hampf, Lindberg-Repo, 2011

8. Assessment of the Effectiveness of the Marketing Budget and the Effectiveness of 4P

The main thing in this part of the audit is the analysis of the feasibility of costs for various marketing activities and work. The analysis is made on the basis of the “cost-benefit” principle, that is, a comparison of the benefits obtained with the costs and efforts (Table 6).

Table 6. Questions for assessment of the marketing budget efficiency

Profit	<ul style="list-style-type: none"> – How does the company's profit differ by location region of the project, by type of commercial property and additional services provided by tenants of the area? – Should we start and/or expand activities in a certain segment of the market, or on the contrary, is it time to withdraw from the segment? – What proportion of short-term and long-term benefits, primarily profits, characterize different segments of the commercial property market?
Costs	<ul style="list-style-type: none"> – Are certain types of marketing work too expensive? – What steps can be taken to reduce costs? – When should start their implementation?

Source: Own preparation on the base of Almádi, Csonka, Máté, 2016; Krykavskyy, Dmytriv, 2017; Nedeliaková, Panák, 2016

In fact, such an audit allows you to assess primarily the effectiveness of the work of the department of market research. Therefore, all questions of the next block were developed by us in accordance with the format adopted in the "4P" model (Table 7).

Table 7. Questions for assessment of the marketing effectiveness

Product	<ul style="list-style-type: none"> – What are the objectives of the company relative to the portfolio of projects it develops? – How realistic are they? – Does the existing portfolio of projects meet the set goals, and if not, why?
---------	--

	<ul style="list-style-type: none"> – Which projects should be suspended (sold) at the concept stage, which projects should be developed foremost? – What is the attitude of potential project consumers to projects (objects) of competitors (to quality, design, technical parameters, conditions of parking, etc.)? – What are the parameters for improvement of projects?
Price	<ul style="list-style-type: none"> – What are the objectives and strategies of the company's pricing policy? – What procedures apply to price determination? – To what extent does the price of the project depend on the level of the project cost, in what - from demand and in what - from the conditions of competition? – Do your customers agree that the price of your project fit its value? – What does the company's management know about the price elasticity of demand; have projected marginal revenues and marginal costs for the project? – To what extent does your pricing policy meet the interests of your partners?
Sales	<ul style="list-style-type: none"> – What goals and strategies does the company use to form a pool of tenants and in the sale of areas? – Is it efficient to involve agents in the sale of areas?
Promotion of the product	<ul style="list-style-type: none"> – What are the objectives for the promotion of the company and its projects? – Are the advertising costs sufficient? – How is the advertising budget determined? – What do consumers think about advertising of the company? – Is the media chosen for advertising correctly? – Are the headlines and content of advertising messages successful? – How does the advertising department work in the company? – Are the costs of promoting projects on the market sufficient, development of public relations sufficient? – Does the public relations department of the company have sufficient creative potential and ingenuity?
Staff	<ul style="list-style-type: none"> – What are the objectives of the personnel involved in sales of commercial property? – Is there enough staff in the department that deals with such sales? – Is the staff properly organized by region, types of commercial property objects, market segments? – Does his organization meet the segment of the commercial property market? – Is staff motivated enough? – How does the company's personnel work in comparison with competitors?

Source: Own preparation on the base of Alavinassab, Soltani, Alimohammadi, 2017; Āad'o, Boguszewicz-Kreft, Miškie, 2017; Simarmata et al., 2017

Answers to the questions formulated by us, as well as other similar issues, will allow the company's management to focus on the most acute and important problems that arise before the company and/or the project in the commercial property market. Marketing audit takes on special significance in the preparation of reports on the implementation of the integrated marketing plan, the development of recommendations on the clarification of such a plan for the successful achievement of the goals set in it.

8. Conclusion

The positioning of brands of enterprises in the commercial property market should be carried out due to the key factors of brand formation in accordance with the stage of project development, reflection and recording of changes in the state of the brand, as well as its components, ensuring the selection of priority development directions. This approach is based on a systematic audit of the brand on the market relative to competing brands, its perception by the target audience, the company's staff, partners and the media. Audit of the brand is a unique marketing tool that allows carrying out tactical activity of an enterprise in accordance with its position on the commercial property market. It avoids significant strategic errors; explains the target audience, what is the essence of the brand; displays the changes necessary to correct it; determines the place in the mental space and the consciousness of consumers due to the competitive market environment. The suggested study was directed on the cooperation increasing between the market research department, on the one hand, and the engineering, constructive, technological building, financial, accounting departments, on the other hand. Thereby in contrast to the general recommendations existing in the literature, the questions blocks proposed by us take into account the specifics of the investigated market and together form an marketing audit of brands integral system just for projects in the real estate market.

References

- Aaker, D. (2003). *Sozdanie sil'nykh brendov*, Moscow: ID Grebennikova.
- Alavinassab, S.M., Soltani, M., Alimohammadi, J. (2017). The effect of brand extension strategy on brand image to customers. *British Journal of Economics, Management & Trade*, vol. 17, iss. 4, pp. 1-9.
- Almádi, B., Csonka, N., Máté B. (2016). Effective content marketing in the food industry: functional food advertising via BTL communication devices. In M. Okręglicka, I. Gorzeń-Mitka, A. Lemańska-Majdzik, M. Sipa, A. Skibiński (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management, CITPM 2016*. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej, pp. 13-18.
- Best Global Brands. Rankings* (2017). [online]. Available: <http://interbrand.com/best-brands/best-global-brands/2017/ranking/>. [2017, October 26].
- Churchill, G. (2004). *Marketingovyie issledovaniya*, St. Petersburg: Publishing House "Neva".
- Czubała, A., Niestrój, R., Wiktor J.W. (2012). *Kierunki rozwoju współczesnego marketingu*. Kraków: Fundacja Uniwersytetu Ekonomicznego w Krakowie.
- Grębosz, M. (2017). Wizerunek marek innowacyjnych – wyniki badań empirycznych w wybranych sektorach w Polsce i we Francji. *Marketing i Rynek*, vol. 9, pp. 122-127.
- Grubor, A., Milovanov, O. (2017). Brand strategies in the era of sustainability. *Interdisciplinary Description of Complex Systems*, vol. 15, iss. 1, pp. 78-88.
- Đađo, J., Boguszewicz-Kreft, M., Miškic, I., (2017). Analysis of consumer preferences for local and global brands in markets of Croatia, Poland and Slovakia. *Marketing i Rynek*, vol. 9, pp. 49-57.
- de Vries, L., Gensler, S., Leeflang, E.S.H. (2012). Popularity of brand posts on brand fan pages: an investigation of the effects of social media marketing. *Journal of Interactive Marketing*, vol. 26, iss. 2, pp. 83-91.
- Dryl, W. (2010). *Audyt marketingowy*. Warszawa: CeDeWu.pl.
- Esmailpour, M., Hoseini, M. (2017). Explaining the impact of service quality on identity and brand personality. *Polish Journal of Management Studies*, vol. 16, iss. 2, pp. 88-98.
- Hadrian, P. (2005). Audyt marketingowy – problemy interpretacyjne. In A. Nalepka (Ed.). *Organizacje komercyjne i niekomercyjne wobec wzmożonej konkurencji oraz wzrastających wymagań konsumentów*. Nowy Sącz: Wyższa Szkoła Biznesu – National-Louis University w Nowym Sączu, Wyższa Szkoła Biznesu w Tarnowie, pp. 65-76.
- Hajli, N. (2014). A study of the impact of social media on consumers. *International Journal of Market Research*, vol. 56, iss. 3, pp. 387-404.
- Hampf, A., Lindberg-Repo, K. (2011). *Branding: The Past, Present, and Future: A Study of the Evolution and Future of Branding*, Helsinki: Hanken School of Economics, vol. 556.
- Krykavskyy, Y., Dmytriv, A. (2017). The marketing audit in higher educational establishment. *Marketing i Rynek*, vol. 9, pp. 196-202.
- Li, F., Zhou, N., Kashyap, R. Sc Yang, Z. (2008). Brand trust as a second-order factor: an alternative measurement model. *International Journal of Market Research*, vol. 50, iss. 6, pp. 817.
- Naylor, R.W., Lambertson, C.P., West, P.M. (2012). Beyond the 'like' button: the impact of mere virtual presence on brand evaluations and purchase intentions in social media settings. *Journal of Marketing*, vol. 76, iss. 6, pp. 105-120.
- Nedeliaková, E., Panák, M. (2016). Methodology for quality assessment within transportation chain. In M. Okręglicka, I. Gorzeń-Mitka, A. Lemańska-Majdzik, M. Sipa, A. Skibiński (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management, CITPM 2016*. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej, pp. 309-314.
- von Oppeln-Bronikowski, S., Hagenkört-Rieger, S., Joao Santos, M. (2017). New trends in communication: branding and content marketing. *Statistisches Bundesamt (Destatis)*, WISTA, vol. 6, pp. 40-47.
- Purnawirawan, N., De Pelsmacker, P., Dens, N. (2012). Balance and sequence in online reviews: how perceived usefulness affects attitudes and intentions. *Journal of Interactive Marketing*, 26, iss. 4, pp. 244-255.
- Rimarenko, M. (2008). Concepcia auditu marketingovoyi strategiyi ta brendu kompaniyi na rynku komercyynoyi nerucumosti. *Naukovy Visnik. Odesky State Economic University*, vol. 20, pp. 38-44.
- Simarmata J., Keke Y., Veronica, Silalahi S.A., Benková E. (2017). How to establish customer trust and retention in a highly competitive airline business. *Polish Journal of Management Studies*, vol. 16, iss. 1, pp. 202-214.
- Shulgina, L., Leo, M. (2011). *Branding: teoriya i praktyka (na prykladi objektiv komercyynoyi neruchomosti)*, Kyiv-Ternopil, Publishing House "Aston".
- Wang, X., Yu, C., Wei, Y. (2012). Social media peer communication and impacts on purchase intentions: a consumer socialization framework. *Journal of Interactive Marketing*, vol. 26, iss. 4, pp. 198-208.

Wu, J.-J., Chen, Y.-H., Chung, Y.-S. (2010). Trust factors influencing virtual community members: a study of transaction communities. *Journal of Business Research*, vol. 63, iss. 9-10, pp. 1025-1032.

Zozulev, A., Solntsev, S. (2008). *Marketingovyie issledovaniia: teoriya, metodologiya, statistika*. Kyiv: Znannia.

74. ASSESSMENT OF SUSTAINABLE BUILDING CONNECTED WITH IMPLEMENTATION OF INNOVATIONS IN THE HOUSING MARKET: CASE OF A LOCAL MARKET

Abstract: The study presents the idea of sustainable building connected with implementation of innovations and its importance to the real estate market. The main goal of this paper was to analyse and assess sustainable building in the local housing market in Czestochowa, Poland. Data for the study were obtained from a survey conducted in the entities that operate in a local estate market. The hypothesis was proposed that the degree of engagement in sustainable building of entities in the market is insignificant. The idea of sustainable development and innovations in the real estate market were discussed and a questionnaire survey concerning innovations and sustainable housing building and aimed at evaluation of their importance in the real estate market was conducted. The analysis indicated poor acceptance of the development of sustainable building in this market. Furthermore, sustainable development connected with implementation of innovations and being a source of competitive advantage points to an insignificant implementation of investment solutions in this market. This supports the adopted thesis and points to the necessity of fundamental changes and strong stimuli to support the investments. This was caused by the necessity of facing the challenges and increasing the acceptance level of sustainable solutions with full awareness of the housing problems. This also requires changes in the approach to management in the real estate market and particularly effective marketing strategy.

Keywords: developers, innovations, real estate market, sustainable development.

JEL Classification: O31, Q01, Q42, Q56

1. Introduction

Sustainable socio-economic development is one of the most important challenges of contemporary world, where the needs of present generations can be met without limitation of the opportunities for meeting the needs of the generations to come. Implementation of the principles of sustainable development became one of the main objectives of the Amsterdam Treaty, amending the Treaty of the European Union, the Treaties establishing the European Communities and certain related acts. The European Union has used its own Strategy for Sustainable Development since 2001.

In 2006, after the evaluation of activities carried out from 2004, in order to implement cohesion and efficiency in striving for implementation of the principles of sustainable strategy adopted in Göteborg, renewed strategy A Sustainable Europe for a Better World: A European Union Strategy for sustainable development (Malherbe et al., 2011) was developed as a document with extended area of impact. In 2007, the Lead Market Initiative (KOM, 2007) adopted building as one of the six lead markets with huge developmental potential. This was the motivation for this study, which was aimed to evaluate sustainable building in the real estate market.

Therefore, the main goal was to evaluate the development of sustainable building in the real estate market. The hypothesis was proposed that the degree of engagement of the entities in this specific market in sustainable development is insignificant.

2. Literature Overview

2.1. Sustainable Building

With the substantial development of civilization, which resulted in several negative environmental phenomena, such as excessive use of natural resources or destruction of ecosystems, humans damaged the environment, whereas the ecosystems show poor capabilities to be recovered.

¹ Marcin Sitek Ph.D.: Dąbrowskiego 69, 42-201 Czestochowa, Poland, sitek_m@poczta.onet.pl

* Corresponding author

In 1987, the World Commission on Environment and Development, issued the report during the meeting headed by Gro Harlem Brundtland. The report was named "Our Common Future"; and defined the concept of sustainable development.

In Poland, the principle of sustainable development adopted the constitutional importance (Konstytucja, 1997), whereas the definition was in the Act of the Environmental Protection (Ustawa, 2001). This definition takes into consideration human population, world of animals and plants, ecosystems and natural world resources. It also integrates the most important challenges that world has to face, such as combating poverty, gender equality, human right, security, education and health (Morzół, 2006). Creation of the fully balanced model of life requires taking varied actions, especially in the case of problems of the sustainable development in building and the necessary integration in three key groups of aspects (European, 2010; Bansal, 2005):

- economic, connected with the building in the full cycle of life (costs of manufacturing, functional costs, income and value),
- environmental (limited consumption of resources, environmental pollution, destruction of natural ecosystems: energy efficiency, the use of raw materials, emissions to waters, air, soil and the impact on the environment),
- social aspects that impact on the quality of life (non-violation of cultural wealth and social variety).

Strategy of sustainable development in the construction sector concerns the reduction in the demand for energy and consumption of raw materials, increasing product life and period of building use, disposal of building materials and components, and minimization of any damage to the natural environment (Sitek, 2017). As a response to key challenges of sustainable building, the European strategy was specified for this sector, oriented especially on energy efficiency and using green energy.

2.2. Innovations in the Real Estate Market

According to OECD and Eurostat (Podręcznik, 2005), innovative activity means the variety of scientific, technical, organizational, financial and commercial activities which lead, or are aimed to lead, to implementation of innovations. Some of them are of innovative character, whereas other are necessary for implementation of innovations.

The main types of innovations include four types:

- product innovations (Peres, 2010),
- process innovations (Jaikumar, 1986),
- marketing innovations (Smolarek, Dziędziora, 2012),
- organizational innovations (Pivo, Fisher, 2010; Lee et al., 2012).

The increase in importance of innovations in the economic processes is noticeable in the contemporary real estate market. Depending on the activities conducted by businesses in the real estate market, the groups of innovations divided according to the criteria presented by Prystrom (2012) and Brzeziński (2001) are presented as:

- main innovations that use innovative solutions in the construction sector, in construction and final services (Pujari, 2006, Komisja, 2014),
- marketing (rent, mobile applications for presentation of products and services, branding, Virtual Reality),
- organizational (passive and energy-saving investments, lofts, microapartments, construction and assembly insurances, Business Interruption or comprehensive insurance of housing community, ESCROW agent, sharing economy, drones, home staggers and new technologies such as cloud computing, the Internet of Things, Internet of Everything),
- financial (derivatives, covered bonds, reverse mortgage or energy efficient mortgage).

This shows that organizational innovations in the real estate market are especially energy-efficient, passive, green and allow for implementation of modern solutions in science and technology and determine the future of the real estate market by forming its development and determining the type of the construction sector: sustainable building (KOM, 2007), (Peca, 2009). This determines not only the intensive economic growth but also competitive advantage of the innovation-based real estate management (Sipa, 2017).

It should be emphasized that, with changes observed in the world economy, implementation of innovativeness, intelligence and creativity perceived as the main source of competitive advantage to guarantee intensive sustainable development is becoming the priority. Therefore, sustainable building is possible through implementation of innovations.

3. Research Methodology

The aim of the study was to collect the opinions of developers concerning sustainable building connected with implementation of innovations and their importance in the real estate market.

Data for the study were obtained from a survey conducted in the entities that operate in a local estate market in Czestochowa. The survey was aimed at developers operating in the local real estate market in Czestochowa, Poland. In total, 16 enterprises responded, with the study sample of 50 people. Some of them had been operating for over 20 years (2 enterprises), others since 2004, and the youngest enterprises – for 4 years. The enterprises studied:

- belonged entirely to small enterprises according to the classification by the Central Statistical Office,
- were present in the market for around 10 to 15 years,
- area of their activity was focused on the local real estate market in Czestochowa.

The questions concerned the following problems:

- innovative activity: motivations, types, support and especially barriers (Gorzeń-Mitka, 2018),
- sense and effects of sustainable building, including the value of costs connected with innovations,
- factors that impact on the difficulties in its functioning.
- degree of investment sustainability and its linkage to ecology (Buro Happold, 2014).

The responses obtained from the survey were grouped in topic-related blocks concerning opportunities for application, benefits of renewable energy resources and functional properties.

Furthermore, the analysis of the assessment of the perspective of the development of sustainable housing investments used the mean values as most precisely reflecting real values instead of medians. The median as a central value that divides a data set into two equal parts reflects information about the analysed set, development of sustainable investments in housing from the standpoint of developers (e.g. set of principles of sustainable building etc.). Unlike the mean, it does not respond to individual values which are substantially deviated from the most of typical assessments for the specific set.

The examinations were used to achieve the study aim and support the adopted hypothesis.

Furthermore, the paper used the available literature concerning sustainable building and innovations in the real estate market, and the results of empirical examinations in this respect, performed by the research institutions.

4. Analysis of a Local Real Estate Market in the Aspect of the Idea of Sustainable Building

The aim of the development investments is to create a new space, new environment where people can live, work and relax. Investments (developers) on the developed real estate markets use analyses concerning various aspects of investment projects, e.g. social, economical, financial and legal aspects. These analyses allow for preparation of the spectrum of market data that represent the basis for making investment decisions. The major aim to conduct market analysis is to confront the data concerning the real estate and the data collected from the market (Peca, 2009, p. 52). According to Peca, the first step is to collect quantitative data concerning the market i.e. supply and demand and prices of rent and purchase. The second step is to assess market absorption i.e. referring investments to current needs and market expectations. The last stage is to use data for the assessment of financial aspects of applicability of the investment. Therefore, the situation in the local real estate market in Czestochowa is defined by the supply of flats, housing services and products according to the surface area and number of rooms, transaction prices and rent prices. However, the quantitative data collected during the analysis of a local market will not have such a high value as qualitative data collected either from surveys or from interviews (Peca, 2009, p. 52). Quantitative data concerning the initial analysis of the local market were presented in Table 1.

Table 1. Housing resources and selected indices concerning the housing services, transaction prices and rent of flats in Częstochowa in 2016

Housing resources (status as of 31 December 2016)	Surface area of the flat	Surface area per person	Number of rooms in the flat	1 flat	Persons per 1 room	
98740	62.2	27.1	3.35	2.29	0.68	
A flat build according to the forms of construction	Cooperative	Developer	Individual	Surface area in m ²		
				Cooperative	Developer	Individual
363	24 (6.1%)	144 (39.6%)	19 (53.7%)	1322	9368	35081
Market prices of real estate per(PLN/ m ²)	Flats		Houses		Land	
Częstochowa	3334		2822		98	
Katowice	3896		3528		141	
Mean prices of rent (in PLN)	889.23		1096.31		1465.38	
surface area / number of rooms	35 m ²	1 room	52 m ²	2 rooms	69 m ²	3 rooms

Source: Ruksza, Kapsa, 2015; Urząd Statystyczny, 2017; PAP, 2017

As results from Table 1, housing resources for the local market in Częstochowa in 2017 amounted to 98740 flats. Mean surface area: 62 m², whereas surface area per 1 person was 27 m². There were 363 flats per 1,000 people.

Since initial qualitative analysis of the local real estate market presented in Table 1 did not offer opportunity to evaluate the assessment of the perspectives of the development of sustainable housing investments, it was used only as an inspiration for collecting the qualitative data concerning this market.

Analysis of the local real estate market concerned the assessment of sustainable building connected with implementation of innovations in this market by developers. The results of the analysis and assessment of the perspectives for the development of sustainable building was presented in Table 2.

Table 2. Analysis and assessment of the perspectives for the development of sustainable housing investments: qualitative questionnaire survey

No.	1. The most important factors according to the developers:	Support %
a)	Motivations for innovations: - pressure from competitors - reduction in the negative impact on the environment - increase in the market share	44 18 32
b)	Barriers to implement innovations: - no financial resources - no sufficient qualifications - no data on market demand - no information on technology	50 6 28 2
c)	The main effects of sustainable building are: - minimization of the harmful impact on the environment - positive effect on human health	90 80
d)	Certificate as a confirmation of energy efficiency in a building: - assessed as a standard - reflecting the attractiveness and competitiveness of the building - pointing to the increase in tendencies for quicker selling - indicating higher price of the investment with a certificate - effect of certificate on higher rate of return	62 80 64 54 28
e)	Costs of sustainable building: : - increase in the cost range by 5-10% compared to the standard, - increase in the cost range by 15-20% compared to the standard, - substantial impact of innovative materials on costs	36 28 64
f)	Factors that intensify the lack of interest in such buildings (profitability) - no financial incentives for investors	44

	- difficulties in assessment of the demand on sustainable building	54
	- lack of servicing the sustainable housing investments	54
g)	Benefits of sustainable housing sector: - energy efficiency and rational use of energy (the use of renewable energy resources) - limitation of pollutants - effective water economy - rational waste management - limitation of the use of natural resources	70 40 36 36 36
h)	Barriers that limit sustainable building in Poland: - high price of innovative building materials - the lack of awareness of the benefits of sustainable building - the lack of qualified supervision over the sustainable projects - excessive disproportions between the price and costs of this type of building	76 72 50 50
2. Assessment of the perspectives in the development of sustainable investments:		
a)	Benefits of sustainable buildings (opportunities for application) - reduction in functional costs - improvement of the environment in sustainable buildings - limitation of harmful emissions of CO ₂ - the use of green technologies and raw materials - effective and efficient marketing and reduction in risk Mean of support of the opportunities for application \bar{x}	70 64 62 52 50 60
b)	Benefits of investments in terms of innovative renewable sources of energy: - protection of the natural environment - savings in energy use - energy safety and the use of internal sources - reduction in greenhouse gases emissions - prices independent of fossil fuels Mean support of benefits of renewable energy sources \bar{x}	68 68 56 48 40 56
c)	Innovations as factors affecting the interest in this type of building (functional characteristics): - reduction in functional costs of the building - high functionality - easy use of the innovative systems - opportunities for extension and remote access Mean support for the benefits of innovative functional characteristics \bar{x}	86 68 64 52 67

Source: Author's own study based on the questionnaire survey conducted in the local market

Summary of the questionnaire survey presented in Table 2 represents point 2 as an assessment of the perspectives for the development of sustainable investments. Analysis that takes into consideration the benefits of this building, effects of its implementation, functional characteristics and costs, profitability and barriers indicates the interest in this type of building. The analysis of the perspectives for the development of sustainable housing investments (Table 2, point 2), mean support for application opportunities for this type of building, benefits of renewable energy sources (RES) and functional characteristics is around 61%. This offers real opportunities for the development of this type of building in the market. However, one should care for preparation of an effective strategy, especially the marketing strategy, for the management of sustainable development in the real estate market.

The assessment of the results of the analysis and evaluation of sustainable building found that:

- in general, all the benefits of the sustainable building are appreciated. However, the analyses of the perspectives for the development of sustainable building made by the developers reveals that despite full awareness of sustainable housing problems, the market demonstrates insignificant interest in sustainable innovative investments. Many developers reported the lack of interest in this type of investment projects since potential users are not willing to be involved in a housing sustainable investment. Mean support \bar{x} = 60%,
- the survey showed that 56% respondents on average appreciate main benefits of investing in terms of innovative renewable energy/heat sources. 82% of them responded that energy-efficient buildings should use only renewable energy sources whereas 50% of them emphasize the role in combating the environmental pollution. In this case, developers (57%) confirmed the opinion of the users concerning the benefits of innovations concerning renewable energy/heat sources in sustainable housing investments. Mean support \bar{x} = 56%.
- the analysis of the survey also shows that a huge number (67%) of the respondents appreciate the weight of the factors that impact on sustainable building with respect to the intelligent building,

since the maximal number of the respondents (91%) appreciates energy savings, 89% appreciate the comfort, whereas 70% appreciate safety. Mean support $\bar{x} = 67\%$.

In general, the entities that operate in the local real estate market demonstrate a good orientation concerning the sustainable housing building while they do not show the interest of potential purchasers.

The analysis of the idea and role of sustainable housing building and its effects resulting from the questionnaire survey of the developers in the real estate market demonstrated that despite appreciation of the benefits resulting from this type of building in the analysed local market, the respondents, especially potential users, do not express high interest in this type of investment projects. Mean support for the appreciation of its basic benefit is ca. 61% (Table 2, point 2).

Since only the arithmetic mean was determined for the support \bar{x} , which does not always reflect the tendencies studied, this conclusion was attempted to be confirmed by the descriptive statistics (Szkutnik, Balcerowicz-Szkutnik, Sojka, 2014; Levin, 1987, pp. 110-132; Berenson, Levine, 1999, p. 141). The dispersion as a measure of scattering expressed by the coefficient of variation V (in %) that defined the distribution of the value of a specific characteristic around the central (mean) value. The determined values were:

$$\bar{x}, (x - \bar{x}), \sum_n (x - \bar{x})^2, \frac{\sum_n (x - \bar{x})^2}{n - 1}, SD = \sqrt{\frac{\sum_n (x - \bar{x})^2}{n - 1}} \text{ and } V = \frac{SD}{\bar{x}} \cdot 100\%$$

where SD is standard deviation.

The values of the coefficient of variation for the three basic characteristics of sustainable building (Table 2, point 2: a,b,c), such as application opportunities, benefits of RES and functional characteristics are presented in Table 3.

Table 3. Determination of dispersion expressed by the coefficient of variation V for the three basic characteristics of sustainable housing in Częstochowa

Basic characteristics of the sustainable building	n	x [%]	$\sum_n (x - \bar{x})^2$	$\frac{\sum_n (x - \bar{x})^2}{n - 1}$	$SD = \sqrt{\frac{\sum_n (x - \bar{x})^2}{n - 1}}$	$V = \frac{SD}{\bar{x}} \cdot 100\%$
Opportunities for application	5	$\bar{x} = 60$	284	71	8.4	14.0
Benefits of RES	5	$\bar{x} = 56$	608	152	12.32	22,0
Functional characteristics	4	$\bar{x} = 67$	602	200.6	14.2	21.1

Source: Author's own elaboration

$$\bar{V} = 19\%$$

As results from Table 3, the values of the coefficient of variation determined for selected characteristics indicated the most important benefits of this building include RES and functional characteristics. The mean value of the coefficient of variation for the three basic characteristics is $\bar{V} = 19\%$. Therefore, after taking them into consideration, the support is at the level of $(61 \pm 19)\%$. According to the ranking of the financial standing of Polish local governments Częstochowa takes the 6th last place. This position is by 2 places worse than in the last year and by 11 compared with the ranking performed 2 years ago (Steinhagen, 2013).

Therefore, the assessment of sustainable housing was limited to its negative approach i.e. *in minus* deviation from the mean support with respect to appreciation of the benefits for its three fundamental characteristics ($\bar{x} = 61\%$). Therefore, taking into consideration the financial status of the local government, users and prices of building materials, and the innovations and new technologies, it should be assumed that the support is at the level of $(61 - 19)\%$ i.e. 42%. This support is marked by full awareness of the benefits that result from sustainable building, but small interest of the potential purchasers and small support for the development in this market. Therefore, it is becoming a necessity to implement environmental management defined as a process that integrates management of relations

with the natural environment. It is especially significant for this process to be involved in the activities aimed at raising the awareness of the benefits of sustainable building over a long time horizon.

Therefore, the basic aim of the new management strategy is to support environmental protection and to prevent pollution and adverse effect of human activity on the environment in a manner that takes into consideration socio-economic needs with respect to the idea of sustainable development.

5. Conclusion

The survey conducted among the developers in the local real estate market point unequivocally to the lack of active interest in sustainable housing. According to the respondents, due to the aspect of innovativeness concerning the use of modern technological solutions and innovative building materials, sustainable building is more expensive than conventional. However, as a result of the prognoses of the respondent concerning the reduction in functional costs with long-term use and through implementation of innovations in the construction market, the return on the surplus costs of design and building incurred at the first stage of investment is reflected by the building price. The substantial benefits that can be generated in the future should lead to the increase in the object's value (value added). This fact should encourage popularization of the sustainable building with implementation of innovations in this market. Therefore, innovative investments in the real estate market allow for implementation of modern solutions of science and technology and impact on the development of sustainable building.

The analysis of the survey, supported with the descriptive statistics, allowed for the assessment of sustainable building in the analysed local market. The survey demonstrated that:

- the main driver for implementation of innovations is pressure from competitors and willingness to increase market share,
- implementation of sustainable building is possible through implementation of innovations,
- developers in the local market show little interest in sustainable building,
- there is awareness of the principles of sustainable building at the European level among the market participants,
- substantial concerns present in society about the real benefits of sustainable building and its financial status represent the biggest difficulties in functioning of this market,
- the lack of financial benefits results in the lack of interest of potential purchasers and, in the case of investors, this represents the factors which has the biggest effect for realization of the investment in sustainable building,
- awareness of the prices of real estate dues to higher costs of implementation of innovations in the context of the lack of demand for this type of building represents the biggest barrier to the development of sustainable building in this market.

The analysis and evaluation of the survey conducted in the local housing market revealed a poor level of acceptance concerning this market. Such prognoses are not conducive to the development of innovations and competitiveness of construction enterprises, thus limiting the dynamic development of the economy. However, as a driver of innovation and the source of competitive advantage, sustainable development, despite poor acceptance, offers opportunities for a slow progress in such investments with full awareness of sustainable real estate building in this market.

Analysis of this problem supports the hypothesis assumed in this study that the degree of involvement of the entities in the local market in sustainable building is insignificant. Reversing this tendency requires changes in the approach to management in the real estate market and particularly effective marketing strategy.

The results obtained from the examinations confirm the achievement of the adopted study aim.

References

- Bansal, M.P. (2005). Evolving Sustainably: A Longitudinal Study of Corporate Sustainable Development. *Strategic Management Journal*, vol. 26, iss. 3, pp. 197-218.
- Berenson, M.L., Levine, D.M. (1999). *Basic Business Statistics*. New Jersey: Prentice Hall.
- Buro Happold, Colliers International, Philips, Builder. (2014). *Analiza rynku zrównoważonego budownictwa w Polsce. Badanie percepcji rynku*. Warszawa: Construction Marketing Group.
- Brzeziński, M. (2001). *Zarządzanie innowacjami technicznymi i organizacyjnymi*. Warszawa: Difin.

- European Commission. (2010). *Europe 2020: A strategy for smart, sustainable and inclusive growth. Brussels COM (2010) 2020 final*, [online]. Available: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN>. [2015, September 28].
- Gorzeń-Mitka, I. (2018). Leading markers of risk culture in organization. *European Journal of Sustainable Development*, vol. 7, iss. 1, pp. 425-434.
- Jaikumar, R. (1986). Post-industrial manufacturing. *Harvard Business Review*, vol. 64, iss. 6, pp. 60-76.
- KOM 2007 860. (2007). *Inicjatywa rynków pionierskich dla Europy, Bruksela 2007*, [online]. Available: <http://www.zb.itb.pl/informator/inicjatywa-rynkow-pionierskich-dla-europy-lmi>. [2015, January 01].
- Komisja Europejska. (2014). *HORIZON 2020, Program ramowy UE w zakresie badań naukowych i innowacji*. Luksemburg: Urząd Publikacji Unii Europejskiej.
- Konstytucja Rzeczypospolitej Polskiej (1997) z dnia 2 kwietnia 1997 r. Dz.U. z 1997 r., nr 78, poz. 483; stan prawny na dzień 21.10 2009 r. Dz.U. z 2009 r. nr 114, poz. 946.
- Lee, S.M., Olson, D.L., Trimi, S. (2012). Co-innovation: convergenomics, collaboration, and co-creation for organizational values. *Management Decision*, vol. 50, iss. 5, pp. 817-831.
- Levin, R.L. (1987). *Statistics for Management*. New Jersey: Prentice Hall.
- Malherbe, J., Malherbe, P., Richelle, I., Traversa, E., de Laveleye, D. (2011). *The impact of the rulings of the European Court of Justice in the area of direct taxation 2010*, (pp. 107-108), [online]. Available: <http://www.europarl.europa.eu/activities/committees>. [2016, September 28].
- Morzoł, I. (2006). *Dekada edukacji dla zrównoważonego rozwoju, Polski Komitet ds. UNESCO*, [online]. Available: <http://www.unesco.pl>. [2017, November 13].
- Podręcznik Oslo. (2005). *Zasady gromadzenia i interpretacji danych dotyczących innowacji*. Warszawa: Ministerstwo Nauki i Szkolnictwa Wyższego, pp. 145-148.
- PAP. (2017). *Polska na szarym końcu w UE pod względem liczby mieszkań. Powinniśmy podwoić zasób mieszkaniowy*, [online]. Available: <http://nieruchomosci.dziennik.pl/artykuly/557672.budownictwo-mieszkaniowe-mieszkania-zasoby-budowa-nieruchomosci-kredyty-mieszkaniowe.html>. [2017, November 13].
- Peca, S. (2009). *Real Estate Development and Investment. A Comprehensive Approach*. Hoboken: John Wiley & Sons Inc.
- Peres, R., Muller, E., Mahajan, V. (2010). Innovation diffusion and new product models: A critical review and research directions. *International Journal of Research in Marketing*, vol. 27, iss. 2, pp. 91-106.
- Pivo, G., Fisher, J.D. (2010). Income, Value and Returns in Socially responsible Office Properties, *Journal of Real Estate Research*, vol. 32, iss. 3, pp. 243-270.
- Prystrom, J. (2012). *Innowacje w procesie rozwoju gospodarczego. Istota i uwarunkowania*. Warszawa: Difin.
- Pujari, D. (2006). Eco-Innovation and New Product Development: Understanding the Influences on Market Performance. *Technovation*, vol. 26, iss. 1, pp. 76-85.
- Ruksza, B., Kapsa, J. (2015). *Diagnoza Społeczno-Gospodarcza, Częstochowa 2015*. Referat w Urzędzie Miasta, Częstochowa.
- Sipa, M. (2017). Innovation as a Key Factors of Small Business Competition. *European Journal of Sustainable Development*, vol. 6, iss. 1, pp. 344-356.
- Sitek, M. (2017). Assessment of sustainable building by the participants of the local real estate market in Częstochowa, *European Journal of Sustainable Development*, vol. 6, nr 4, pp. 309-319.
- Smolarek, M., Dzieńdziora, J. (2012). Growing importance of the Internet from the perspective of selected areas of managing small and medium enterprises in Poland. Štefan Majtán a kolektív (eds), *Actuálne problémy podnikovej sféry. Zborník vedeckých prác*, (pp. 493- 498). Bratislava: Vydavateľstvo EKONOM.
- Steinhagen, D. (2016). *Częstochowa coraz biedniejsza. Szóste miejsce od końca w rankingu zamożności*, [online]. Available: http://wyborcza.pl/1,155287,14339295,Czestochowa_coraz_biedniejsza__Szoste_miejsce_od_konca.html. [2016, December 05].
- Szkutnik, W., Balcerowicz-Szkutnik, M., Sojka, M. (2014). *Statystyka opisowa dla ekonomistów. Przykłady i zadania*. Katowice: Wyd. Uniwersytet Ekonomiczny w Katowicach.
- Urząd Statystyczny w Katowicach. (2017). *Województwo śląskie w liczbach 2017*. Katowice: Urząd Statystyczny w Katowicach.
- Ustawa (2001) z dnia 27 kwietnia 2001 r. Prawo ochrony środowiska: Dz.U. z 2001 r. nr 62, poz. 627.

Luiza Skrobich^{1*}

Czestochowa University of Technology
Poland

Sebastian Kot²

Czestochowa University of Technology
Poland
North-West University
South Africa

75. MARKETING 3.0 IN CONTEMPORARY MARKETING MANAGEMENT ACTIVITIES OF ENTERPRISES

Abstract: Contemporary consumers are increasingly experiencing the effects of dynamic economic, social and environmental change. The article aimed to present the origin, the definition of implementation conditions and the identification of the benefits of the marketing 3.0 concept in managing the marketing of businesses. This research topic was carried out using the critical evaluation method, including: literature analysis, reports and studies with conclusions. Here was confirmed the need to change current marketing practices by concentrating on a consumer that requires more collaboration and a focus on value and spirituality. Consumers become prosumer, involved in the production process or introducing innovation. Cooperation was enabled in the sense of a designated mission and thus contributed to make the world a better place (according to the concept of sustainable development). This approach to marketing organization management goes against the preferences of today's consumers - consumers 3.0 - and allows them to gain supportive stakeholder groups, resulting in a competitive advantage. As a consequence, the negative impact of potential risks can be minimized.

Keywords: business management, Consumer 3.0, marketing, Marketing 3.0.

JEL Classification: M3

1. Introduction

Dynamic changes in the environment result in the need to transform the marketing activities of enterprises (Juarez, 2017). Entrepreneurs are increasingly aware that effective functioning in the marketplace requires cooperation with customers, employees, suppliers and all business partners. In the developed markets, Maslow's pyramid needs to be reversed - self-realization and personal development become a priority, so goods and services should carry some value. That is why the third generation of marketing is focused on values (Gomez-Suarez, Martinez-Ruiz, Martinez-Caraballo, 2017). Mission, vision and values are the main guidelines for marketing, and the goal is to make the world a better place. Man is perceived in the full sense of this word, so the value proposition is extended to the spiritual dimension (Warrink, 2015). Moreover, the mission of the company is associated with the concept of sustainable management, and all the declared ideas are shaped into goals and plans. Strategic objectives and plans are pervasive at all levels of the company's organizational structure, as they form the basis for the development of tactical and operational objectives (mid-level management) and operational (bottom-level management) (Chang, 2016; Pabian, 2017).

The aim of this article is to show Marketing 3.0 as a key element of a modern business strategy, as well as an indication of the origin and benefits to businesses resulting from the application of this concept. The novelty of this article is distinction of the conditions for implementing Marketing 3.0 in two stages (planning and implementation) for both the consumer and the organization's employees.

¹ Luiza Skrobich M.Sc.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, luizaskrobich@gmail.com

² Assoc. Prof. Eng. Sebastian Kot Ph.D.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, sebacat@poczta.zim.pcz.pl

* Corresponding author

2. The Origin of Marketing 3.0 - Literature Review

Marketing 3.0 is based on a new wave of technology that combines interacts with individuals and groups (thanks to the lower price of selected models of computers, smartphones, relatively inexpensive Internet and open source software) (Hamill, 2016). This technology allows consumers to become prosumers who, while cooperating with manufacturers, actively participate in creating a market offer. It connects consumer and producer functions, enabling individuals to engage in the design or modification, as well as in the production or development of products / services according to their own preferences. The Internet plays a key role in the prosumption, especially social media (Ritzer, 2015; Strielkowski, Gryshova, Kalyugina, 2017). People can use it to create, share information and obtain feedback. Consumers have never been able to be as close to business as they can be today (Kot, Tan, Dragolea, 2017).

Every year more and more enterprises are turning to the Internet, including Facebook. This social media channel has over 14 million users in Poland, 79% of which use it every day. This opens up huge business opportunities - advertising on Facebook is now the best, cheapest and most effective form of advertising. With an appropriately designed promotional message, the cost of acquiring the customer is immediately returned because during the first 24 hours after clicking on the advertisement (Bagiński, 2017). The value of Internet advertising in 2016 amounted to PLN 2.355 billion and increased by 1.7 percentage points compared to the previous year. The entire advertising market in Poland had a turnover of PLN 8.33 billion, which is synonymous with the second place in the ranking of the most popular promotional media (first place was for television - PLN 4.068 billion). Moreover it is worth more than all other media - radio, outdoor, press, cinema - taken together (PLN 1.908 billion). Internet advertising market in Poland is not lagging behind the European market because 27.7% of entrepreneurs in Poland pay for internet advertising, while the EU average is 25% (Lead Labs, 2017).

Marketing 1.0 was focused on the product. Surplus production resulted in aggressive sales in the first half of the 20th century (Tarabash, 2013). J. McCarty describes the 4P model in the 1960s - the marketing management from the perspective of the company is presented in four categories: promotional activities (promotion) of the manufactured product (product) that has specified price (price) in the appropriate distribution channel (place) (Al Badi, 2015). A seven-element marketing-mix was introduced for the service businesses later. The 7P model has been enriched by service staff (people) in appropriate physical conditions (physical evidence) as a result of organizational and technological processes (processes) (Pogorelova et al., 2016).

In the age of informatization appeared the idea of marketing 2.0, which in the focus of the organization put the customer. However he was treated as a passive recipient of a promotional message that was driven by mind and heart. The aim of such actions was to meet consumers' expectations and build their loyalty by distinguishing themselves on the market (Nowacki, 2014). At that time the 4P model was transformed into 4C - representing the marketing mix from the buyer's point of view. The product was defined as value for customer, the price as the total cost incurred to purchase the product or service. The two-way communication, based on the dialogue, instead of the promotion is next the convenience in the place of distribution, (Ritika, Tarak, 2013).

Marketing 3.0 was launched as a result of the globalization process, the concept of co-existence and the era of creative society. Globalization is inextricably linked to technology, which enables faster and more effective exchange of resources between selected entities. Consumer activity is evolving on many fronts, but it has gained momentum on expressive social media - where they share their photos, experiences, opinions and values (blogs, Facebook, YouTube, etc.). Citizens of the creative society are mainly people using the right hemisphere of the brain because they work in the sphere of science, art and professional services. According to D. Pink, this is the highest level of society development (Kotler, Kartajaya, Setiawan, 2010). The changes that contributed to the emergence of Marketing 3.0 are presented in the Figure 1.

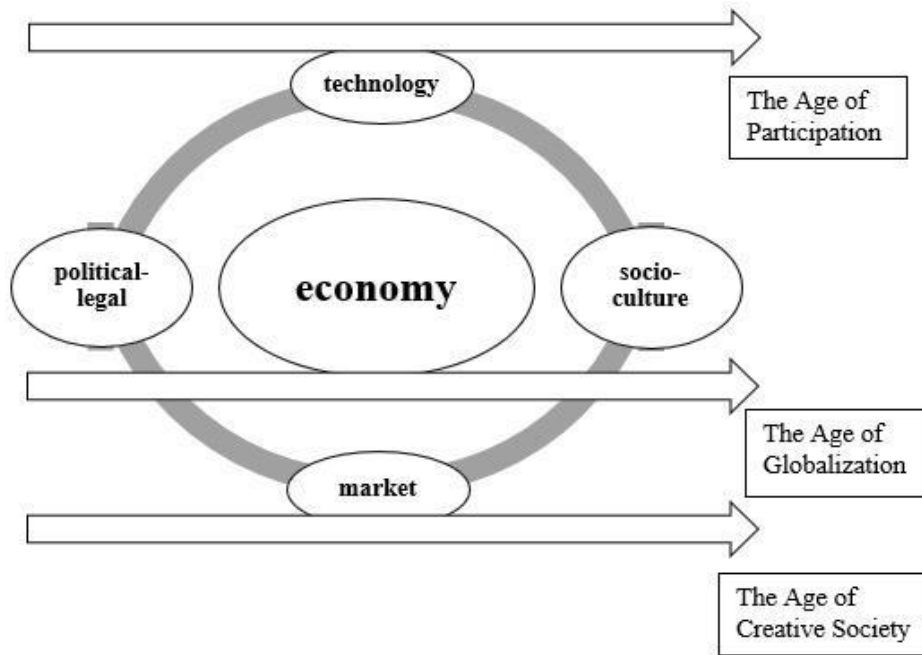


Figure 1. Changes leading to Marketing 3.0

Source: Kotler, Kartajaya, Setiawan, 2010

The 4E model has been recently described, which shows companies the tools needed to effectively influence on the minds, hearts and spirits of consumers. Purchase decisions are largely emotional, so the product must be emotionally connected with the customer (emotions) (Magdis, Zorfas, Leemon, 2015). Brands should deliver unforgettable experiences (experiences) that will find a reflection in creating deeper and meaningful relationships with buyers engaged in communication (engagement). These two new elements are the equivalent of distribution and promotion. The price is related to the personality of the brand, its uniqueness (exclusivity). Only authentically and consistently created brand personality will “hold” an exclusive position in the minds of customers (Heartbeats International, 2010).

The implementation of Marketing 3.0 strategy to enterprise strategies assumes taking into account the interests of all stakeholder groups in the decision-making process and implementing an open door policy in communication with higher levels of management what is needed to maintain, deepen confidence and willingness to work for the company mission. Above all, there are people who are passionate about their customers, and suppliers are seen as true partners (Senkus, 2013; Strielkowski, Shishkin, Galanov, 2016). Corporate culture, reflecting the nature of the organization, the overall atmosphere and environment within it, is one of the greatest assets and a major source of competitive advantage. Repetition of behaviours, consistent with the values of the company, creates a pattern of behaviours that cannot be imitated by competitors (Szczepańska-Woszczyna, 2014; Senkova et al., 2016; Wróblewski, 2017). As a consequence, the negative impact of potential risks can be minimized (on strategic, financial and operational level of risks), especially through discussions with all risk beneficiaries in the organization (Kot, Dragon, 2015; Chovancová, Hudcovský, 2016).

3. Methodology of the Research

This article analyses appropriately selected scientific literature on the Marketing 3.0 concept - its origin, conditions of implementation and identification of benefits for enterprises. The method of this paper is a literature review since it compresses the key findings of various researches in this area, as well as combines previously discovered research findings and reviews these.

An important part of the information and data was collected using electronic search engines, such as Web of Science, Ebsco, Scopus and Google Scholar. After receiving the literature provided by electronic search engines, it was necessary to decide whether the article was right or not. This was done by analysing the abstract, the year of publication and the journal in which the article was published (at this stage fifty articles were accepted, 80% of which were further analysed).

The next step was the analysis of the introduction and the conclusion, and then a detailed inspection of the entire article. The choice of articles was based on: the reference to Marketing 3.0 and the relevance of the issues rose in relation to the subject of the article (60% of the analysed articles were covered for the purposes of this article). The reports used were the latest available, nationwide. The final literature has been enriched with scientific books and valuable internet entries.

When searching for relevant references, several key search terms were used. Primarily, the term 'marketing 3.0' was used, but also 'consumer 3.0', 'online marketing', 'value driven marketing', 'sustainability marketing' and 'corporate social responsibility'. The practical use of the third generation marketing principles has been described on the basis of the case studies of US companies available in the literature, which currently apply this approach to marketing (practical part is presented in section 4 - Results; here only a few research papers was qualified to refer because of their practical dimension). The period of literature review was: September 15 – November 5, 2017.

4. Results

Marketing 3.0 introduces a new business perspective, which is designed to change the lives of consumers. This transformation is made through the formulation of a mission statement that contains a moving story, at the execution stage gives power and influence to consumers (Varey, McKie, 2010). The third generation marketing message recipient is consumer 3.0. It is characterized by several facts (Houdek, 2016; Wilczak, 2016):

- freedom of movement on the Internet, while performing various social and market roles,
- continuous presence in the network, being available through the use of multiple devices,
- excellent information that results from practically unlimited access to a huge, ever-expanding data base,
- networking – staying in a virtual relationship with no limit to the large number of other people on the Internet,
- very high expectations related to meeting the needs and preferences,
- focus on collecting experiences, co-creating.

Consumer 3.0 is the result of profound changes in consumer behaviours, which has been influenced by the growing need of customers to co-create business missions. From an organization's point of view the same values as the target segments are the key to achieve the certain goals (Erragcha, Romdhane, 2014). Consequently, it is the consumers and the employees (who verify the authenticity of the business in a consistent manner with the values of the company) should be prioritized in the process of marketing transformation to the third generation. Terms of enforce Marketing 3.0 in the planning and implementation phase for consumers and employees of the organization are presented in Table 1.

Table 1. Terms of implementation of marketing 3.0 for consumers and employees of the organization

PHASE	STAKEHOLDER GROUPS	
	consumers	employees
planning phase	<ul style="list-style-type: none"> – having an idea that will have a significant impact on people's lives – recognition of mission priority over financial results – preparation of the offer, which will be a life changing experience - consumers perception, attitudes, behaviours – assumption that the mission belongs to the consumers, and they are co-responsible for fulfilling it 	<ul style="list-style-type: none"> – defining corporate values - stoking up the desire to cooperate, stimulating creativity and cultural aspects of employees – creating a platform where employees can make changes

<p>implementation phase</p>	<ul style="list-style-type: none"> – creating different ways to fulfil company mission - both inside and outside organization – reaching the buyers through emotions by telling authentic stories that are passed from mouth to mouth and “became alive” – using the discussion as a new type of advertising – communicating brand personality based on values 	<ul style="list-style-type: none"> – establishing charismatic leaders at every level of the organization – giving employees the feeling that they are influenced and empowered by the company's authentic values – demonstrating values through daily behaviours within the company – focusing on aligning values with behaviours – creating stories that will touch the hearts of employees, so that they can be identified with the mission of the company – implementing an open door policy in communication with higher levels of management – stimulating corporate culture (through social-occupational adaptation of new employees or brainstorming, integration meetings for all employees etc.)
-----------------------------	--	--

Source: Kotler, Kartajaya, Setiawan, 2010

Implementing Marketing 3.0 concept for enterprise promotional activities forces the transformation of corporate mission, vision and values. It means that marketing influences the strategic future of the company, and should not be considered solely as a tool to support the organization's functioning (Kotler, Kartajaya, Setiawan, 2010, p. 45).

A literature study showed that taking up complex activities, within the framework of Marketing 3.0, is beneficial for the functioning of the company. Among the most important advantages should be mentioned (Kotler, Kartajaya, Setiawan, 2010):

- increased profitability of the company,
- shortening of time of return on investment,
- loyalty and efficiency of employees,
- attracting and retaining talents,
- long-term relationships with consumers, acquiring dedicated customers,
- the productivity of the back office departments and the quality of the customer contact department,
- the benefits of respecting the principles of sustainable development.

All stakeholders (own staff, customers, shareholders, suppliers, local communities, etc.) work together to improve productivity, quality and reduce costs. In addition, marketing costs are much lower than the competitors, both customer satisfaction and customer retention are higher. It is important to assume that the brand's reputation is the most important - the proper positioning of the brand and the identification of its distinctive elements (based on values - honesty, originality and authenticity). Business activities should be treated as a service to the consumer (each product provides a service so it is a service activity) (Kotler, Kartajaya, Setiawan, 2010). In times when social and environmental problems are increasing, consumer service becomes a service to the whole of society and to the whole planet. This is an action for the effective implementation of the concept of sustainable development, which aims to ensure survival and development opportunities for future generations (Pabian, Pabian, 2014).

The marketing 3.0 approach affects the overall functioning of the organization and allows emphasizing the best solutions for running a company today. After the marketing models evolution: 4P, 7P and 4C there is a new one - 4E, which shows how the offer should be shaped on the market to satisfy needs and desires of the selected target group. This is a key element of any business plan, and as a consequence, it determines “be or not to be” an enterprise on the consumer 3.0 market.

5. Study Limitations and Future Research

In the future, research will be needed to demonstrate whether businesses apply Marketing 3.0 principles in their promotional activities and, if so, with using which marketing instruments and tools. In addition, the perception of Marketing 3.0 by entrepreneurs and the implementation conditions for other stakeholders groups (business partners, suppliers, stakeholders) should be identified.

The research limitation for the article was the lack of one, generally accepted definition of Marketing 3.0. This is a relatively new concept that has not yet been properly defined and systematized. Also, the role, which Marketing 3.0 plays in the organization's marketing efforts, should be identified. Another limitation is using only selected electronic search engines which were available

for authors and subjective article selection based on the abstract review, the year of publication and the adequacy of journal. Additionally, only a few articles to the presentation in results were selected which were subjectively considered the most interesting from the article topic point of view.

6. Conclusion

Acquiring loyal and profitable customers is the strategic goal of every business (Susilo, Yulius, Suryati, 2015). The analysis of literature, reports and studies has shown that dynamically changing environments require companies to take a new look at the needs of customers wishing to participate in the production or innovation process. Value is becoming a key marketing competence, and building long-term relationships with consumers enable to co-create something good for the world by carrying out the mission of the company. Mission is not only a promotional formula designed for public relations but also a vision of a company's sustainable development with respect for corporate values, the rights and interests of its stakeholders. It serves to provide satisfaction, to raise awareness and show empathy (Niedzielska, 2011). Now marketing activities must be planned from the strategic level of organization. All these guidelines are the key to the long-term viability and profitability of business (Chang, Slaubaugh, 2017).

The marketing 3.0 concept brings some new elements to the following areas of business operations: economic (productivity, quality, risk, costs) and social (corporate culture, relations with employees, clients and all other stakeholders). The priority groups in planning and implementing third generation marketing principles are consumers and employees. This new approach, especially to the perception and planning of business operations, makes it possible to effectively compete on the current market.

Changes in marketing concepts are closely linked to technological change, so it is difficult to determine when the marketing 3.0 concept evolves to the next, fourth generation. If companies want to function effectively in the future, they must constantly monitor changes in the environment (economic conditions, technology availability, national and international regulations, behaviours of competitors and consumers). Effective marketing activities are consistent with appropriate, constant adaptation to these changes (Pikuła-Małachowska, 2015). This activity is part of the sustainable enterprise concept, which points to the need for flexible functioning in chaos and crisis through change management and renewal. In other words, the ability of enterprises to constantly acquire knowledge, adapt, develop, revitalize, reconstruct and reorient (Moczyłowska, 2015).

References

- Al Badi, K.S. (2015). The Dimensions of Marketing Mix. *Management and Organizational Studies*, vol. 2, iss. 1, pp. 136-142.
- Bagiński, D. (2017). *Raport - Jak zaistnieć i zarabiać na facebooku*, [online]. Available: <http://dawidbaginski.com/sp/warsztat-facebook>. [2017, October 07].
- Chang, O.H., Slaubaugh, M.D. (2017). Sustainable Business Practices in the United States: A Survey on Implementation. *Journal of Management and Sustainability*, vol. 7, iss. 3, pp. 1-11.
- Chang, S.J. (2016). Sustainable Evolution for Global Business: A Synthetic Review of the Literature. *Journal of Management and Sustainability*, vol. 6, iss. 1, pp. 1-23.
- Chovancová, B.; Hudcovský, J. (2016). Return-risk profile of Slovak pension funds. *Administratívne a Management Public*, vol. 27, pp. 94-106
- Erragcha, N., Romdhane, R. (2014). New Faces of Marketing In The Era of The Web: From Marketing 1.0 To Marketing 3.0. *Journal of Research in Marketing*, vol. 2, iss. 2, pp. 137-142.
- Gomez-Suarez, M., Martinez-Ruiz, M.P., Martinez-Caraballo, N. (2017). *Consumer-Brand Relationships under Marketing 3.0 Paradigm: A Literature Review*, [online]. Available: <https://www.frontiersin.org/articles/10.3389/fpsyg.2017.00252/full#h2>. [2017, November, 08].
- Hamill, J. (2016). The end of marketing as usual: be social: be digital. In M. J. Baker, S. Hart (Eds.), *The Marketing Book* (pp. 415-438). New York: Routledge.
- Heartbeats International (2010). *The philosophy of the four Es - conclusion*, [online]. Available: <http://www.soundslikebranding.com/?tag=marketing-mix>. [2017, November 03].
- Houdek, P. (2016). A Perspective on Consumers 3.0: They Are Not Better Decision-Makers than Previous Generations. *Front Psychol.*, vol. 7, iss. 848, pp. 1-6.
- Juarez, L.E.V. (2017). Corporate Social Responsibility: Its Effect on SMEs. *Journal of Management and Sustainability*, vol. 7, iss. 3, pp. 75-89.

- Kot, S., Dragon, P. (2015). Business Risk Management in International Corporations. *Procedia Economics and Finance*, vol. 17, pp. 102-108.
- Kot, S., Tan, M., Dragolea, L. (2017). The Use of Social Media Supporting Studying. *Economics and Sociology*, vol. 10, iss. 1, pp. 169-180.
- Kotler, Ph., Kartajaya, H., Setiawan, I. (2010). *Marketing 3.0: from products to customers to the human spirit*. Hoboken: John Wiley & Sons.
- Lead Labs (2017). *Raport - Marketing Internetowy i Big Data w Polsce 2017*, [online]. Available: <https://www.facebook.com/leadlabspoland>. [2017, October 15].
- Magdis, S., Zorfas, A., Leemon, D. (2015). *The New Science of Customer Emotions*, [online]. Available: <https://hbr.org/2015/11/the-new-science-of-customer-emotions>. [2017, November 02].
- Moczydłowska, M. (2015). Koncepcja „przedsiębiorstwa przyszłości” jako źródło nowych paradygmatów w obszarze zarządzania kapitałem ludzkim. *ZN WSH Zarządzanie*, vol. 2, pp. 27-36.
- Niedzielska, A. (2011). Marketing 3.0 w przedsiębiorstwie jutra. *ZN Uniwersytetu Szczecińskiego. Ekonomiczne problemy usług*, vol. 662, iss. 74, pp. 374-400.
- Nowacki, F. (2014). Marketing 4.0 - nowa koncepcja w obliczu przemian współczesnego konsumenta. *Marketing i Rynek*, vol. 6, pp. 11-19.
- Pabian, A., Pabian, B. (2014). Sustainable Management of an Enterprise – Functional Approach. *Polish Journal of Management Studies*, vol. 10, iss. 1, pp. 98-107.
- Pabian, A. (2017). Planowanie strategiczne z perspektywy sustainability. *Handel Wewnętrzny*, vol 3, iss. 368, t. 1, pp. 341-350.
- Pikuła-Małachowska, J. (2015). Komunikacja w koncepcji marketingu 3.0 przez pryzmat sektora MSP w świetle badania własnego. *ZN Uniwersytetu Szczecińskiego. Problemy Zarządzania, Finansów i Marketingu*, vol. 875, iss. 41, t. 1, pp. 105-114.
- Pogorelova, E. V., Yakhneeva, I. V., Agafonova, A. N., Prokubovskaya, A. O. (2016). Marketing Mix for E-commerce. *International Journal of Environmental & Science Education*, vol. 11, iss. 14, pp. 6744-6759.
- Ritika, J., Tarak, P. (2013). *Mutual fund Investors Expectation and Experience – A Gap analysis from customers’ communication perspective of Marketing Mix*, [online]. Available: <https://www.ajsh.com/shop/articlepdf/org/marketing/paper81.pdf>. [2017, November 05].
- Ritzer, G. (2015). Prosumer Capitalism. *The Sociological Quarterly*, vol. 56, iss. 3, pp. 413-445.
- Senkova, A., Sambronska, K., Mitrikova, J., Matusikova, D., Matkova, S. (2016). Corporate Culture as a tool for increasing employee motivation. *Polish Journal of Management Studies*, vol. 13, iss. 2, pp. 131-141.
- Senkus, P. (2013). Marketing 3.0: The Challenge for Private, Public and Non-profit Sectors, Theoretical Approach. *Proceedings of The Sixth International Scientific Conference - Rural Development 2013*, vol. 6, iss. 1, pp. 328-335. Akademijska: Aleksandras Stulginskis University.
- Strielkowski, W., Shishkin, A., Galanov, V. (2016). Modern Management: beyond traditional managerial practices. *Polish Journal of Management Studies*, vol. 14, iss. 2, pp. 225-231.
- Strielkowski, W.; Gryshova, I.; Kalyugina, S. (2017). Modern Technologies in Public Administration Management: A Comparison of Estonia, India and United Kingdom. *Administratie si Management Public*, vol. 28, pp. 174-185.
- Susilo, W.H., Yulius, Y., Suryati, L. (2015). Role of Communitization Marketing 3.0 on Purchasing in Higher Education of Postgraduate Institutions in Jakarta. *Mediterranean Journal of Social Sciences*, vol. 6, iss. 2, pp. 125-132.
- Szczepańska-Woszczyna, K. (2014). The importance of organizational culture for innovation in the company. *Forum Scientiae Oeconomia*, vol. 2, iss. 3, pp. 27-39.
- Tarabash, A. (2013). The Use of Social Media in the Polish Retail Banking in the Era of Marketing 3.0. *Studia Ekonomiczne / Uniwersytet Ekonomiczny w Katowicach*, iss. 150, pp. 159-168.
- Varey, R.J., McKie, D. (2010). Staging consciousness: marketing 3.0, post-consumerism and future pathways. *Journal of Customer Behaviour*, vol. 9, iss. 4, pp. 321-334.
- Warrink, D. (2015). The Marketing Mix in a Marketing 3.0 Context. *Proceedings of 5th IBA Bachelor Thesis Conference*, pp. 1-15. Enschede: University of Twente.
- Wilczak, A. (2016). Konsument 3.0 – specyfika i implikacje dla marketingu w świetle opinii menedżerów. *Problemy Zarządzania*, vol. 14, iss. 1(68), t. 2, pp. 61-73.
- Wróblewski, Ł. (2017). Application of marketing in cultural organizations: the case of the Polish Cultural and Educational Union in the Czech Republic. *Cultural Management: Science and Education*, vol. 1, iss. 1, pp. 79-92.

Stanislava Strelcová^{1*}

University of Žilina
Slovakia

Ladislav Šimák²

University of Žilina
Slovakia

76. ASSESSING THE ENTERPRISE ECONOMIC SECURITY

Abstract: One of the possible approaches to assessing the enterprise economic security is the use of financial-economic analysis indicators that can assess past results as well as anticipate future developments. However, these indicators are largely based on the financial value of the enterprise's tangible assets and the value of the intangible assets is included only marginal. Moreover, they do not capture the specifics of the enterprises which relate to their economic activity. The aim of this paper was to point out these specifics and to propose an appropriate set of indicators that would capture economic security from the point of view of both tangible and intangible resources. We took the deliberate decision to keep our study small. For this reason, we opted only one industry – passenger transport. Then we chose indicators, where the comparability was the most important criterion. The values of the indicators were found out in more than 20 enterprises and they were compared consequently to each other. Afterward, the boundaries of the enterprise economic security in transport enterprises were determined by using the method of indicators variability. Finally, the economic security of a particular enterprise was assessed and it could be stated that the economic security of the particular company is disrupted only moderately. For future research, we have the motivation to deal with generalizing the acquired knowledge to be usable in any enterprise.

Keywords: economic security, enterprise, indicator.

JEL Classification: M21, D24

1. Introduction

The importance of economic security was already recognized by representatives of the traditional approach to security. Dent (In: Collins, 2007) talks about so-called "economics–security nexus", which expresses:

- the necessity of economic and financial resources to ensure military capability,
- the use of economic instruments (embargos, sanctions) to support security policy.

A modern approach to security highlights the economic aspect of maintaining a system (social, technical, environmental...) in a state in which it can fulfil defined functions as well as their development. For this reason, it could be said that economic security is one of the components of national security.

The Business dictionary (2012) defines economic security as: „A situation of having a stable source of financial income that allows for the on-going maintenance of one's standard of living currently and in the near future.“ This definition is applicable to any sector or object of security. According to the International Labour Organization (International, 2018), the economic security is composed of:

- basic social security, defined by access to basic needs infrastructure pertaining to health, education, dwelling, information,
- social protection, as well as work-related security which includes income security, representation security, labour market security, employment security, job security, work security, skill reproduction security.

The Canadian Council on Social Development defines economic security as „an assured and stable standard of living that provides individuals and families with a level of resources and benefits necessary to participate economically, politically, socially, culturally, and with dignity in their community's activities“ (Tsoukalas, 2003, p. 3).

¹ Assoc. Prof. Ing. Stanislava Strelcová Ph.D.; Ul. 1. mája 32, 010 26 Žilina, Slovak Republic, stanislava.strelcova@fbi.uniza.sk

² Prof. Ing. Ladislav Šimák Ph.D.; Ul. 1. mája 32, 010 26 Žilina, Slovak Republic, ladislav.simak@fbi.uniza.sk

* Corresponding author

The International Committee of the Red Cross (2013) defines economic security as „the condition of individuals, households or communities able to cover their essential needs and unavoidable expenditures in a sustainable manner, given physiological requirements, the environment, and prevailing cultural standards“.

In the sense of the above definitions, economic security is identified mainly with social security. However, economic security can also be viewed from a different angle than the security of the state and the population. Economic security can be defined as the security of economic subjects, processes and relationships between them, but at the same time it can be perceived as the sustainability of given processes and relations between economic subjects.

The enterprise economic security as the basic economic unit of the state is an inevitable condition for ensuring the economic security of all subjects of the economic security at the supranational level, i.e. the state bodies, self-government, small economic groups and individual persons as well because of the companies:

- participate in creating the GDP through their activities and it means in creating the resources of the state budget,
- contribute to the self-government’s budget through paying the local taxes and fees,
- are the majority employers, i.e. they create the main source of income for individual persons and small social groups,
- participate in creating funds serving the social and health care through paying levies for the employers.

From the point of view of the company management or the owners (partners) the enterprise economic security is perceived on the one hand as a state of ensuring sufficient resources necessary for the operation of the companies in common conditions but also during emergencies and on the other hand as a necessity to ensure the return on investments. Kozachensko et al. (2001) understand the enterprise economic security from the point of view of harmonising the company relations with its external environment and it draws our attention to the fact that the company economic security is inevitable for securing the economic security of other market subjects too.

2. Threats and Risks Disrupting the Company Economic Security

The enterprise economic security is a state in which the economy of an enterprise or business entities is exposed to a level of risks that does not significantly reduce its performance required for fulfilment the core functions and achieving the goals. On the one hand, ensuring the economic security is perceived by enterprises as a necessity to acquire and maintain sufficient resources to carry out activities in normal and extraordinary conditions. On the other hand, it is perceived in terms of the return of investment.

The enterprise economic security is affected by a group of factors which influence the economy in a parallel way. These factors represent risks and threats for the company – they can be classified as the internal and external ones.

The internal threats and risks result from the company activities themselves (Strelcová, 2015; Sinha, 2012; Vaughan, Vaughan, 2008; Janasová, 2016). They result especially from:

- an unsuitable property and capital structure,
 - the insolvency,
 - the secondary insolvency,
 - the loss of the owners’ proprietary control of the company
 - the costs caused by financial problems,
 - the costs of the capital,...
- the transformation process,
 - the intentional or unintentional errors of the employees,
 - the technical and technological errors and accidents,
 - the process and managerial failures,
 - the shortages and failures during concluding contracts,...
- the process of processing information,
 - breaching confidentiality, accessibility, and integrity of information,
 - the hardware and software errors during processing the information.

The external threats and risks affect the company from its direct or indirect surroundings and they influence not only the company itself but also the society, human activities, material values, environment but also the life and health of people (Šimák, 2006; Shiler, 2017; Poltorak, Volosyuk, 2016; Michell, 2017). According to their character, we can classify them as:

- the military ones,
 - the armed conflicts,
 - the terrorism,
- the non-military ones,
 - the demographic and educational structure,
 - the information explosion, the inflation,
 - the situation of the financial markets,
 - the exchange-rate risk,
 - the competitive environment,
 - the insufficient enforcement of a law,
 - the corruption,
 - the acts of sabotage,
 - the industrial accidents of the strategic enterprises and companies working in our direct surroundings,
 - the geophysical and climatological phenomena.

A lot of these threats and risks simultaneously endanger the economic security of other market subjects or affect other components of the national security (Varnaliy, Onishchenko, Masliy, 2016; Marhasova, Sakun, Klymenko, 2017).

3. Possibilities of Assessing the Enterprise Economic Security

The maintaining of the enterprise economic security requires from the company to have a sufficient amount of the financial means for its entrepreneurial activities and to utilise this means in such a way it will ensure its return, i.e. an adequate profitability (Engstrom, McKelvie, 2017; Kupkovič et al., 2003).

However, the means for realising the entrepreneurial activities is not only the financial means (cash) or financial assets but also work and capital assets (Kostyaeva, Plotnikova, 2016; Chod, Zhou, 2014). The task of the company is to select and utilise the employees and the manufacturing equipment in such a way that the highest productivity of work can be achieved (Armeanu, Vintila, Gherghina, 2017). However, we have to take into account the fact that the excessive utilisation of these manufacturing factors can cause their failures and losses of the property, health and eventually of the human lives.

Currently, there is no standardized system of indicators which would be used for assessing the enterprise economic security. But as the impacts of the majority of risks and threats can be expressed in values, the most suitable procedure seems to be the calculation of a system of indicators expressing the financial and economic side of the entrepreneurial activities (Kašík, Michalko et al, 1998; Sedlák et al., 2010; Nam, Lee, McMahan, Sherraden, 2016). The company can orient here on analysing the previous results or prediction of the results in the future (Kubičková, Jindřichovská, 2015; Mitchell, 2017).

The retrospectively oriented financial and economic analysis aims at analysing the current financial situation of the company through a view at the past and at the same time it provides the points of reference for improving the financial health and the company economic security. The traditional indicators are especially the indices of activity, indebtedness, profitability, and liquidity. The EVA (Economic Value Added) and MVA (Market Value Added) belong to the progressive indicators. Except for the indicators characterising the financial situation the company management should also follow the indicators of the property and capital structure. However, for the enterprise to assess the company economic security, it has to know the reference values of individual indicators which would represent a situation when the company economic security is ensured. Such a reference framework can be achieved on the basis of the company economic results of the enterprises realising their activities in the framework of the same line of business and conditions. A suitable method for comparing can be then the Method of Indicator Variability in the framework of which the company achieves the economic security if the values of the selected indicators are in the standard zone (Šimák, Klučka, Strelcová, 2014).

The financial and economic analysis oriented on the future attempts to foresee the development of the financial situation. Through the financial indicators, it enables to predict the development of the financial situation a few years in advance and it enables to make the necessary changes in time and to

prevent disrupting the company economic security or acute financial crises. This type of analysis can be realised through various, on the future-oriented methods. Their common characteristic feature is the calculation of indicators which determine the possible negative development and in this way the threat of the company security. The advantage during their creation is the fact they contain the reference values, i.e. the company need not acquire any information about other enterprises. According to (Zalai et al., 2007), we divide them into:

- the methods of the point evaluation where the values of the selected financial indicators are transformed into points through the so-called point scales stated by the expert methods. The best known is the Kralicek Quick Test.
- the mathematic and statistical methods in the framework of which we differentiate them according to the number of the indicators used:
 - the one-dimensional discriminant analysis, the so-called Beaver Discriminant Function,
 - the two-dimensional discriminant analysis,
 - the multi-dimensional analysis, e.g. Altman Score, Beerman Discriminatory Function, the Solvency Index and others,
 - the neuron networks whose advantage is the ability to reveal the non-linear links in the data.

These methods provide only a general framework for assessing the enterprise economic security. The companies work in different conditions and economic branches which create specific requirements on their activities (Ianioglo, 2016). We achieve different results in the manufacturing enterprises for which the capital demandingness is typical or in the companies providing services where a greater emphasis is laid on the staff. That is why the value indicators should be completed by the technical and economic ones which are dealing more with the procedures and efficiency of the transformation process.

4. Assessing the Economic Security in the Transportation Companies

The transportation companies belong to the enterprises providing services. They are market subjects which deal with transporting persons (passenger transport) and things (freight) or providing additional services connected with realising and safety of the traffic and its quality. According to the character of the means of transport and methods used we classify them as the railway, road, water, sea and air transport.

4.1. Methodology

This paper is aimed at assessing the enterprise economic security of the road transport company. We chose the Indicator Variability Method for our assessment and it compares the position of a particular company regarding the level of comparable enterprises. During assessing the economic security of a particular company it is inevitable not to limit on one or several indicators which were selected in an isolated way but to realise a comprehensive comparison of a compact system of indicators which is able to characterise the company as an economic system (Královenský, 1982; Šindelář, Eisler, 1986).

The decisive criterion for selecting the indicators was the possibility to compare them with other road transport companies and their usability for assessing the economic security of any road transport company. Based on these requirements the following system of indicators was designed:

- the total performances per kilometre,
- the sales from transport per kilometre,
- other sales and revenues per kilometre,
- the subsidies per kilometre,
- the costs per kilometre,
- the costs for fuels per kilometre,
- the costs for tires per kilometre,
- the costs for other direct material per kilometre,
- the costs for direct wages per kilometre,
- the costs for maintenance and repairs per kilometre,
- operational overheads per kilometre,
- administrative overheads per kilometre,
- the number of drivers for one bus,
- the number of drivers for one maintenance man.

We worked with the indicators as with a statistic file. The values of individual indicators were found out in all compared enterprises. Subsequently, they were ranked on a scale from maximum to minimum and a median, i.e. the middle segment of the value rows which arose in this way, was defined. The medians were given the value of 100 %. If we express the maximal and minimal values of individual indicators in percent to the detected median, their connecting lines then define a zone characterising the total variation range of all indicators included in the system. In the next phase, we determined the quartiles. The range between the upper and bottom quartile is called the quartile range and it can be considered as the boundary of the enterprise economic security compared.

For assessing the economic security of a particular company it is important to find out the percentage values of the indicators the company achieved. Their connection determines the line of the company's position which shows which results of the company are good and in which of them it is behind the other enterprises of the selected file. At the same time, it is possible to find out the level of the relative economic security according to the fact if the line of the company's position moves in the limits of the quartile range or if it approaches or is the same as the minimum or maximum of the variation range of the file investigated. But during the assessment of the enterprise economic security it is necessary to rank the individual indicators to one of the following three groups:

- the indicators whose growth indicates a positive development of the given relation,
- the indicators whose reduction shows a positive development,
- the indicators which can be assessed only with perfect knowledge of a particular situation.

4.2. Implementation for a Particular Company

The analysis was carried out for the financial year 2016, i.e. from 1st January 2016 to 31st December 2017 in companies ranked according to the classification of the economic activity SK NACE to the subgroup 49.39.0 – Other passenger land transport n.e.c. We reduced the number of the analysed companies on 17 – they are all members of The Association of the Bus Transport of the Slovak Republic.

In the first step, we acquired information. The Association of the Bus Transport of the Slovak Republic and the University of Žilina provided the data for processing this part. They concern information about the economic categories in individual bus companies in Slovakia – the mass transport, long-distance transport and bus-tour transport. Due to the great amount of information provided it was impossible to utilise all information and therefore the indicators are processed only for the companies as wholes. To make the achieved results as transparent as possible we used the assessment in tables and diagrams.

Subsequently, we determined the values of minimum, bottom quartile, median, upper quartile and maximum for each indicator. The real values were transformed to the percentage ones due to the median which was assigned the value of 100 %.

The Table 1 clearly shows the group of enterprises is remarkably homogeneous. It is demonstrated by the narrow variation range. The biggest dispersion of values is recorded in the indicator I3: Other sales and revenues per km whose values move from 0 % to 640 %.

Table 1. Variation range

Indicator	Designation	Variation Range	
		Minimal Value in %	Maximal Value in %
Total performance per km	I1	74	119
Sales from transport per km	I2	86	143
Other sales and revenues per km	I3	0	640
Subsidies per km	I4	80	154
Costs per km	I5	73	118
Costs for fuels per km	I6	92	106
Costs for tires per km	I7	79	124
Costs for other direct material per km	I8	51	136
Costs for direct wages per km	I9	82	134
Costs for maintenance and repairs per km	I10	39	119
Operational overheads per km	I11	38	207
Administrative overheads per km	I12	61	163
Number of drivers for one bus	I13	78	112
Number of drivers for one maintenance man	I14	51	136

Source: Own research

The next step compares the economic security of a particular enterprise with the determined boundaries.

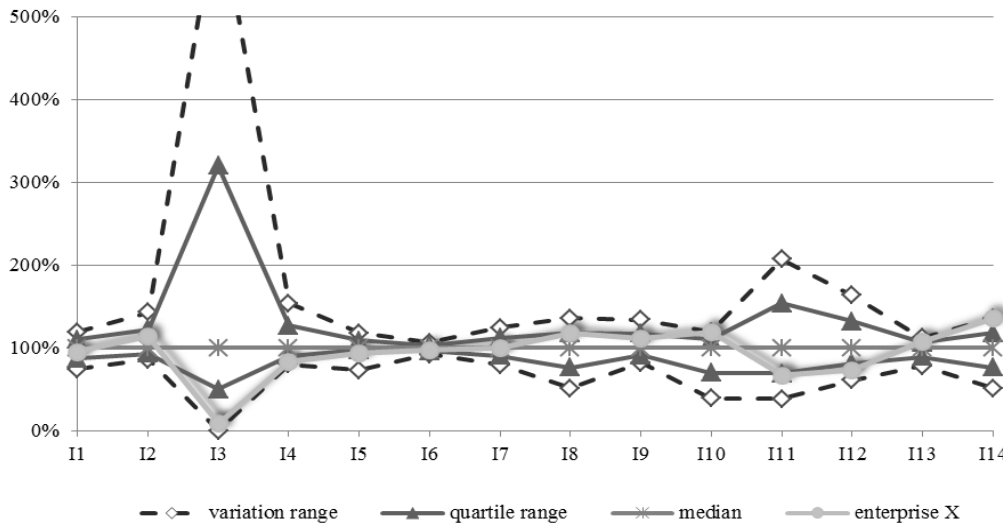


Figure 1. Line of the particular enterprise`s position

Source: own research

Due to the fact, the selected indicators have similar values and it is not possible to explain them clearly we completed the results of the situation in the area of the particular enterprise economic security by a table. Table 2 shows the real values of the indicators in difference to the table 1 where the percentage values regarding the median are depicted.

Table 2. Comparison of particular enterprise with boundaries of economic security

Indicator	Standard Zone	Enterprise	State of Economic Security
Total performance per km	0.7840 – 0.9542	0.8272	Non-Disrupted
Sales from transport per km	0.4855 – 0.5925	0.6008	Non-Disrupted, Above-Standard
Other sales and revenues per km	0.0038 – 0.0133	0.0004	Disrupted, Substandard
Subsidies per km	0.1291 – 0.1758	0.1311	Non-Disrupted
Costs per km	0.7802 – 0.9440	0.8119	Non-Disrupted
Costs for fuels per km	0.2224 – 0.2393	0.2224	Non-Disrupted, Bottom Quartile
Costs for tires per km	0.0098 – 0.0124	0.0110	Non-Disrupted, Median
Costs for other direct material per km	0.0392 – 0.0521	0.0548	Disrupted, Substandard
Costs for direct wages per km	0.1130 – 0.1421	0.1414	Non-Disrupted
Costs for maintenance and repairs per km	0.0491 – 0.0790	0.0833	Disrupted, Substandard
Operational overheads per km	0.0259 – 0.0498	0.0219	Non-Disrupted, Above-Standard
Administrative overheads per km	0.0232 – 0.0410	0.0199	Non-Disrupted, Above-Standard
Number of drivers for one bus	1.3050 – 1.4700	1.4700	More Information Needed
Number of drivers for one maintenance man	2.9650 – 3.9150	4.6980	More Information Needed

Source: Own research

When we assess the chosen enterprise economic security we compare its values of achieved indicators with the standard (quartile) zone. If the value of indicators is in this zone, the economic security of the X enterprise is maintained. If the values are outside of this zone it is necessary to consider the character of the particular indicator. If it is, e.g. the indicator of costs, it is good if the value is as low as possible. On the other hand, the indicator of sales should achieve the highest values. The character of some indicators, e.g. number of a driver for one bus does not allow assessing directly their influence on the enterprise economic security and then we need a deeper analysis.

Based on the realised comparison it is possible to say that the economic security of the particular company is disrupted only moderately. The most significant disruption was detected in the framework of the indicator I10 Costs for Maintenance and Repairs per km. One of the possible solutions recommended to the company management is to outsource the maintenance and repair activities to a specialised company. This could also bring a reduction of the indicator I8 Costs for Other Direct Material per km.

5. Conclusion

The company security is affected by the existence of the risks and threats which impact the enterprise from its surroundings and have a character of mostly non-military anthropogenic and natural risks. If the company did not possess sufficient financial, natural, personal and information resources and no continuous sustainability was ensured, the company security would be seriously disrupted. And just the acquiring and maintaining of the sufficient resources is the task of the company management in the framework of maintaining the economic security.

The assessment of the company security can be considered a part of the risk management in the enterprise. The benchmarking of the companies by the method of indicator variability can be utilised as one of the supporting tools. It is possible to reveal the critical points which can disrupt the company economic security through detecting the quartile range of values in the enterprise.

This paper aimed attention at the area of the passenger transport. The original objective was to assess the influence of the technical and economic indicators characterising the utilisation of the vehicle fleet and transportation capacity on the economic security of the selected enterprise. Due to a limited access to information, we assessed the economic security only from the point of view of revenues and costs per one driven kilometre.

In spite of all of this, the method of indicator variability can be considered a relatively quick and cheap method how the company can compare its economic strength with competitors and find out the state of its economic security. For this purpose, it can utilise the economic databases which are available only after buying the license. However, the price of such a license can be a too high cost item and in this way paradoxically disrupt the economic security especially for companies with a low number of employees and low turnover. For this type of companies, a solution can be to utilise the publicly available information bases, e.g. the Register of the Financial Statements established by the Ministry of Finance of the Slovak Republic.

However, the use of method of indicator variability entails a number of limitations. Based on our research, we consider the most important are:

- complex selection of indicators that would characterise the business activity of enterprise in economic and technical terms as most as possible,
- unavailability or limited availability of information on the economic activity of other enterprises,
- limited comparability of available data.

Therefore, this method will be the subject of our further scientific research. The method will be applied to assess the economic security of other industries in order to generalise acquired knowledge to be usable for any enterprise.

Acknowledgements

This paper was created with the support of the project VEGA 1/0560/16 Risk management of small and medium enterprises in Slovakia as a prevention of corporate crises and project Solving Economic Risks in Small and Medium Enterprises.

References

- Armeanu, S.D., Vintila, G., Gherghina, S.C. (2017). A Cross-Country Empirical Study Towards The Impact of Following Iso Management System Standards on Euro-Area Economic Confidence. *Amfiteatru Economic*, vol. 19, iss. 44, pp. 144-165.
- Business Dictionary (2018). *Economic Security* [online]. Available: <http://www.businessdictionary.com/definition/economic-security.html> [2018, January 05].
- Chod, J., Zhou, J. (2014). Resource Flexibility and Capital Structure. *Management Science*, vol. 60, iss. 3, pp. 708-729.
- Collins, A. (2007). *Contemporary Security Studies*, Oxford: Oxford University Press.
- Engstrom, P., McKelvie, A. (2017). Financial literacy, role models, and micro-enterprise performance in the informal economy. *International Small Business Journal-Researching Entrepreneurship*, vol. 35, iss. 7, pp. 855-875.
- Ianioglo, A. (2016). Indicators of Enterprise Operating Activity and Levels of Its Economic Security. *Proceedings of CBU International Conference on Innovations in Science and Education (CBUIIC)*, pp. 36-41. Prague: Central Bohemia Univ, Unicorn College.
- International Committee of the Red Cross (2013). *Economic Security* [online]. Geneva: ICRC. Available: https://shop.icrc.org/securite-economique.html?___store=default [2018, January 05].
- International Labour Organization (2018). *Definitions: What we mean when we say "economic security"* [online]. Geneva: ILO Socio-Economic Security Programme. Available: <http://www.ilo.org/public/english/protection/ses/download/docs/definition.pdf> [2018, January 05].

- Janasová, D. (2016). The Importance of Signals Monitoring as a Base of Enterprise Development Anticipation. *Proceedings of the 6th International Scientific Conference Business Process Risks 2016*. pp. 181-189. Ústí nad Labem: Univerzita Jana Evangelisty Purkyně.
- Kašík, J., Michalko, M. (1998). *Podniková diagnostika*. Ostrava: TANDEM.
- Kostyaeva, E.V., Plotnikova, I.V. (2016). Methodological Approaches to Indicators' Monitoring of Economic Security for Corporations of Hi-Tech Industry. *Proceedings of 3rd International Multidisciplinary Scientific Conference on Social Sciences and Arts, SGEM 2016*, pp. 431-438. Albena, Bulgaria.
- Královenský, J. (1982). *Technical and Economic Analysis of Road Transport Company*, Bratislava: ALFA.
- Kubičková, D., Jindřichovská, I. (2015). *Financial Analysis and Business Performance Evaluation*, Praha: Nakladatelství C. H. Beck.
- Kupkovič, M., Majdúchová, H., Majtán, Š., Mišík, V., Neumannová, A., Rajňák, M., Satková, B., Strinková, V. (2003). *Business Economics*, Bratislava: Sprint vfra.
- Marhasova, V.G., Sakun, O. S., Klymenko, T.V. (2017). Modelling and Prognostication of Macroeconomic Dynamics of Providing The Economic Sustainability to The Economic Security Threats. *Scientific Bulletin of Polissia*, iss. 1, pp. 43-54.
- Mitchell, O.S. (2017). Financial knowledge and key retirement outcomes: an overview of the issue. *Journal of Pension Economics & Finance*, vol. 16, iss. 3, pp. 273-276.
- Nam, Y., Lee, Y., McMahon, S., Sherraden, M. (2016). New Measures of Economic Security and Development: Savings Goals for Short- and Long-Term Economic Needs. *Journal of Consumer Affairs*, vol. 50, iss. 3, pp. 611-637.
- Poltorak, A., Volosyuk, Y. (2016). Tax risks estimation in the system of enterprises economic security. *Economic Annals-XXI*, vol. 158, iss. 3-4, pp. 35-38.
- Sedlák, M., Cibák, E., Kachaňáková, A., Mišík, V., Oláh, M., Rózsa, Z., Vlachynský, K. (2010). *Business Economics*, Bratislava: Iura Edition.
- Shiler, R.J. (2017). Economic risks associated with deep change in technology, and their mitigation. *Journal of Policy Modeling*, vol. 39, iss. 4, pp. 616-624.
- Sinha, S. (2012). Understanding Industrial Espionage for Greater Technological and Economic Security. *IEEE Potentials*, vol. 31, iss. 3, pp. 37-41.
- Strelcová, S. (2015). *Economic Security*, Žilina: EDIS – vydavateľské centrum Žilinskej univerzity.
- Šimák, L. (2006). *Risk Management* [online]. Žilina: Žilinská univerzita v Žiline. Available: http://fsi.uniza.sk/kkm/files/publikacie/mn_rizik.pdf. [2017, October 05].
- Šimák, L., Klučka, J., Strelcová, S. (2014). Modulation of limits in economic security of enterprises. *Ekonomika poľnohospodárstva = Economics of agriculture*. vol. 14, iss. 2, pp. 89-104.
- Šindelář, J., Eisler, J. (1986). *Analysis of Economic Activity of Transport*, Praha: VŠE.
- Tsoukalas, S. Mackenzie, A. (2003). *Personal security index, 2003. After five years* [on line]. Ottawa: The Canadian Council on Social Development, [online]. Available: http://www.ccsd.ca/images/research/Publications/PDF/Personal_Security_Index_2003en.pdf [2018, January 05].
- Varnaliy, Z., Onishchenko, S., Masliy, A. (2016). Threat prevention mechanisms of Ukraine's economic security. *Economic Annals-XXI*, vol. 159, iss. 5-6, pp. 20-24.
- Vaughan E.J., Vaughan T.M. (2008). *Fundamentals of Risk and Insurance*. USA: John Wiley & Sons.
- Zalai, K., Dávid, A., Šnircová, J., Moravčíková, E., Hurtošová, J., Sovíková, D. (2007). *Financial and Economic Analysis of Company*, Bratislava: Sprint – vfra.

Herbert Strunz¹

University of Alexander Dubcek in Trenčín
Slovakia

Dana Jašková² *

University of Alexander Dubcek in Trenčín
Slovakia

77. THE POTENTIAL OF SLOVAKIA'S REGIONS FOR THE FORMATION OF A TOURISM CLUSTER

Abstract: The article deals with one of the possible approaches to quantitative evaluation of the potential of the region for mutual comparison of the regions in the Slovak Republic. Interest in regional clusters and their role in economic development have grown sustainability over the last several years among academics, economic development professionals, and firm managers. The concept of clusters is initially applied in industry, the idea of co-operation of companies in order to increase competitiveness and improve market position, was also transferred to the field of tourism. Tourism clusters affect the development of industry in the region, resulting in the social, cultural and ecological life of the region. For this reason, it is important to measure the potential of the cluster region. The aim of the paper was to analyze the number of existing clusters in the field of tourism and their location. Using selected indicators of regional development, we characterized the maturity of the regions with the highest concentration of clusters. Then it could be assessed the regions potential for cluster formation. The potential of the region was evaluated on the basis of several indicators. Account had to be taken of the social, economic and environmental indicators of the region. In this paper the study of the cluster potential of Slovak regions was addressed by building a composite indicator that used multicriteria decision techniques for the aggregation and weighting of the simple indicators considered. The potential of the studied regions could be easily compared and fair ranking of the regions could accordingly be obtained. The result of the research was that some regions of the Trenčín region showed a similar potential for cluster development in tourism as regions with already existing and functioning clusters.

Keywords: composite indicator, multicriteria methods, region, tourism cluster.

JEL Classification: C02, O18, R11

1. Introduction

One of the main objectives of regional policy governance is to improve the socio-economic level of the regions. To achieve this goal, the level of economic and social development is important. Region in the EU is regarded as the main element and at the same indicator of economic development. The region is considered to be a political, economic, social and cultural unit (Krajňáková, Vojtovič, 2012). Activities are aimed to improving the welfare and performance of the regions and are referred to as a regional policy. Within the regional economy operate various institutions and partnerships whose mission and activities create conditions conducive to the development of the region, formation of its structure and capacity utilization. One of the options for improving the economic performance of regions is to promote the development in certain sectors of the prevailing in the region. This creates a unique environment to unite enterprises of a similar nature (Habánik et al., 2016).

Those treys to exploit the comparative advantages of the region, thus creating a network of a wide range of companies connected to specific networks, i.e. the cluster. The term cluster became part of different developmental directions of economic theory and practical experience in the field of economic development. For the definition of a cluster there are a variety of definitions. The most common definition is: „Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, and companies in related industries and associated institutions (such as universities, agencies, business associations) in a certain area which not only compete but also cooperate“ (Porter, 2000). The most important participants of the clusters are small and medium-sized enterprises. Thanks to

¹ Prof. Ing. Mag. Dr. Herbert Strunz Ph.D.; Študentská 3, 911 50 Trenčín, Slovakia, herbert.strunz@gmx.de

² RNDr. Dana Jašková Ph.D.; Študentská 3, 911 50 Trenčín, Slovakia, dana.jaskova@tnuni.sk

* Corresponding author

the cooperative agreements, small and medium-sized enterprises are able to increase their competitiveness and face pressure to be out of the market (Wöhe, Döring, 2002). The clusters will become particularly important in industries where is applicable the Gibratov law and so where small businesses don't grow faster than large enterprises and so ones do not have one of its essential advantages against to big firms (Leitão, Serrasqueiro, Nunes, 2010). Other major entities involved in the cluster include are: public administration and self-government, middle and high school, scientific research institutes and so on. In the definitions of clusters areas of cooperation and relations between firms, agglomerating effects, social capital, economies of scale, the transfer and dissemination of technology, innovation and knowledge management are overlapping (Kordos, Karbach, 2014).

To the common element and the ties, which form the basis of successful clusters include the following attributes: cluster management, cooperation and competition, ties, system's approach, the life cycle of the cluster, innovation and so on. Clusters play a major role in the development of the various regions by contributing to an increase in their competitiveness (Navickas et al., 2016).

The promotion of regional development by influencing of the existence of the cluster in the region is affected by several factors. This is the level of the scientific research base and access to research institutions and facilities in the region. Furthermore it is a kind of culture of the participating firms, proximity to markets and the level of transport infrastructure, materials technology, the availability of skilled labor, the ability to finance, raw material's availability, the availability and the level of potential participants in the cluster and foreign markets. Different research works indicate that the mapping of differentiation in individual regions focused on sectorial structure is required condition for cluster creation (Haviernikova, Strunz, 2014).

The peculiarity of the cluster is organized on the basis of the principle of the uniqueness of regional internal environment, infrastructure, and macro-level system of their own to the region. Also the feasibility of it competitive advantages in the territory through the integration. The cluster acts as a stimulus of economic development. Regionality is the support point for the stable development of the cluster, which has an important role in the selection of the priority directions of investment in the region. The investment's effectiveness in accordance with cluster is conditional by strengthening the cluster to the reciprocal links between the participants (Krajňáková, 2016).

The article focuses on tourism clusters in Slovakia. It describes their difference from industrial clusters. The main objective was to analyze the number of existing clusters in the field of tourism and their location. Potential is estimated by methods of multidimensional statistical methods.

2. Cluster of Tourism as Part of Development of the Regions

Tourism and its product comprise a group of companies of a different nature. Their goal is to meet the needs of visitors in the tourism industry. The development of a cluster of tourism affects the development of other industries in the region. It has an impact on the social, cultural and ecological life of the region. Not every region has the potential for the emergence of a cluster of tourism. If the cluster has also become a factor for regional development, it must be created in the region with appropriate conditions. Cluster in tourism can be defined as: "Targeted mutual cooperation of actor's product creation and actors of regional development by means of tourism, which simultaneously meets the needs of tourists while supporting business environment in accordance with the moral and environmental regulations of the objective region" (Zdon, Korzeniowska, 2009).

Clusters of tourism have become bearers of offerings, the makers or marketing promoters of tourism products. The visibility of the region has resulted into increase of its traffic. This has other positive economic impacts. Clusters are able to offer clients packages of services that did not offer so far. The formation of the cluster is a long-term process, which is based on the existence of appropriate conditions in the tourism industry. Includes two phases: the mapping of the cluster formation and development of the cluster. The formation of the cluster in the region represents a long-term process based on the identification of its potential. To identify the potential and the appropriateness of the assessment of the conditions for the establishment of a cluster are:

- identifying existing or potential competitive advantages that have the prospect to developing,
- processing strategies for the use of the key opportunities for businesses and partners involved,
- creation of added value for the customer with the ability to offer a comprehensive tourism product for the national and even international market,
- the creation of new employment opportunities,
- a common solution of the problems raised by the undertakings in the cluster (Belešová, 2009).

Cluster in tourism are typical examples of „knowledge economy“. Clusters in tourism support cooperation of various actors of tourism and focus on the raise of the regions competitiveness. This is more or less the only similarity with the technology of cluster. The reason for their difference is the fact that the tourism has different inputs, outputs and specifically structured functional environment. The differences between tourism and industrial clusters are in:

- tourism is seasonal,
- tourism has different localization factors (natural attractions, human-geographic attractions),
- tourism can be well-developed even in peripheral regions,
- employees in tourism have different structural qualification,
- products of tourism can even have abstract character (experience, education, culture, etc.).

Each geographical region of Slovakia shows different results of various economic, employment, the structure of the industry, the amount of the wages, the potential for tourism and other indicators. The attractiveness of regions creates a good potential for the formation of clusters of tourism.

Cluster Liptov is the first cluster of tourism in Slovakia. It was founded in 2008. This association tries to build a considerable destination of tourism of the Liptov region with strategic aim to increase the attendance of Liptov at least to a double. A brief overview of the existing cluster of tourism is provided in Table 1.

Table 1. Cluster of tourism in Slovakia

Title	Region	Date of establishment	Type of cluster
Cluster Liptov	Žilina	2008	Cluster of tourism
Cluster of tourism Western Slovakia	Trnava	2008	Cluster of tourism
Cluster Orava	Žilina	2009	Cluster of tourism
Cluster Turiec	Žilina	2009	Cluster of tourism
Cluster Horehronie	B. Bystrica	2011	Cluster of tourism
Balnea Cluster Dudince	B. Bystrica	2008	Spa tourism cluster
Cluster Smolenice	Trnava	2010	Rural cluster of tourism
Novohradský Cluster	B. Bystrica	2009	Rural cluster of tourism
Cluster Košice	Košice	2010	City cluster of tourism
Cluster Šariš	Prešov	2014	Cluster of tourism
Cluster Slanské vrchy	Košice	2010	Cluster of tourism
Cluster Topoľčany	Topoľčany	2012	Cluster of tourism
Cluster Tatry	Prešov	2010	Cluster of tourism
Cluster of border castles in southern Slovakia	B. Bystrica	2010	Cluster of tourism

Source: Own processing

The main initiators and founders of the cluster of tourism in Slovakia are mostly private companies, autonomous counties, cities, towns and rural settlements. The number of clusters and their members in compared with countries in Europe is lower and in the functioning less efficiently. Their links with universities and research centers is inadequate, hardly any. The major problem in achieving the objectives and the promotion of the regions is the lack of financial resources. The aim of the article is using the multidimensional statistical methods to track clusters at the level of districts in considering appropriate indicators.

3. Materials and Methods

No single methodology has been found more suitable than any other for building composite indicators, multicriteria decision making techniques seem to be particularly appropriate for this task. The simplest and best-known method is the weighted linear aggregation, with indicator weights, or objectives methods, that exploit the information contained in the data set (Pulido, Sánchez, 2009). There is no universal agreement on a common list of indicators to be used in such analysis. It is well known that the selection process is invariably subject to arbitrary decisions. Consistency of the theoretical framework and quality of the available data largely condition the usefulness of the final index, composite indicator. Therefore indicator must be carefully selected according to their ability to describe the desired concept, relevance and availability (Carrillo, Jorge, 2017).

In the next section we will use the following markings. In a generic case, if n territorial units (districts) are to be evaluated a number m of indicators, the whole dataset for the analysis can be displayed using a $n \times m$ matrix. Elements of this matrix I_{ij} measure the potential of the i -th unit in

relation to the j -th indicator ($i = 1, 2, \dots, n; j = 1, 2, \dots, m$). For each indicator the improvement direction must be established in such a way that a distinction is made between positive and negative indicators. Positive indicators are of the “more is better” type, for which higher observed values are preferred as they imply a superior performance. Negative indicators are the “less is better” type, for which lower observed values indicate higher performance or potential of unit.

3.1. Data Normalization

To eliminate the effects of different unit scale of the indicator measured used, normalization of raw data is recommended. After normalization, original indicators turn into dimensionless measures with the same improvement direction. The following terms will be used in the following section:

$$\bar{I}_{ij} = \frac{I_j^{max} - I_{ij}}{I_j^{max} - I_j^{min}} \quad (1)$$

if I_j is a positive indicator, and

$$\bar{I}_{ij} = \frac{I_{ij} - I_j^{min}}{I_j^{max} - I_j^{min}} \quad (2)$$

if I_j is a negative indicator,

where $I_j^{max} = \max_{1 \leq i \leq n} I_{ij}$ and $I_j^{min} = \min_{1 \leq i \leq n} I_{ij}$. After this process all indicators take values between 0 and 1.

All normalized indicators are of the “less is better” type, so a value of 0 represents the best possible outcome for all of them. This normalization formula is crucial in order to obtain an index (Composite indicator) that effectively represents the intended concept for arbitrary set of indicator weights.

3.2. Data Aggregation

In real case studies dealing with assessment of environmental, economic and social performance, CI is increasingly acknowledged as a powerful tool for describing complex issues and benchmarking performances of regions (Attardi et al., 2017). A composite indicator (CI) is the combination of several indicators that do not have a common measurement unit (Nardo et al., 2008, Saltelli, 2007). CI is a suitable tool for performance measurement and monitoring, benchmarking, policy analysis and public communication via providing an aggregated performance index in various fields such as sustainable energy index, Human development Index, Environmental Performance index, etc. The main steps in constructing CI are weighting and aggregating of a set of given sub-indicators which directly affect the quality and reliability of the calculated CI (Hatefi, Torabi, 2010).

For calculating the composite indicator the following procedure was used. Since each territory is evaluated along m indicators, the distance between the unit i and the ideal alternative (that after normalization would be identified as the one having a null value in all indicator variables), can be measured by this expression:

$$d_i^p = \left(\sum_{j=1}^m \left(w_j (\bar{I}_{ij} - 0) \right)^p \right)^{1/p} \quad (3)$$

where the parameter $1 \leq p \leq \infty$ is related to the metric used in the distance measure and w_j is used to denote the corresponding indicator weights. The p values 1, that measures the so-called Manhattan distance, $p = 2$ that considers the Euclidean distance, and $p = \infty$ that yields the Chebychev distance are the most commonly used values for p , due to the geometric interpretations derived and the relative easiness of the computations involved (Carrillo, Jorge, 2017). Also note that when $p = 1$ is used in this context, the weight sum of the indicators is obtained, whereas for $p = \infty$ the former expression can be reduced to

$$d_i^\infty = \max_{1 \leq j \leq m} (w_j \bar{I}_{jk}) \quad (4)$$

These two metrics reflect the different properties of the aggregate obtained. Such a dichotomy reminds us of the discussion between a weak or a strong approach to assessing the region's potential. Such dichotomy is represented in literature as weak or a strong approach to sustainability. The debate concerning the substitutability among environmental asset and man-made capital has been deeply discussed in the literature related to ecological and resource economics (Garmendia et al., 2010). This

approach will be used to construct a composite indicator in assessing the region's potential for cluster development in tourism. The composite indicator obtained with the Manhattan metric provides the weak vision of potential, since by this construction a poor performance in one of the indicators is compensable if a very favorable assessment is obtained for another indicator, resulting in an overall acceptable evaluation of that region. Thus, for each region i Weak Potential Index (WPI) be obtained as:

$$WPI_i = \sum_{j=1}^m w_j \bar{I}_{jk} \tag{5}$$

Similarly, when the Chebysev metrics is used, the potential of each region i is characterized only by indicator with the worst observed potential. The Strong Potential Index (SPI) is calculated as:

$$SPI_i = \max_{1 \leq j \leq m} (w_j \bar{I}_{jk}) \tag{6}$$

The resulting composite indicator, which characterizes the region's potential, can be called Tourism Potential Index defined as

$$TPI_i = \mu WPI_i + (1 - \mu)SPI_i \tag{7}$$

where $\mu \in [0, 1]$ a control parameter that quantifies to what extent a compensatory assessment is allowed among different indicators. It can be seen that when the extreme values $\mu = 1$ or $\mu = 0$ are selected, then either total compensability is allowed or no compensability at all is allowed, respectively, meanwhile other parameter values bring the two views closer and generate index that feature partial compensability to a certain degree that the decision maker determines. In our case the value will be used $\mu = 0,5$.

3.3. Weighting the Indicators

In this section we will determine the weight of the indicators. The weighting of individual indicators is based on Data Envelopment Analysis (DEA) (Liu, Zhang, Fu, 2017, Rogge, 2017). A fair selection of weights is obtained in the sense that it is not particularly advantageous for just one region, but at the same time for all of them, by minimizing the sum of the distance of all the evaluated units from the ideal unit. The performance of the ideal region is represented by a 0 value for all the normalized indicators (Ma, Fan, Huang, 1999). The above idea is formalized through the following quadratic programming problem that must be solved to obtain the indicator weight considered:

$$\begin{aligned} \min_{s.t} \quad & \sum_{i=1}^n \sum_{j=1}^m (w_j \bar{I}_{ij})^2 \\ & \sum_{j=1}^m w_j = 1, \\ & w_j \geq 0 \end{aligned} \tag{8}$$

4. Comparative Regional Analysis

For the selection of the indicators to be used in this study the starting point was the World Tourism Organization guidelines (WTO, 2004). To evaluate the potential of the districts in Slovakia using composite indicator we have chosen regional indicators (Table 2) available in the databases of the Slovak Statistical Office for the year 2016.

Table 2. Analyzed indicators

	Indicator indication	Indicator name
1	I_1	Number of accommodation facilities
2	I_2	Number of beds in accommodation facilities
3	I_3	Number of visitors in accommodation facilities
4	I_4	Number of overnight stays by visitors in accommodation of facilities
5	I_5	Emissions of basic pollutants – particulates
6	I_6	Emissions of basic pollutants – Carbon monoxide
7	I_7	General and specialized hospitals
8	I_8	Number of cultural facilities (theaters, cinemas, museums, galleries, ...)
9	I_9	Electricity consumption
10	I_{10}	Consumption of drinking water
11	I_{11}	Number of registered job applicants

Source: Own processing

These indicators include an economic social and environmental dimension. The Slovak Republic consists of 79 districts at NUTS level 4. As far as Bratislava and Kosice tend to create an urban cluster of further analysis have been left out of the districts of these cities. In the analysis is joining the 70 properties. All values were converted to the middle state of the population in a given period. Input data had different variability of different units of measure. Some values were converted to the middle state of the population in a given period. Therefore in the introduction of the analysis the data was normalized by formulas (1) and (2). Table 3 shows the weights w_i obtained for the indicator I_i with eq. (8).

Table 3. Indicator weight

I_i	I_1	I_2	I_3	I_4	I_5	I_6	I_7	I_8	I_9	I_{10}	I_{11}
w_i	0.1522	0.1496	0.1348	0.1734	0.0317	0.0287	0.0287	0.1308	0.0321	0.0175	0.0981

Source: Own calculations

For each district, indices WPI and SPI were calculated by formulas. The index TPI was subsequently expressed.

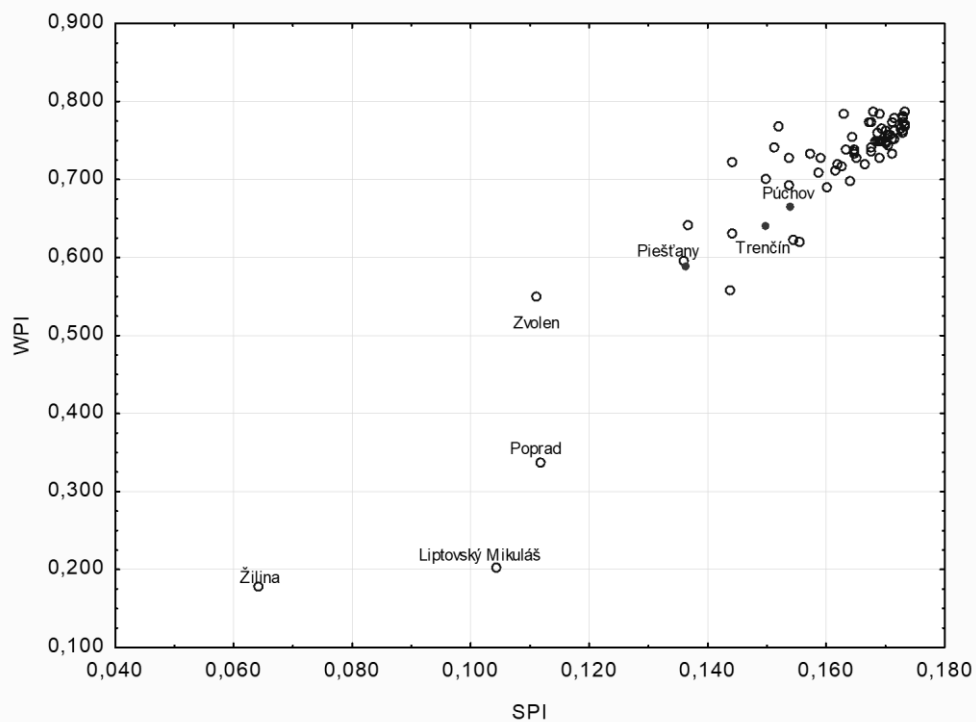


Figure 1. Strong and weak tourism potential performance

Source: Own processing

The chart shows the best position of the districts of Liptovský Mikuláš, Poprad, Banská Bystrica and Zvolen. These districts are already associated in the respective tourist clusters. Their advantageous starting position is influenced by unique geographic conditions. The territory of these districts lies in the national parks of the Slovak Republic. It is therefore logical that they use this potential when designing the cluster. The aim of the article was to evaluate the potential of the Trenčín region to build cluster in tourism. The status of the Trenčín district and its neighboring regions (Púchov, Piešťany) shows, from the point of view of analyzed indicators, the possibility of creating a cluster of tourism. In the following Table 4 there are thirteen districts, with the best potential for tourism development.

The best value for the TPI indicator was reached by the districts of Žilina, Liptovský Mikuláš and Poprad. Three strongest clusters in tourism in Slovakia are created in these districts. They have been effective since 2008. The district of Trenčín has the 13th best rating. Nearby districts are rated approximately from 20 to 30.

Table 4. Districts with the best tourist potential

District	<i>TPI</i>
Žilina	0.121273
Liptovský Mikuláš	0.153809
Poprad	0.224579
Zvolen	0.330963
Banská Bystrica	0.350751
Brezno	0.366043
Kežmarok	0.386788
Martin	0.387794
Michalovce	0.388883
Piešťany	0.389632
Ružomberok	0.423104
Tvrdošín	0.424501
Trenčín	0.424887

Source: Own calculation

The calculation of the *TPI* composite indicator and the ranking of the best regions characterize the potential of the Trenčín region and Piešťany to create an efficient tourist cluster. The districts of Piešťany, Trenčín and Púchov represent regions with a high degree of economic development. This predetermines these regions to apply the cluster initiative and then the cluster.

5. Conclusion

In the last fifty years, tourism has been one of the activities with the highest expansion potentials in the world. It plays an important role as a local development strategy due to its potential for growth and for being a product that can only be consumed in loco. Although it has a relevant potential for development and plays an important role in defining public interventionist policies, there has been little progress in terms of study, research and models for measuring the impact of tourism on local development.

There are very few research studies that would assess the potential of regions in Slovakia for creating a cluster of tourism. Of course, this topic requires a more comprehensive assessment of several institutions. These conclusions could build regional governance institutions to create the right conditions for the development of the region. In this article, we tried to indicate the possibilities of the Trenčín region to create a functioning grouping in the field of tourism. This potential stems from applied statistical methods. It is to be hoped that this potential will be used in the near future.

Acknowledgements

This paper was created within the project VEGA 1/0953/16 “The evaluation of clusters impact measurement on regional development of the Slovak Republic”.

References

- Attardi, R., Cerreta, M., Sannicandro, V., Torre, C.M. (2017). Non-compensatory composite indicators for the evaluation of urban planning policy: The Land-Use Policy Efficiency Index (LUPEI). *European Journal of Operational Research*, vol. 264, pp. 491-507.
- Belešová, S. (2009). Klastre cestovného ruchu ako faktor regionálneho rozvoja. *Geografické informácie 13*. Nitra: Univerzita Konštantína Filozofa v Nitre, pp. 22-26.
- Carrillo, M., Jorge, J.M. (2017). Multidimensional Analysis of regional Tourism Sustainability in Spain. *Ecological Economics*, vol. 140, pp. 89-98.
- Garmendia, E., Prellezo, R., Murillas, A., Escap, M., Gallastegui, M. (2010). Weak and strong sustainability assessment in fisheries. *Ecological Economics*, vol. 70, pp. 96-106.
- Habanik, J., Kordos, M., Hostak, P. (2016). Competitiveness of Slovak economy and regional development policies. *Journal of International Studies*, vol. 9, iss. 1, pp.144-155.
- Hatefi, S.M., Torabi, S.A. (2010). A common weight MCDA-DEA approach to construct composite indicators. *Ecological Economics*, vol. 70, pp. 114-120.
- Havierníková, K., Strunz, H. (2014). The comparison of selected methods used for identification of cluster potential in the regions of the Slovak Republic. *Political sciences, law, finance, economics and tourism conference proceedings*. SGEM, vol. IV, pp. 693-700.

- Kordos, M., Karbach, R. (2014). The Issue of Innovation in International Economics. *Political science, Law, Finance, Economics and Tourism*, vol. III, Book Series: International Multidisciplinary Scientific Conferences on Social Sciences and Arts, SGEM, pp. 653-667.
- Krajňáková, E., Vojtovič, S. (2012). Význam ľudského kapitálu a kreatívnych klastrov v rozvoji regiónu. *Sociálno-ekonomická revue*. vol. 1, pp. 76-84.
- Krajňáková, E. (2016). Vznik a fungovanie klastrov v rozličných regiónoch sveta. *Sociálno-ekonomická revue*. 3/2016, pp. 31-42.
- Leitão, J., Serrasqueiro, Z., Nunes, P.M. (2010). Testing Gibrat's law for listed Portuguese companies: a quantile approach. *International Research Journal of Finance and Economics*, vol. 37, pp. 147-158.
- Liu, J., Zhang, J., Fu, Z. (2017). Tourism eco-efficiency of Chinese coastal cities – Analysis based on the DES-Tobit model. *Ocean & Coastal Management*, vol. 148, pp. 164-170.
- Ma, J., Fan, Z.P., Huang, L.H. (1999). A subjective and objective integrated approach to determine attribute weights. *European Journal of Operational Research*, vol. 112, pp. 397-404.
- Meloun, M., Militký, J. (2002) *Kompendium statistického zpracování dat*. Praha, Academia 2002.
- Nardo, M., Saisana, M., Saltelli, A., Tarantola, S., Hoffman, A., Giovannini, E. (2008). Handbook on constructing composite indicators: Methodology and user guide. *OECD Statistics Working Paper*.
- Navickas, V., Vojtovic, S., Svazas, M. (2016). Clusterization processes influence to competitiveness: biomass clusters case. In Okreglicka, M., Gorzeń-Mitka, I., Lemańska-Majdzik, A., Sipa, M., Skibiński, A. (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management, CITPM 2016*, pp. 302-308. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Porter, M.E. (2000). Location, Competition, and Economic Development: Local Clusters in a Global Economy. *Economic Development Quarterly*, vol. 14, iss. 1, pp.15-34.
- Pulido, J.I., Sánchez, M. (2009). Measuring tourism sustainability: proposal for a composite index. *Tourism Economic*, vol. 15, iss. 2, pp. 277-296.
- Rogge, N. (2017). On aggregating Benefit of the Doubt composite indicators. *European Journal of Operational Research*, vol. 264, pp. 364-369.
- Saltelli, A. (2007). Composite indicators between analysis and advocacy. *Social Indicators Research*. vol. 81, iss. 1, pp. 65-77.
- Statistical office of the Slovak republic (2017). DataCube, [online]. Available: www.statistics.sk. [2017, November 11].
- Wöhe, G., Döring, U. (2002). *Einführung in die Allgemeine Betriebswirtschaftslehre*. 24. Auflage. München: Vahlen.
- WTO (2004). *Indicators of Sustainable Development for Tourism Destinations. A Guidebook*, [online]. Available: <http://www.e-unwto.org/doi/book/10.18111/9789284407262>. [2017, November 11].
- Zdon-Korzeniowska, M. (2009). *Jak kształtować regionalne produkty turystyczne. Teoria i praktyka*. Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego.

78. CORPORATE SOCIAL RESPONSIBILITY OF SPORT ORGANISATIONS: THE INFLUENCE OF SELECTED VARIABLES ON FAN AND SPECTATOR BEHAVIOUR AND PERCEPTIONS

Abstract: Sport organisations are well placed, because of their close association to the communities in which they operate, to engage in corporate social responsibility (CSR) initiatives which has become an area of increasing importance among researchers. Limited research regarding the influence of sport organisations CSR initiatives on the perceptions of fans and spectators has been conducted. Hence, the purpose of this study was to investigate the influence of selected variables on fans' and spectators' perceptions regarding the importance that sport organisations attach to CSR. The study also investigated the influence of selected variables on fans' and spectators' behaviour. A quantitative research approach was adopted for the study. The sample for the study comprised fans and spectators of sport organisations. Using snowball sampling, data were collected using SurveyMonkey from one hundred and five (n=105) participants. Descriptive statistics were used to establish the demographic profile of the participants. In addition reliability and validity analyses, correlation analysis and multiple regression analysis were computed. The findings of the study suggest sport organisations which have a positive attitude towards CSR respond more favourably to CSR initiatives. Their positive attitude also influences fans' and spectators' behaviour positively. Sport organisations' positive attitude also influence fans' and spectators' perceptions of the importance sport organisations attach to CSR initiatives. It is therefore important for sport organisations to visibly engage in CSR activities associated with the environment to attract fans and spectators as well as contribute to the wellbeing of society in general.

Keywords: behaviour, corporate social responsibility, perceptions.

JEL Classification: C83, L21

1. Introduction

Corporate social responsibility (CSR) has attracted great interest and concern, and become an area of increasing importance among researchers (Babiak, Wolfe, 2009). While there is no consensus on what CSR entails, several views of CSR have emerged in the literature. Holmes and Watts (2000) describe CSR as a commitment by organisations to behave in an ethically acceptable manner and contribute to economic development while at the same time engaging in activities that aim to improve the quality of life their workforce and society at large. Prokeinová (2012) describes CSR as a vehicle that strengthens the brand value of an organisation by enabling the integration of environmental, social, economic and ethical criteria into management strategies and decisions in organisations. In an organisation, internal pressures such as those exerted by an organisation's shareholders, and external pressures exerted by external stakeholders influence the manner in which organisations respond to social issues. Mohr and Webb (2005) provided supporting non-profit organisations, employee well-being, and addressing environment and human right issues as examples of CSR initiatives. An overarching and common understanding is that organisations have a duty beyond the economic motive (to make a profit) and become more socially responsible (Turker, 2008). This may be achieved through them voluntarily integrating social and environmental concerns in their business activities (Prokeinová, 2012). Environmental interest groups, media and members of society increasingly exert pressure on organisations, including sport organisations, to address issues regarding the environment. The sport industry has evolved significantly from one that was amateur-focused to one that is professional-focused with the objective of generating profit (Surujlal, 2016). This has resulted in greater exposure of sport to society which is more aware than ever of the social responsibilities of corporate organisations.

¹ Jhalukpreya Surujlal Ph.D.; PO Box 1174, Vanderbijlpark 1900, South Africa; Babs.Surujlal@nwu.ac.za

* Corresponding author

Three key components, namely economic, environmental policy and social policy, as well as management or decision-makers with a vision are essential for sustainable business success (Jajić, Jajić, 2015). Application of the concept of CSR in practice shows that the social engagement of corporations and profit maximisation and shareholder value do not exclude each other, but strengthen each other. Bakanauskiene, Staniuliene and Zirgūtis (2016) argue that in order for organisations to thrive and function in equilibrium they need to respond to stakeholder needs. It is, therefore, necessary to apply business strategies while at the same time protecting the natural resources.

There are many examples of CSR of sport organisations as alluded to by Walker and Kent (2009). Among these are the Fédération Internationale de Football Association's (FIFA) significant investment in supporting the development of the game at grass root level as well as developing partnerships with relief organisations; the Philadelphia Eagles environmental campaign to provide a cleaner community for Philadelphia's citizens; the Adidas Group's contribution to creating awareness regarding working conditions, the environment, community affairs, and employee programs through their publications and Nike's Fair Labour Standards Act which promotes sound worldwide labour practices. Zhang and Surujlal (2015) argue that involvement of sport organisations in CSR programmes is usually more dynamic and hands-on than traditional business organisations as they, unlike corporate organisations, respond to social issues by doing more than just giving cash donations (Carroll, 1979).

There are several positive reasons for sport organisations to engage in CSR. These include the free and vast media exposure that sport receives increases awareness of the social issues they address (Zhang, Surujlal, 2015); the wide appeal of sport to a diverse sport fan base ensures that the message they send out can be conveyed to the broader population thereby improving the public opinion of the organisation (Zhang, Surujlal, 2015; Walker, Kent, 2009); and the emotional and psychological connection to fans create an awareness which may assist in significantly shaping the opinions of their fans toward the social issues they address (Zhang, Surujlal, 2015); financial benefits (Brammer, Millington, 2008), and increased brand loyalty (Moon, Lee, Oh, 2015). Because of the large number of people who are associated with sport either as participants, fans, spectators, sponsors or employees, it becomes a responsibility for sport organisations to use their ability to reach a wide spectrum of the community to address social issues for the betterment of society (Walker, Kent, 2009).

2. Problem Statement

CSR has become an area of significant importance in many organisations and abundant research examining benefits from CSR practices for society in general has been conducted. However, relatively little research has examined perceptions of fans and spectators regarding CSR in the context of environmental protection in the sport industry which has, in recent times, begun to engage increasingly in socially responsible activities.

Based on the foregoing literature review and the problem statement, the following hypotheses were formulated for the study:

- H₁: Association with the sport organisation positively influences participant's perceptions of the importance of sport organisations' protection of the environment.
- H₂: Organisation's attitude towards environmental protection positively influences participant's perceptions of the importance of sport organisations' protection of the environment.
- H₃: Organisation's response towards environmental protection positively influences participant's perceptions of the importance of sport organisations' protection of the environment.
- H₄: Association with the sport organisation positively influences participant's behaviour.
- H₅: Organisation's attitude towards environmental protection positively influences participant's behaviour.
- H₆: Organisation's response towards environmental protection positively influences participant's behaviour.

3. Research Methodology

In addition to a literature review on CSR, a quantitative research approach was adopted for the study.

The sample for the study comprised fans and spectators 18 years and older associated with sport organisations in the Gauteng province of South Africa. A non-probability sampling technique in the form of snowball sampling was used to identify participants for the study. Initially seven participants

were identified and provided with a link to SurveyMonkey. They were requested to complete the questionnaire online and identify and provide the link to other potential participants. One hundred and thirteen (N=113) participants participated in the study. Of these 105 (n=105) participants comprising 48 males (46%) and 57 females (54%) submitted completed questionnaires. Majority of the participants were associated with the sport organisation for more than one year suggesting that they were in a good position to determine the sport organisation's involvement in CSR activities.

A questionnaire was developed comprising scales operationalised from previous research. In addition to a section which requested demographic information from the participants, the following subsections were included in the questionnaire: B1 – participant's association with the sport organisation; B2 – Sport organisation's attitude towards environment protection; B3 – Sport organisation's response to environment protection; B4 – participant's behaviour and B5 - participant's perceptions of the importance of sport organisations' protection of the environment. Items in Sections B1-B3 were scored on a seven-point Likert scale anchored at 1 (strongly disagree) and 7 (strongly agree) while items in Section B4 were scored on a seven-point Likert scale ranging from 1 (infrequently) to 7 (frequently) and items in Section B5 ranging from 1 (not important) to 7 (very important).

The data were analysed using the Statistical Package for Social Sciences (IBM SPSS version 22). Descriptive statistics were used to establish the demographic profile of the participants. In addition reliability and validity analyses, correlation analysis and multiple regression analysis were computed.

Participants were informed that participation in the study was voluntary; personal responses will not be ascribed to any individual and their confidentiality and anonymity would be preserved throughout the study. Ethics clearance was obtained from the North-West University Faculty of Economic Sciences and Information Technology Ethics Committee.

4. Results

The internal consistency of the measurement items constructs in the study is reported in table 1. All constructs returned acceptable Cronbach's alpha values ranging from 0.817 to 0.861 which are above the recommended threshold of 0.70 (Malhotra, 2012).

Table 1. Scale Reliability

Variable	Number of items	Cronbach's alpha
Association with sport organisation (1)	5	0.805
Organisation's attitude towards environmental protection (2)	6	0.916
Organisation's response towards environmental protection (3)	3	0.857
Participant behaviour (4)	5	0.867
Participant's perceptions of the importance of sport organisations' protection of the environment (5)	5	0.922

Source: Own research

As indicated in table 2, the correlation matrix showed significant positive correlations between variables suggesting evidence of convergent validity. Further construct validity was established through the computation of factor analysis during which stage the uni-dimensionality of each construct was established. All the study constructs (table 2) showed uni-dimensionality, thereby further affirming construct validity.

Table 2. Correlation matrix

Variable	1	2	3	4	5
1	1.000	0.449**	0.438**	0.395**	0.249*
2	0.449**	1.000	0.796**	0.372**	0.260**
3	0.438**	0.796**	1.000	0.779**	0.217*
4	0.395**	0.372**	0.779**	1.000	0.475**
5	0.249*	0.260**	0.217*	0.475**	1.000

* Correlation is significant at the 0.05 level (2-tailed).
 ** Correlation is significant at the 0.01 level (2-tailed)

Source: Own research

Table 2 reports on the non-parametric Spearman’s correlation coefficients (r) that was computed with a view to examine the existence of a relationship among association with the sport organisation; organisation’s attitude towards environmental protection; organisation’s response towards environmental protection; participant’s behaviour; and participant’s perceptions of the importance of sport organisations’ protection of the environment.

On inspection of the correlation analysis a positive linear association among the variables was observed. None of the coefficients were above 0.9. Therefore there were no multicollinearity issues and the data was considered suitable for linear regression analysis (Hair et al., 2010; Malhotra, 2012). A strong positive correlation was found between organisation’s attitude towards environmental protection and organisation’s response towards environmental protection ($p < 0.01$; $r = 0.796$). Moderate correlations were found between association with the sport organisation and organisation’s attitude towards environmental protection ($p < 0.01$, $r = 0.449$); association with the sport organisation and organisation’s response towards environmental protection ($p < 0.01$, $r = 0.438$); association with the sport organisation and participant’s behaviour ($p < 0.01$, $r = 0.395$) and organisation’s attitude towards environmental protection and participant’s behaviour ($p < 0.01$, $r = 0.372$). Weak correlations were observed between association with the sport organisation and participant’s perceptions of the importance of sport organisations’ protection of the environment ($p < 0.05$; $r = 0.249$); organisation’s attitude towards environmental protection and participant’s perceptions of the importance of sport organisations’ protection of the environment ($p < 0.05$; $r = 0.260$) and organisation’s response towards environmental protection and participant’s perceptions of the importance of sport organisations’ protection of the environment ($p < 0.05$; $r = 0.217$).

Table 3. Regression analysis (participant’s perceptions of the importance of sport organisations’ protection of the environment)

Dependent variable: Participant’s perceptions (Selected independent variables)	Unstandardised coefficients		Standardised coefficients	T	Sig.
	B	Std. Error	Beta		
Association with sport organisation	0.055	0.118	0.043	0.467	0.641
Organisation’s attitude towards environmental protection	0.754	0.135	0.746	5.596	0.000*
Organisation’s response towards environmental protection	-0.251	0.129	-0.261	-1.948	0.054*
R = 0.581 R ² = 0.337 Adjusted R ² = 0.317 * Significant at $p < 0.05$					

Source: Own research

A multiple linear regression procedure was conducted with a view to establish the predictive relationship between the predictors (association with the sport organisation, organisation’s attitude towards environmental protection, organisation’s response towards environmental protection) and participant’s perceptions of the importance of sport organisations’ protection of the environment. The model results are reported in table 3. The regression analysis revealed that the three variables (adjusted R²=0.317) explain approximately 32 percent of the variance in participant’s perceptions of the importance of sport organisations’ protection of the environment.

Table 4. Regression analysis (participant’s behaviour)

Dependent variable: Participants’ behaviour (Selected independent variables)	Unstandardised coefficients		Standardised coefficients	T	Sig.
	B	Std. Error	Beta		
Association with sport organisation	0.368	0.146	0.238	2.516	0.013*
Organisation’s attitude towards environmental protection	0.564	0.168	0.465	3.362	0.001*
Organisation’s response towards environmental protection	-0.114	0.160	-0.099	-0.714	0.477
R = 0.534 R ² = 0.285 Adjusted R ² = 0.264 * Significant at $p < 0.05$					

Source: Own research

A multiple linear regression procedure was conducted with a view to establish the predictive relationship between the predictors (association with the sport organisation, organisation’s attitude towards environmental protection, organisation’s response towards environmental protection) and participant’s behaviour. The regression analysis results in table 4 suggest that the three variables (adjusted R²=0.264) explain approximately 26 percent of the variance in participant’s behaviour.

5. Discussion

It was hypothesised (H_1) that there would be a positive association between association with the sport organisation and participant's perceptions of the importance of sport organisations' protection of the environment. The correlation results revealed a weak association ($r=0.249$). An examination of the regression results ($\beta=0.055$; $p=0.641$) revealed that association with the sport organisation does not have a significant influence on participant's perceptions of the importance of sport organisations' protection of the environment. The hypothesis is therefore not supported.

It was hypothesised (H_2) that organisation's attitude towards environmental protection positively influences participant's perceptions of the importance of sport organisations' protection of the environment. An examination of the correlation results revealed weak association ($r=0.260$). The regression results revealed that there exists a significant positive relationship ($\beta=0.754$; $p=0.000$) between organisation's attitude towards environmental protection and perceptions of the importance of sport organisations' protection of the environment. This suggests that as the organisation's attitude towards environmental protection increases the participant's perceptions of the importance of the sport organisation's protection of the environment will also increase. The hypothesis is therefore supported. As sport possesses a unique opportunity to bring together diverse groups of individuals (Essays, 2013), it is important for sport organisations to develop and portray a positive image of themselves through the implementation of CSR initiatives directly linked to the environment. This is because the majority of the activities associated with sport takes place on the open sports field with the community being involved either as sponsors, spectators, fans or participants. Patil (2014) therefore argues that protection of the environment is considered to be more associated with public interest than private interest of the organisation.

The third hypothesis (H_3) posited that the organisation's response towards environmental protection positively influences participant's perceptions of the importance of sport organisations' protection of the environment. The correlation analysis revealed a weak association ($r=0.217$). The regression analysis revealed that there exists a negative but insignificant relationship ($\beta = -0.251$; $p=0.054$) between the organisation's response towards environmental protection and participant's perceptions of the importance of sport organisations' protection of the environment. This indicates that the organisation's response towards environmental protection negatively influences participant's perceptions of the importance of sport organisations' protection of the environment. The hypotheses is therefore not supported.

Hypothesis 4 (H_4) posited that the association with the sport organisation positively influences participant's behaviour. Examination of the correlation results revealed a moderate association ($r=0.395$). The regression analysis revealed a significant positive relationship ($\beta=0.368$; $p=0.013$) between association with the sport organisation and participant's behaviour. This implies that the stronger the association one has with the sport organisation the more positively will the participant's behaviour be influenced. The hypothesis is therefore supported. The degree to which one's association with a sport organisation is strengthened may be dependent on the extent to which the organisation meets one's needs, expectations and demands (Ullmann, 1985). The needs, expectations and demands may be associated with the products or services that an organisation offers or its CSR initiatives. Sport organisations, which have become big business, have come into the limelight because they attract a consuming public which is aware of the social aspects which affect them (Athanasopoulou, Douvis, Kyriakis, 2011). Therefore, their response to societal needs through CSR initiatives influences society's association with them, thereby influencing the behaviour of society.

It was hypothesised (H_5) that the organisation's attitude towards environmental protection positively influences participant's behaviour. The correlation analysis results indicated a moderate association ($r=0.372$). Upon examining the regression results it was found that there was a significant positive relationship ($\beta=0.564$; $p=0.001$) between the organisation's attitude towards environmental protection and participant's behaviour. This implies that the organisation's attitude towards environmental protection positively influences participant's behaviour supporting the hypothesis.

Hypothesis 6 (H_6) posited that the organisation's response towards environmental protection positively influences participant's behaviour. An examination of the correlation results revealed a

weak association ($r=0.217$) between the variables. The regression results ($\beta = -0.114$; $p=0.447$) revealed that the organisation's response towards environmental protection does not influence participant's behaviour. The hypothesis is therefore not supported.

6. Managerial Implications

Engaging in and implementing CSR initiatives have several positive strategic and managerial implications for organisations. Sport organisations, in particular, are socio-economic agents (Duke II, Kanpang, 2013) which have a high impact on the environment; therefore they need to engage in activities which have a positive high impact on the environment. Those organisations which respond to their moral obligation to demonstrate environmental social responsibility may benefit in the following ways: increase their competitive advantage; ensure their legitimacy (Freeman, 1984); create value for themselves (Freeman, Wicks, Parmar, 2004); and maximise their stakeholders' (in this study fans and spectators) interest.

7. Conclusion

Sport has an enormous capacity to contribute to CSR and change the mindset of those associated with sport organisations. The findings of the study suggest sport organisations which have a positive attitude towards CSR respond more favourably to CSR initiatives. Their attitude also influences fans' and spectators' behaviour positively. Sport organisations' positive attitude also influence fans' and spectators' perceptions of the importance sport organisations attach to CSR initiatives. It is therefore important for sport organisations to visibly engage in CSR activities associated with the environment to attract fans and spectators as well as contribute to the wellbeing of society in general.

References

- Athanasopoulou, P., Douvis, J., Kyriakis, V. (2011). Corporate social responsibility (CSR) in sports: antecedents and consequences. *African Journal of Hospitality, Tourism and Leisure*, vol. 4, pp. 1-11.
- Babiak, K., Wolfe, R. (2009). Determinants of corporate social responsibility in professional sport: Internal and external factors. *Journal of Sport Management*, vol. 23, iss. 6, pp. 717-742.
- Bakanauskienė, I., Staniulienė, S., Zirgūtis, V. (2016). Corporate social responsibility: the context of stakeholders' pressure in Lithuania. *Polish Journal of Management Studies*, vol. 13, iss. 1, pp. 18-29.
- Brammer, S., Millington, A. (2008). Does it pay to be different? An analysis of the relationship between corporate social and financial performance. *Strategic Management Journal*, vol. 29, iss. 12, pp. 1325-1343.
- Carroll, A.B. (1979). A three-dimensional conceptual model of corporate social performance. *Academy of Management Review*, vol. 4, pp. 497-505.
- Duke II, J., Kanpang, K. (2013). Implications of Corporate Social Responsibility for the Performance of Nigerian Firms. *Advances in Management & Applied Economics*, vol. 3, iss. 5, pp. 73-87.
- Essays, UK. (November 2013). *Corporate Social Responsibility in Professional Sports Marketing Essay* [online]. Available: <https://www.ukessays.com/essays/marketing/corporate-social-responsibility-in-professional-sports-marketing-essay.php?cref=1> [2017, August 17].
- Freeman, R.E. (1984). *Strategic Management: A Stakeholder Approach*. Pitman: Boston, MA.
- Freeman, R.E., Wicks, A.C., Parmar, B. (2004). Stakeholder theory and the corporate objective revisited, *Organization Science*, vol. 15, iss. 3, pp. 364-369.
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. (2010). *Multivariate data analysis: a global perspective*. 7th ed. New Jersey: Pearson Education.
- Holmes, L., Watts, R. (2000). *Corporate Social Responsibility: Making Good Business Sense*. World Business Council for Sustainable Development.
- Jajić, B., Jajić, J. (2015). *Corporate social responsibility and sport* [online]. Available: hrcak.srce.hr/file/238168 [2017, September 12].
- Malhotra, N.K. (2012). *Marketing Research*. (4thed.). Oxford: FT Press.
- Mohr, A., Webb, D.J. (2005). The effects of corporate social responsibility and price on consumer responses. *The Journal of Consumer Affairs*, vol. 39, pp. 121-147.
- Moon, B., Lee, L.W., Oh, C.H. (2015). The impact of CSR on consumer-corporate connection and brand loyalty: A cross cultural investigation. *International Marketing Review*, vol. 32, iss. 5, pp. 518-539.

- Patil, Y.D. (2014). *Corporate social responsibility towards environmental management*. [online]. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2403680 [2017, September 12].
- Prokeinová, R. (2012). Analysis of Principles of Corporate Social Responsibility in Food Industry in the Slovak Republic. *Statistika*, vol. 49, iss. 3, pp. 52-60.
- Surujlal, J. (2016). Managing human resources in sport: Issues, challenges and possible remedies. *African Journal for Physical Activity and Health Sciences*, vol. 22, iss. 3:1, pp. 760-776.
- Turker, D. (2008). How Corporate Social Responsibility Influences Organizational Commitment. *Journal of Business Ethics*, vol. 89, iss. 2, pp. 189-204.
- Ullmann, A. (1985). Data in search of a theory: A critical examination of the relationship among social performance, social disclosure, and economic performance. *Academy of Management Review*, vol. 10, pp. 540-577.
- Walker, M., Kent, A. (2009). Do fans care? Assessing the influence of corporate social responsibility on consumer attitudes in the sport industry. *Journal of Sport Management*, vol. 23, iss. 6, pp. 743-769.
- Zhang, Z., Surujlal, J. (2015). Willingness of sport fans to participate in socially responsible community programmes of professional sport organisations. *South African Journal for Research in Sport, Physical Education and Recreation*, vol. 37, iss. 3, pp. 185-197.

Marek Szajt^{1*}

Czestochowa University of Technology
Poland

Katarzyna Hampel²

Czestochowa University of Technology
Poland

79. SERVICE EVALUATION OF CUSTOMERS OF VARIOUS SOCIAL GROUPS IN NON-PUBLIC HEALTHCARE INSTITUTIONS

Abstract: The goal of the present paper was to examine the discrepancies in evaluating services rendered by non-public healthcare institutions (NPHI) that result from demographic characteristics of the respondents. Main differentiating variables were: sex, age, education and professional activeness. The research has been conducted in the group of nearly 500 respondents in Śląskie Voivodeship. The analysis of empirical material has been conducted with the use of statistical methods of STATISTICA software. The results indicate significant differences in evaluation resulting from sex, employment, education and only rarely caused by the age of NPHI customers.

Keywords: customer service, non-public healthcare institutions (NPHI), patient/customer.

JEL Classification: P36

1. Introduction

The main reason of interest in the issues of customer service in non-public healthcare institutions is lack of comprehensive results of surveys that undertake the analysed problem domain. Different opinions of entities – healthcare entities and patients – are not currently empirically identified in a wide grasp. Opinions on medical personnel, patient satisfaction from the received service, evaluation of patient service at patient registration desk are the issues rarely undertaken in surveys. The conducted analyses of various dimensions of healthcare system functioning across the country should be complemented with comprehensive research on patient satisfaction. The growing competition on the healthcare services market causes that healthcare institutions have to take care of their patients. Healthcare institutions rely on patient trust and own image in their opinions. The elementary method to evaluate the attractiveness of a given institution and the quality of services it offers is becoming patient satisfaction survey.

The evaluation of customer service at healthcare institutions requires comparative analyses. Patient surveys should allow for obtaining information on how patients perceive received medical services. What seems to be the best in the service provider's opinion not necessarily is treated in the same way by the patients. Surveys provide information not only about how patients evaluate the quality of a given service, but also indicate the motives behind selecting a given service provider. They should focus on the process of searching for the means to satisfy the needs of healthcare institutions customers, evaluate the reasons that influenced the choice of a given service provider and opinions of patients after they receive medical services.

Presently, the standard of customer service is equally important as the quality of offered products or services (Harsono et al., 2017). It strengthens the relationships with customers, evokes their trust, helps to win a competitive advantage and builds a good reputation of the company. Thanks to surveys conducted among patients it is possible to determine the things that have to be improved, changed in order to make the services rendered by a given healthcare institutions be perceived as the ones of high

¹ Assoc. Prof. Marek Szajt; Al. Armii Krajowej 19 B, 42-201 Częstochowa, Poland, marszajt@zim.pcz.pl

² Katarzyna Hampel Ph.D. Student; Al. Armii Krajowej 19 B, 42-201 Częstochowa, Poland, katarina@zim.pcz.pl

* Corresponding author

quality. Patient surveys in this aspect will provide knowledge on the external customer of a given healthcare institution, and regular evaluations and measurement of patient satisfaction will allow to handle both the positive and negative opinions on healthcare services quality.

2. Characteristics of Non-public Healthcare Institutions

The basic service provider in the healthcare services market is currently non-public healthcare institutions – NPHI. Since 30th June 2011 the fundamental legal act that regulated their functioning was the Law of 30 August 1991 on healthcare institutions (the Law of 30th August 1991 on healthcare institutions). In Article 1 it defined healthcare institutions as “distinguished as to the organizational structure a set of persons and assets created in order to provide healthcare services and promote health.” The law divided healthcare institutions into: public and non-public ones. The division criterion was connected with the type of establishing entity. The founding bodies of healthcare institutions could be: physical persons, legal persons and unincorporated organizational units (e.g. commercial partnerships). NPHIs did not have legal personality and constituted only an organizational form of conducting business activity (Paszowska, 2012, p. 59). NPHI existed only as an entity distinguished within the founding institution or organization bearing full responsibility for all its liabilities.

Since 1st July 2011 changes on the market of service providers have been present, which followed entering into force the Law of 15th April 2011 on therapeutic activity. The previously valid law on healthcare institutions was repealed and since then the legal basis for organization and functioning of healthcare institutions in Poland has been the law on therapeutic activity. The new law comprehensively regulates the principles of conducting therapeutic activity. It defines the functioning principles, structure of the entities that perform therapeutic activity and changes concerning private and public division of healthcare services market. It has been stressed in the literature that present legal regulations grant the same rights and obligations to both public and non-public healthcare entities, recognizing them as the ones that perform therapeutic activity. In practice this means that the Minister of Health obtains greater auditing and supervising rights with relation to private healthcare institutions (Zimna, 2014).

The law on therapeutic activity has introduced new terminology, it includes definitions of terms that were not regulated before, such as: therapeutic institutions, therapeutic activity and therapeutic entity. The term „therapeutic entity” has replaced the previously valid one of “healthcare institution”. The regulatory definition defines the basic goal of therapeutic entities – conducting therapeutic activity of out-patient, stationary, single- or multi-profile nature (Chluska, 2014, p. 19). The most important change adopted in the law on therapeutic activity is granting the status of an entrepreneur to entities that perform therapeutic activity. Presently, NPHIs are entrepreneurs in all possible forms foreseen by the law on freedom of economic activity. As of the day of the law on therapeutic activity entering into force non-public healthcare institutions became enterprises of therapeutic entities. NPHI can just only exist as an association or a foundation (Paszowska, 2015, p. 20).

Presently, non-public healthcare institutions are the most frequently established therapeutic entities in Poland, most often in the form of non-public, private medical clinics. A classic clinic in the form of NPHI can be opened by almost anyone. Detailed regulations in this scope have been included in Article 4 paragraph 1 of the law on therapeutic activity. Currently, the most frequently encountered form of conducting therapeutic activity in the private healthcare sector is a partnership (civil law partnership or commercial partnership). The operating profile of a NPHI is closely connected with its functioning. A non-public healthcare institution can function as a basic healthcare (BH), which relies mainly on contracts with the National Health Fund (NHF) and complying with detailed requirements, particularly in the scope of medical personnel employment. To be profitable, such a clinic should provide services for on average 2.5 – 3.5 thousand of patients (Jarosz, 2016), while the “recommended number of service recipients in the care of one BH doctor should not exceed 2750 of persons”³. Another profile of activity can be a NPHI rendering exclusively private services – such an institution cannot be controlled by the NHF, but the financing sphere belongs to the founding entity and it is in its

³ §13 paragraph 1 of the Regulation NO 69/2013/DSOZ of the President of the NHF of 27 November 2013 on determining the conditions of concluding and implementing contracts for providing healthcare services such as: basic healthcare (NHF.2013.69 as amended).

interest to employ qualified medical personnel that will attract patients. The third profile of NPHI activity can be specialist out-patient care based on the contract with the NHF and being subject to detailed administrative and organizational requirements.

Non-public healthcare institutions are functioning in the market economy conditions and can co-exist among the entities that allow to win a competitive advantage (Amelung, 2013, p. 53; Mynarzová, Štverková, 2015). The dynamic development of medical services market requires medical institutions to adopt proper strategy of activity, particularly in the context of competition for patients. Thus, the basis for building a competitive position on the market is becoming the knowledge on the contemporary management specificity. It is necessary to manage patients skilfully in order to achieve a higher efficiency.

2. Patients – Customers of Non-public Healthcare Institutions

An essential link of each economic process and the main driver of organizations' functioning are customers. They play a key role in all organizations and any enterprise that wants to enter the market. Customers constitute the element that conditions the success in business. The success of a healthcare institution depends largely on the fact whether it considers in its activity interests of customers and strives to satisfy them (Ofili, 2014, p. 25). Thanks to understanding their needs and meeting their expectations a given therapeutic entity can achieve a success (Koupai, Alipourdarvish, Sardar, 2015, p. 105). Non-public healthcare institutions should be particularly open to their customers opinions and shape contacts with them in order to maintain long-term bonds.

The literature on the subject provides abundant definitions of the term “customer”. For the need of the present paper the Authors quote the definition included in the standard PN-EN ISO 9000-2015-10 (Majerník et al., 2017), which defines a customer as a person or organization that receive a product and stressing the fact that the customer can be internal or external towards the organization. An internal client is each employee who participates in creating the value added, in case of NPHIs this will comprise all employees working in the clinic (medical, administrative and managerial personnel). The personnel is considered to be the most important organizational resource, as it is the quality of employee work, their qualifications, experience and knowledge that the effectiveness of each organization's operation depends on (Cagliano, Grimaldi, Rafele, 2011). All employees shape the image of a given entity. An external customer will be the final recipient of a service or product – in this case: patients, suppliers and other interested parties. It is not possible for an organization to be successful without external customers, therefore every organization, in this one rendering medical services should identify their customers, recognize their needs, expectations and conduct their segmentation.

Patients of non-public healthcare institutions are a specific group of persons (customers) characterized by extraordinary requirements, expectations, for whom health and security of the therapeutic process are most important elements (Hampel, 2016). A patient is each person who uses medical services regardless of their health condition (Patel, 2009). A patient cannot be treated as a „suppliant”, as it is an exceptional customer of medical services. Patients should be recognized as the most important element of the given therapeutic entity's structure, without which the existence of clinics would become pointless. Each therapeutic entity should ensure its patients comprehensive medical services providing therapeutic services in a reliable manner, preserving high medical standards. The patient should be treated professionally since the first contact with a given NPHI, starting from information, registration process, medical advice and finishing with diagnostic examination and implementation of doctor's recommendations. Services for patients should be conducted in an efficient and comprehensive way.

Nowadays patients are becoming excellent “information carriers” on a given medical entity's functioning. They are shaping the therapeutic services market through expressing their subjective opinions and determining their preferences and expectations towards a given service provider. They constitute an integral part of the healthcare process (Murphy et al., 2006). Conducting surveys in the scope of patient/customer services of NPHIs allows for evaluation of medical institutions functioning, helps to design possible directions of changes and also undertake – if need be – remedial actions. Research and analyses concerning healthcare system functioning are of vital importance due to the necessity to monitor and adopt a set of various indexes that may prove helpful in the process of healthcare development.

3. Methodology

The research was conducted on a sample of 481 patients of non-public healthcare institutions of Czeszochowa District, with the use of the sample survey method and the survey questionnaire. The respondents were asked to evaluate on the five-grade rating system (where 5 means the best grade) a range of factors that influence the perception of the patient/customer services in NPHIs. The results have demonstrated high grades for the quality of service. The research used the Mann Whitney test, which made it possible to compare different groups of respondents in terms of service assessment in NPHIs. This test is a non-parametric equivalent of the t test for averages.

4. Results of empirical research

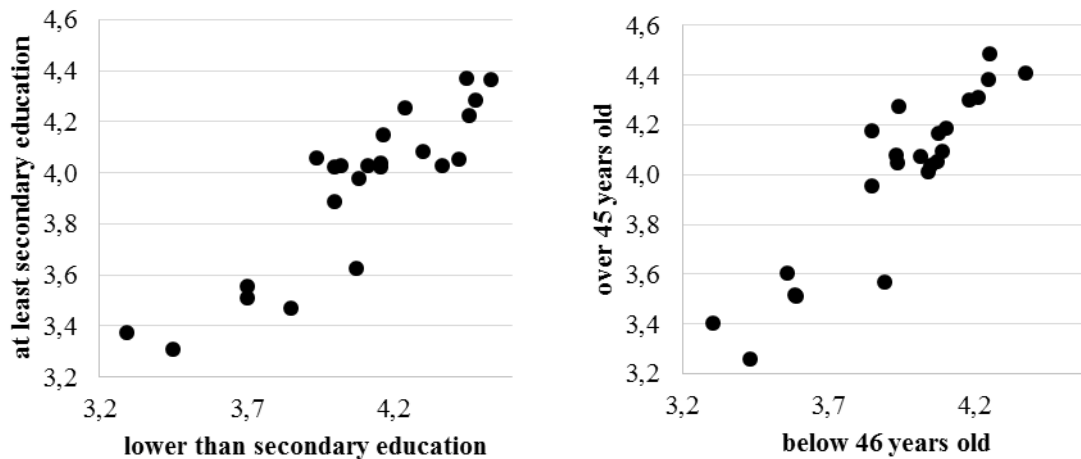


Figure 1. Values of patient service grades depending on the education level and age

Source: Own research

Respondents grades demonstrated a relatively high level (on average above 3.2), in majority of cases above 4. However, a certain discrepancy can be observed between the grades granted by persons of different education level and various ages. Therefore, actions have been taken to verify the significance of discrepancies of grades with relation to the indicated attributes. In order to do this the Mann-Whitney test has been used (Szajt, 2014, p. 88).

Table 1. Values of Mann-Whitney test for the elements of work organization at the health centre depending on demographic characteristics of respondents

Elements of work organization in the health centre (NPHI)	sex		age		education	
	Z	p	Z	p	Z	p
Convenience of health centre’s location	2.619	0.009	- 3.899	0.000	- 0.656	0.512
Opening and closing hours of the health centre	1.765	0.077	- 3.458	0.001	3.684	0.000
Standards of premises (cleanliness and aesthetics)	2.666	0.008	0.679	0.497	0.944	0.345
Social conditions (toilets)	2.776	0.006	- 0.950	0.342	1.012	0.312
Health centre’s adjustment to the needs of disabled patients	0.368	0.713	3.044	0.002	2.452	0.014
Specialised doctors availability	- 1.243	0.214	- 0.337	0.736	0.922	0.356
Queues to specialists/treatments/examinations	- 0.917	0.359	- 1.059	0.289	- 0.071	0.944
Availability of car park for the health centre’s customers/patients	- 1.007	0.314	1.635	0.102	0.474	0.635

Source: Own research

The surveyed women significantly higher compared to men evaluated the convenience of the health centre’s location ($Z = 2.619$; $p = 0.009$), standards of premises ($Z = 2.666$; $p = 0.008$) and social conditions ($Z = 2.776$; $p = 0.006$). Elderly persons higher than the younger ones evaluated the convenience of the health centre’s location ($Z = -3.899$; $p < 0.001$) and working hours of the health centre ($Z = -3.458$; $p = 0.001$). This is understandable in case of the second element as elderly persons usually have more free time, therefore adjustment to the working hours of the health centre does not constitute a problem for them. Younger persons in turn significantly higher compared to elderly ones

evaluate the adjustment of the health centre to the needs of disabled persons ($Z = 3.044$; $p = 0.002$). Persons with education level lower than secondary one significantly higher than those with at least secondary education level evaluated the working hours of the health centre ($Z = 3.684$; $p < 0.001$) and adjustment of the health centre to the needs of disabled persons ($Z = 2.452$; $p = 0.014$) (Table 1).

Table 2. Values of Mann-Whitney test for evaluating the elements of communication between the health centre and patients depending on the demographic characteristics of the respondents

Elements of communication with the health centre	sex		age		education	
	Z	p	Z	p	Z	p
Accurate and available information	3.030	0.002	- 0.983	0.326	1.277	0.202
Properly marked places/information boards	3.427	0.001	- 1.743	0.081	0.012	0.991
Possibility to handle the problem/by telephone/via the Internet	1.003	0.316	0.616	0.538	2.129	0.033
Legibility/availability of the health centre's website	- 0.048	0.962	0.742	0.458	0.882	0.378

Source: Own research

In the course of the research the statistically significant differentiation of evaluations between women (granting higher grades) and men with relations to the accuracy and availability of information on the NPHI websites has been confirmed ($Z = 3.030$; $p = 0.002$) as well as proper marking of places ($Z = 3.427$; $p = 0.001$). The age has not significantly influenced the differences in evaluations, however, persons with lower than secondary education level evaluated statistically higher compared to persons with at least secondary education level the possibility to handle the problem by telephone ($Z = 2.129$; $p = 0.033$) (Table 2).

Table 3. Values of Mann-Whitney test for evaluating the elements of appointment with the doctor at the health centre depending on the demographic characteristics of the respondents

Evaluation of the appointment with the doctor at the health centre	sex		age		education	
	Z	p	Z	p	Z	p
Professionalism and expertise	3.892	0.000	- 0.955	0.339	2.298	0.022
Commitment, accuracy, curiosity in solving the medical problem	3.302	0.001	0.412	0.680	2.930	0.003
Personal culture	3.049	0.002	- 1.564	0.118	1.382	0.167
Individual approach to the patient	2.032	0.042	- 0.788	0.431	1.732	0.083
Compliance with medical ethics principles	3.669	0.000	- 3.039	0.002	0.356	0.722

Source: Own research

Each of the studied elements of the appointment with the doctor at the health centre has been evaluated significantly higher by surveyed women compared to men. Elderly persons have evaluated higher the compliance with medical ethics principles compared to younger ones ($Z = -3.069$; $p = 0.002$). Persons with lower than secondary education level have evaluated significantly higher than those with at least secondary education level professionalism and expertise ($Z = 2.298$; $p = 0.022$) and the commitment to solve the medical problem ($Z = 2.930$; $p = 0.003$) (Table 3).

Table 4. Values of Mann-Whitney test for evaluating the nurses working at the registration desk depending on professional activity orientation

Attributes of the nurse working at the registration desk	Pensioners/white collar employees		Pensioners/blue collar employees		White collar/blue collar employees	
	Z	p	Z	p	Z	p
Professionalism and expertise	- 0.596	0.551	- 1.814	0.070	- 1.377	0.168
Commitment and the will to help to deal with the problem	- 0.779	0.436	- 0.888	0.374	- 0.173	0.863
Personal culture	0.888	0.375	- 0.265	0.791	- 1.316	0.188
Appearance of the person rendering services	1.109	0.267	- 1.375	0.169	- 2.624	0.009
Individual approach to the patient/customer	- 0.676	0.499	- 1.619	0.105	- 1.000	0.318
Speed and quality of service/handling the problem	0.089	0.929	- 1.579	0.114	- 1.675	0.094

Source: Own research

Professional activity orientation does not significantly influence the evaluation of persons working at the registration desk. Only appearance has been evaluated significantly higher by blue collar workers compared to white collar workers ($Z = -2.6245$; $p = 0.009$) (Table 4).

Table 5. Values of Mann-Whitney test for evaluating the elements of health centre's work organization depending on professional activity orientation

Elements of health centre's work organization (NPHI)	Pensioners/white collar employees		Pensioners/blue collar employees		White collar/blue collar employees	
	Z	p	Z	p	Z	p
Convenience of health centre's location	2.544	0.011	0.757	0.449	- 2.069	0.039
Availability of car park for the health centre's customers/patients	- 1.023	0.306	- 3.153	0.002	- 2.740	0.006
Opening and closing hours of the health centre	4.801	0.000	2.275	0.023	- 2.664	0.008
Standards of premises	- 0.886	0.376	- 1.546	0.122	- 0.708	0.479
Social conditions (toilets)	0.384	0.701	- 0.013	0.990	- 0.513	0.608
Health centre's adjustment to the needs of disabled patients	- 1.232	0.218	- 3.419	0.001	- 2.758	0.006
Specialised doctors availability/limits of appointments	2.552	0.011	0.177	0.860	- 2.000	0.045
Queues to specialists/treatments/examinations	2.038	0.042	1.102	0.271	- 0.493	0.622

Source: Own research

Convenience of the health centre's location is evaluated significantly higher by blue collar employees ($Z = -2.069$; $p = 0.039$), as well as pensioners ($Z = 2.544$; $p = 0.011$) than white collar employees. A similar situation occurs in case of evaluation of specialized doctors availability (respectively $Z = -2.000$; $p = 0.045$ i $Z = 2.552$; $p = 0.011$). Blue collar employees in turn evaluate significantly higher compared to the pensioners ($Z = -3.153$; $p = 0.002$) and white-collar workers ($Z = -2.740$; $p = 0.006$) availability of the car park to the customers and adjustment of the health centre to the needs of disabled persons (respectively $Z = -3.419$; $p = 0.001$ i $Z = -2.758$; $p = 0.006$). The surveyed pensioners evaluate significantly higher the opening and closing hours of the health centre both compared to blue collar employees ($Z = 2.275$; $p = 0.023$), as well as white collar employees ($Z = 4.801$; $p < 0.001$), whose grades are also lower than in case of blue collar employees ($Z = -2.664$; $p = 0.008$). Queues to specialists have been evaluated significantly better by the pensioners compared to the grades of white collar workers ($Z = 2.038$; $p = 0.042$) (Table 5).

Table 6. Values of Mann-Whitney test for evaluating the elements of health centre's communication with the patient depending on the professional activity orientation

Elements of communication with the health centre	Pensioners/white collar employees		Pensioners/blue collar employees		White collar/blue collar employees	
	Z	p	Z	p	Z	p
Accurate and available information	0.909	0.363	- 1.425	0.154	- 2.398	0.016
Properly marked places/information boards	1.359	0.174	0.737	0.461	- 0.661	0.508
Legibility/availability of the health centre's website	- 0.346	0.729	- 3.243	0.001	- 2.983	0.003
Possibility to handle the problem/by telephone/via the Internet	- 0.154	0.877	- 1.004	0.315	- 0.815	0.415

Source: Own research

In the scope of health centre's communication with the patient few significant differences have been observed among the respondents of various professional activity orientation. Blue collar employees significantly higher than white collar employees ($Z = -2.983$; $p = 0.003$) and pensioners ($Z = -3.243$; $p = 0.001$) have evaluated the availability of the health centre's website. White collar employees have evaluated significantly lower compared to blue collar employees evaluated the accuracy and availability of information ($Z = -2.3989$; $p = 0.016$) (Table 6).

Each of the studied elements of the appointment with the doctor at the health centre has been evaluated significantly higher by the pensioners compared to white collar employees and simultaneously insignificantly different compared to blue collar workers. Blue collar workers in turn significantly higher compared to white collar workers evaluated professionalism and expertise of doctors ($Z = -2.606$; $p = 0.009$), commitment in solving the medical problem ($Z = -2.352$; $p = 0.019$) individual approach to the patient ($Z = -2.457$; $p = 0.014$) and compliance with medical ethics principles ($Z = -2.693$; $p = 0.007$) (Table 7).

Table 7. Values of Mann-Whitney test for evaluating the elements of the appointment with the doctor at the health centre depending on the professional activity orientation

Evaluation of the appointment with the doctor at the health centre	Pensioners/white collar employees		Pensioners/blue collar employees		White collar/blue collar employees	
	Z	p	Z	p	Z	p
Professionalism and expertise	2.976	0.003	0.438	0.661	- 2.606	0.009
Commitment. accuracy. curiosity in solving the medical problem	2.290	0.022	- 0.191	0.849	- 2.352	0.019
Personal culture	3.018	0.003	1.567	0.117	- 1.502	0.133
Individual approach to the patient/customer	2.974	0.003	0.578	0.563	- 2.457	0.014
Compliance with medical ethics principles	3.364	0.001	0.743	0.458	- 2.693	0.007

Source: Own research

Evaluation of medical personnel (doctors in particular) constitutes an essential element of evaluating the quality of healthcare system functioning. Patients attach great importance to the interpersonal aspects connected with the visit to the doctor, which is understandable as they often expect the doctor not only a precise advice but also support.

5. Conclusion

Public opinion is of key importance for the society. It constitutes a perfect source of information and reference point for taking actions in various areas. Identifying the perception of healthcare system by patients is presently treated as one of the elements that confirm the quality of rendered medical services. Subjectively defined evaluation of the quality of health care and its particular elements functioning reflects the compliance level of satisfying the needs and expectations of the patients. Patient opinions on the quality of services rendered by a health centre are based primarily in the results of the treatment. Patients evaluate medical services through the prism of efficiency and security of the therapeutic process, and particularly its result. The whole of patient services at a non-public healthcare institution – starting with services at the registration desk, attitude of medical personnel, through the visit to the doctor – definitely influences their opinion on the given health centre and does not concern the medical side of the service only.

The presented results of sample surveys have demonstrated that despite the general opinion of the society that the healthcare system requires improvement, the level of services rendered at non-public healthcare institutions has been evaluated high (above 4). A certain inconsistency has been identified among the grades granted by persons of different ages and with various education levels. In case of evaluating the attributes of persons rendering services at the registration desk, neither the demographic characteristics of the respondents nor their professional activity orientation have significantly influenced the results. The respondents evaluated high only the importance of medical personnel appearance (particularly women, persons with lower education level and blue-collar employees). The largest differences in evaluations (with regard to demographic characteristics and professional activeness) have been observed with reference to: convenience of the health centre's location (evaluated high by elderly persons and white-collar employees), standards of premises and social conditions (evaluated higher by women), adjustment of the health centre to the needs of disabled persons (significantly higher evaluated by white collar employees and younger persons). High grades were given to importance of communication with the patient, in particular accuracy and availability of information, the possibility to handle the problem by the phone or via the Internet and marking of places at the health centre (information boards), which was significantly influenced by sex, education level and professional activity orientation. Particularly important in the respondents' evaluations are: professionalism, expertise and ethics of the doctor at the health centre, which have been significantly influenced by age, education level and professional activity of the surveyed persons (in particular pensioners and white-collar employees granted higher grades here).

The value of the conducted research constitutes empirical verification of the inconsistencies in evaluation of services rendered by non-public health institutions of Czestochowa District. Obtained results are of cognitive value (provide information on patient satisfaction level with reference to services at the therapeutic entity) as well as utilitarian one (indicate the areas in the scope of services

that require improvement). Collecting data on the evaluation of services at health centres allow for identifying and effectively settle in the future potential problems connected with receiving satisfactory quality of patient services.

References

- Amelung, V.E. (2013). *Healthcare Management. Managed Care Organisations and Instruments*. Berlin Heidelberg: Springer-Verlag.
- Cagliano, A.C., Grimaldi, S., Rafele, C. (2011). A systemic methodology for risk management in healthcare sector. *Safety Science*. vol. 49. iss. 5. pp. 695-708.
- Chluska, J. (2014). *Rachunkowość podmiotów leczniczych*. Warszawa: ABC a Wolters Kluwer business.
- Hampel, K. (2016). Patients' Satisfaction In Health Care On The Example Euro Health Consumer Index. *Pragmata Tes Oikonomias*. vol. X. pp. 119-131.
- Harsono, S., Widyantoro, H., Prawitowati, T., Rahmat, B. (2017). The Development of Service Quality Model as a Criterion in Selecting the Banks in Indonesia. *Polish Journal of Management Studies*. vol 15. iss. 2. pp. 82-92.
- Jarosz, P. (2016). *Czy oplaca się otworzyć placówkę medyczną*. [online]. Available: <http://niezdrowybiznes.pl/czy-oplaca-sie-otworzyc-placowke-medyczna/>. [2017. November 17].
- Koupai, M.R., Alipourdarvish, Z., Sardar, S. (2015). Effects of trust and perceived value on customer loyalty by mediating role of customer satisfaction and mediating role of customer habit. *Advanced Social Humanities and Management*. vol. 2. iss. 1. pp. 102-112.
- Majerník, M., Daneshjo, N., Chovancová, J., Sančiová, G. (2017). Design of Integrated Management Systems According to the Revised ISO Standard. *Polish Journal of Management Studies*. vol. 15. iss. 1. pp. 135-143.
- Murphy, K., O'Shea, E., Cooney, A., Shiel, A., Hodgins, M. (2006). *Improving Quality of Life for Older People in Long-Stay Care Settings in Ireland*. Dublin: National Council on Ageing and Older People.
- Mynarzová, M., Štverková, H. (2015). Public Support as an Important Factor for Competitiveness of SMEs in the European Union. In: *Zborník vedeckých prác Aktuálne problémy podnikovej sféry 2015* (pp. 452-461). Bratislava: Ekonomická univerzita Bratislava. Fakulta podnikového manažmentu. Katedra podnikovohospodárska.
- Ofili, O.U. (2014). Patient satisfaction in health care delivery – a review of current approaches and methods. *European Scientific Journal*. vol. 10. iss. 25. pp. 25-39.
- Patel, G. (2009). *Total Quality Management in Healthcare*. [online]. Available https://www.researchgate.net/publication/283621788_Total_Quality_Management_in_Healthcare [2017. December 10].
- Paszowska, M. (Eds.) (2015). *Zarządzanie podmiotami wykonującymi działalność leczniczą*. Warszawa: Wydawnictwo Difin.
- Paszowska, M. (2012). Pożegnanie NZOZ – zmiany dla świadczeniodawców medycznych. *Przedsiębiorczość i zarządzanie*. vol. XIII. no. 5. pp. 57-71.
- PN-EN ISO 9000-2015-10. (2015). *Systemy zarządzania jakością – Podstawy i terminologia*.
- Szajt, M. (2014). *Przestrzeń w badaniach ekonomicznych*. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Ustawa z dnia 15 kwietnia 2011r. o działalności leczniczej (Dz.U. z 2011r., Nr 112, poz. 654, z późn. zm.).
- Ustawa z dnia 2 lipca 2004r. o swobodzie działalności gospodarczej (Dz.U. z 2015r., poz. 584, z późn. zm.).
- Ustawa z dnia 30 sierpnia 1991r. o zakładach opieki zdrowotnej (Dz.U. z 1991r., Nr 91, poz. 408, z późn.zm.).
- Zarządzenie Nr 69/2013/DSOZ Prezesa NFZ z dnia 27.11.2013 r. w sprawie określenia warunków zawierania i realizacji umów o udzielanie świadczeń opieki zdrowotnej w rodzaju: podstawowa opieka zdrowotna (NFZ.2013.69 z późn. zm.).
- Zimna, T. (2014). *Zawieranie umów o udzielanie świadczeń opieki zdrowotnej*. Wyd. 3. Warszawa: Wydawnictwo Wolters Kluwer SA.

Beata Ślusarczyk^{1*}

Czestochowa University of Technology

Poland

North-West University

South Africa

Magdalena Baryń²

Czestochowa University of Technology

Poland

80. TERMS OF THE DEVELOPMENT OF FAMILY BUSINESSES IN SELECTED COUNTRIES IN EUROPE

Abstract: Family businesses are the driving force of economies in almost all countries of the world. These are both small local businesses and global corporations owned by members of one family. They largely determine the competitiveness of the economies of countries; they are responsible for the creation of a significant part of GDP and provide jobs. Therefore, it is worthwhile to consider in which European countries family businesses are operating best and where they face the biggest barriers. The objective of the paper was to compare conditions of the operation of family businesses in selected European countries. This article was mainly based on the *Länderindex Familienunternehmen* report and other available studies which allowed characterizing the functioning of family businesses in EU countries. According to the report, Luxembourg, United Kingdom, Switzerland and Finland were the best places to locate large family businesses. The least friendly were Italy and Spain, which may be surprising given that in these countries, the share of family businesses among all enterprises is one of the higher in Europe and Spain is a country where these entities receive a great support of the scientific community. This particular paradox may be a contributing factor to further research to which smaller entities should also be included. Only then will it be possible to make a full comparison of European countries and to determine which of them is the most friendly for family businesses.

Keywords: European family businesses, family business, family business operating.

JEL Classification: D190, M210

1. Introduction

Family businesses are the driving force of economies in almost all countries of the world. These are both small local businesses and global corporations owned by members of one family. They largely determine the competitiveness of the economies of countries; they are responsible for the creation of a significant part of GDP and provide jobs.

The share of family businesses in the creation of GDP and job creation causes that family businesses become the object of a growing interest of not only scientific circles but also state institutions which are beginning to appreciate their role and attempting to take actions aimed at facilitating their operation. The objective of the paper is to compare conditions of the operation of family businesses in selected European countries. This comparison will allow for the isolation of the group of countries which create the friendliest operating conditions to family businesses and the ones in which the activity of these entities encounters the greatest difficulties.

2. Literature review

The significance of family businesses for the economy is widely known and increasingly emphasized (Surdej, Wach, 2010; Della Piana, Vecchi, Cacia, 2012; Lemańska-Majdzik 2016; Leszczewska, 2016; Martín Castejón, Aroca López, 2016 Zapletalov, 2017). Despite general agreement as for the key role played by these entities, there is still no consensus in terms of defining family businesses. The variety of definitions is pinpointed by at least the researchers of the subject such as Soler and Gémar (2016) or Cano-Rubio, Fuentes-Lombardo and Vallejo-Martos (2017), and the lack of a uniform definition is one of the main problems of the research into family businesses (Machek, 2016). In view of the above,

¹ Assoc. Prof. Eng. Beata Ślusarczyk Ph.D.; Al. Armii Krajowej 19B, Częstochowa, Poland, beata.slusarczyk@wz.pcz.pl

² Msc. Magdalena Baryń; Al. Armii Krajowej 19B, Częstochowa, Poland, magdabaryn@op.pl

* Corresponding author

it is extremely difficult to define precisely the number of these entities and their impact on the economy (Ślusarczyk, Baryń, 2016). In Europe itself, as noted by Mandl (2008), there are 90 different definitions. They are based on various criteria (mainly: ownership, management and succession) or sets of these criteria (Litz, 2008), and reconciling different points of view and selecting the most appropriate configuration of criteria, simultaneously taking into account an enormous diversity of family businesses (Arteaga, Menéndez-Requejo, 2017), seems to be virtually impossible nowadays. At the same time, some authors believe that common definition of family businesses may be deceptive as it will not take into account substantial differences in legal and institutional conditions (Carney, 2005; Dyer, 2006; San Martin-Reyna, Duran-Encalada, 2012).

Despite the differences in definition, there is widespread agreement that family businesses have a number of characteristics that distinguish them from other entities. On the one hand, these features may determine the competitive advantage of family businesses, but on the other hand, they may constitute additional barriers to their development and expansion. They may include, among others, the barriers: independence, competences, inheritance and generation change, intrafamily relationships, conflicting financial interests and the structural one (Winnicka-Popczyk 2016; Frankovský, Birknerová, 2017; Meyer, Meyer, 2017). Some of them are internal, although some are associated with the environment, and the support of the State authorities may play a great role in overcoming them. The other group includes at least the financial barrier which may be co-created by e.g. high taxes preventing the allocation of funds for other purposes or the barrier to inheritance and generation change, including the issues such as inheritance tax or the lack of legal solutions enabling trouble-free transfer of ownership to successors.

3. Family Businesses in the Economies of Selected European countries

3.1. Methodology

The paper is based on the secondary data which are different types of reports concerning the operation of family businesses in Europe. Among them, the most important role is played by the report *Länderindex Familienunternehmen* published by The Foundation for Family Businesses from Germany, the methodology of which requires deeper insight. It is already the sixth edition of the report which evaluates the attractiveness of selected European countries for family businesses. The United States was also incorporated into the analysis. The report was based on the requirements of family businesses (mostly from the industrial sector) with revenues of more than 100 million EUR, for which the transfer of the activity to another country is a real option. It was created by means of the assessment of the set of key factors in six main areas. There was distinguished a range of input variables which, to allow the analysis, were given the values ranging 0 to 100. The value of 100 points was given to the country which was the best in terms of this variable, 0 points – to the worst country and the scores for other countries were established using an appropriate linear transformation. Therefore, the values of input variables represent the percentage value which the specific country achieved compared to the best country. The input variables were used to create a set of sub-indices which were given relevant weights and grouped into 6 main criteria. These criteria concern the following areas:

- taxes (consist of: taxation of national business activities, inheritance taxes, taxation of cross-border business activities and complexity of the tax system sub-indicators),
- labor (consist of: labor costs, hourly labor productivity, education spending, PISA results and educational level of labor force sub-indicators),
- regulation (in terms of: labor market, collective-bargaining law, product market, doing business, co-determination),
- financing (credit market, creditor protection, credit information, debt and sovereign ratings sub-indicators),
- infrastructure and institutions (transport infrastructure, information and communications infrastructure, legal certainty, criminality and political stability and anti-corruption measures sub-indicators),
- energy (consist of: electricity prices, gas and fuel prices, security of electricity supply, energy import risk and climate targets sub-indicators).

The values obtained for the above criteria were subsequently aggregated (during the aggregation the criteria were also given relevant weights) thus obtaining Country Index for Family Businesses. Since the category of “energy” was incorporated into the analyzes only in the fifth edition of the report

(of 2014) and there are no complex data in this area concerning previous years, this criterion was excluded from the analysis in between period comparisons, which resulted in the necessity for the change in the weights of the other criteria (see Table 1) and resulted in the change of the value of the aggregated index.

Table 1. Weighting of sub-indices when calculating the overall index

Criterion	Weighting for six dimensions	Weighting for five dimensions
Taxes	0.20	0.25
Labor	0.175	0.20
Regulation	0.175	0.20
Financing	0.15	0.15
Infrastructure and institutions	0.15	0.20
Energy	0.15	-

Source: Bräutigam, Dutt, Evers, Heinemann, Kraus, 2016, p. 235

In addition to the *Länderindex Familienunternehmen* report, this article also uses data from *Family Business Yearbook 2017, Overview of Family Business Relevant Issues* and *Global Family Business Index*.

3.2. The role of Family Businesses in Selected Economies

Family businesses can compete efficiently with non-family businesses. The “familiness” does not prevent them from becoming important players on the global market, conducting their activity all over the world. The family businesses are even global brands such as Wal-Mart, Volkswagen, Ford, Dell, Auchan, Arcelor Mittal, or L'Oréal. They operate in different industries where they achieve undeniable success, often being the leaders of these industries.

From among 500 largest family businesses all over the world as many as 224 come from Europe, which amounts to almost 45% of the total number of entities. They are responsible for creating about 14.5% of the European GDP, creating 2.7% of all jobs on the continent. These companies have been operating on the market for more than 90 years and almost 40% of them are listed on the stock-exchange (Ernst & Young 2017). The information concerning the largest family businesses in selected countries is presented in Table 2.

Table 2. Family businesses from the group of 500 largest family businesses in selected European countries (as of June 2017)

Country	The largest family businesses in general	Family businesses over 100 years old	Family businesses listed on the stock exchange
Austria	4	2	0
Belgium	9	5	8
Czech Republic	0	-	-
Denmark	6	1	1
Finland	1	1	1
France	29	9	17
Germany	70	36	14
Ireland	1	1	0
Italy	17	4	8
Luxembourg	5	2	2
Netherlands	12	6	3
Poland	0	-	-
Slovakia	0	-	-
Spain	11	2	6
Sweden	4	2	1
Switzerland	19	7	8
United Kingdom	10	1	3

Source: Own elaboration based on Global Family Business Index, 2017

Almost 1/3 of the largest family businesses in Europe are located in Germany. Other important locations for these entities are France, Switzerland and Italy. Poland, Czech Republic and Slovakia have no representative in the group of 500 largest family businesses. This is largely due to the Communist regime prevailing in these countries after World War II in which the activity of private companies, i.e. family businesses was particularly difficult. After the political transformation the

countries of Central and Eastern Europe opened up to the economic cooperation with the countries of Western Europe, Scandinavia and the United States, which resulted in an increase in their welfare (Jankiewicz, 2017), however, they are still at a lower level of the economic development, which exerts impact on development and expansion opportunities of enterprises from these countries.

More than 41% of the largest European family businesses have been operating for more than 100 years. The countries in which the companies with over 100 years of tradition are the most important are Germany, Belgium, Austria, Netherlands and Sweden. More than 36% of the largest European family businesses are listed on the stock-exchange. Most of them are in Germany, however, in this country, they only amount to 20% of the total number of entities. In Belgium, almost all the largest family businesses are listed on the stock-exchange. These companies amount to a significant percentage also in France, Italy, Spain and Switzerland.

However, family businesses are not only global enterprises with hundreds of millions of euro revenues but also, or rather most of all, much smaller entities, operating on the domestic market or only the local one. It is the companies from the sector of small and medium enterprises that are the basis for national economies (Okřęglicka, Mynarzová, Kařa, 2015) and it is their success that determines the fate of millions of people. The number of family businesses is different in different countries like their share in the overall structure of enterprises. So far, the only comprehensive report collectively describing family businesses in individual countries of Europe has been the study prepared for the European Commission in 2008 (Mandl, 2008). It indicates that the largest proportion of family businesses in the total number of enterprises is in Estonia (90%), Slovakia (90%), Cyprus (90%), Czech Republic (87%), Spain (85%), Finland (80%), Austria (80%), Greece (80%) and Denmark (77%), whereas the smallest one in Lithuania (38%), Latvia (58%) and Sweden (55%). In France, this percentage amounts to 75%, similarly - in Germany, Ireland, Italy and Poland. The 70% share of these companies in the overall structure of enterprises was recorded in Belgium and Luxembourg, 65% in United Kingdom, and 61% in Netherlands. There are no data for Switzerland in this report. However, due to the aforementioned lack of a uniform definition of family businesses and the methodology for their examination, in various national studies, there can be found different data, e.g.:

- in the research conducted in Poland in 2016, the share of potentially family businesses in the overall structure of enterprises in this country was estimated at 92% (Lewandowska, Więcek-Janka, Hadryś-Nowak, Wojewoda, Tylczyński, 2016),
- the report developed by Danmark Statistik indicates that, in 2014, 60% of all enterprises in Denmark were family businesses (Danmark Statistik, 2017),
- the report prepared by Instituto de la Empresa Familiar indicates that, in Spain, in 2013 family businesses amounted to 90% of all enterprises (Instituto de la Empresa Familiar 2015).

These studies were carried out in later years than the report prepared for the European Commission, however, the fact of the passage of a few years hardly explains such big differences as it is unlikely that, in all these countries, the share of family businesses in the overall structure of enterprises did not change by a few or even several percentage points. The explanation of these discrepancies is therefore different methodology of the conducted research and adoption of other criteria for recognizing entities as family businesses.

However, all the scores clearly indicate that family businesses are extremely important elements of economies of individual countries of both Western and Central and Eastern Europe. Therefore, the provision of appropriate conditions of their operation should be one of the priorities of national authorities.

3.3. The Conditions for the Operation of Family Businesses in Selected Countries

The conditions for the operation of family businesses in individual countries are different and, at the same time, affect the selection of specific countries as areas of the possible location of these entities. Therefore, recognizing the key conditions and their objective assessment takes on vital importance, which in turn allows for comparing countries in these terms. In Figure 1, there are presented the values of Country Index achieved by individual countries, whereas, in Table 3, there are summarized the values of sub-indices in six analyzed areas.



Figure 1. Geographical representation of the Country Index in 2016

Source: Bräutigam et al., 2016, p. 83

In 2016 the friendliest countries to family businesses were Luxembourg, United Kingdom and Switzerland. At the other extreme there was Italy with almost twice as bad score of Country Index for Family Businesses. Poor scores of the countries such as Italy, Spain France or Belgium may be surprising since there are many of the largest European family businesses. Also Germany, which most of large family businesses in Europe come from, was not among the leaders of classification concerning the favoring of these entities. This could mean that when a company reaches a certain level of development and internationalization, the conditions in the home country are already less important as it can better encounter barriers and also identify and manage risk (Kot, Dragon, 2015).

It is also worth considering that Country Index indicates that the best conditions for the operation of family businesses are provided by small countries (the exception is United Kingdom) whereas the worst conditions for these entities prevail in large countries (the exception is Belgium). This phenomenon may be an interesting contribution to further research in this field. Poland occupies the 12th position (considering only European countries) in this listing, thus the score is not particularly positive. However, taking into account only the countries of similar size, its score looks much better.

Table 3. Values of sub-indices for individual countries in 2016

Country	Taxes	Labor	Regulation	Financing	Infrastructure and institutions	Energy
Austria	68.27	41.92	26.38	65.26	59.70	63.57
Belgium	35.23	47.51	29.95	50.11	53.74	66.46
Czech Republic	76.25	42.82	40.86	68.45	27.62	63.00
Denmark	51.14	55.21	64.42	66.11	64.08	68.29
Finland	60.34	55.28	42.52	67.75	81.80	42.81
France	38.42	45.37	35.49	53.60	43.82	63.11
Germany	53.38	41.98	35.60	79.37	60.24	52.51
Ireland	55.96	57.63	69.58	49.88	61.23	52.48
Italy	59.22	33.85	25.56	29.88	6.67	49.11
Luxembourg	73.83	62.68	40.91	56.25	85.41	75.00
Netherlands	65.30	51.69	50.79	56.92	78.01	66.68
Poland	78.75	49.32	29.74	63.44	14.12	52.56
Slovakia	86.20	36.06	30.35	62.94	9.20	48.79
Spain	47.35	43.45	29.58	44.10	25.96	68.43
Sweden	73.26	43.10	35.55	73.77	67.30	54.57
Switzerland	66.69	47.79	71.41	73.70	84.31	44.89
United Kingdom	70.02	56.08	84.27	67.35	56.85	52.82
USA	32.04	57.73	87.97	81.39	51.83	68.31

Source: Own elaboration based on Bräutigam et al., 2016

While analyzing the values of indices for individual categories, it can be noticed that there is no country to achieve the highest values in each area. Moreover, as shown on the example of Slovakia, it is possible that a country achieves the highest score in one area (“taxes”) and it offers family

businesses the worst operating conditions in another one (“labor”). The lack of a strong leader in the classification simultaneously in all the categories brings about some freedom of interpretation of the results since individual areas may have different meaning for different companies. If a family business takes the most considerable interest in e.g. the amount of taxes, and the other areas of operation are less important, it may occur that the best location for it will be Poland, not Switzerland. Therefore, despite the fact that Luxembourg, United Kingdom and Switzerland are generally found the friendliest to family businesses, individual entities may approach this differently.

Italy is the country where, in most areas, there are recorded the poorest results. Therefore, it should not be surprising that their Country Index is by far the worst among all the analyzed countries. Also Spain faces similar problems. In this context, the case of France can be surprising as this country does not achieve the lowest values in any criterion (very poorly falls out only in the “taxes” area) whereas its Country Index is only by 3 points higher than for Spain. The opposite situation can be observed in the case of United Kingdom – it belongs to the leaders only in “labor” and “regulation” areas and its overall Country Index places it in the second position.

When reviewing the scores of the best countries in individual categories one may notice significant differences. Whereas the country, being the leader, scored 80 points in the criteria of “taxes”, “regulation”, “financing” and “infrastructure and institutions”, Luxembourg, which is the best in the area of “labor”, may boast of only less than 63 points. This means that, in spite of the overall highest score in the whole category, the country did not achieve the best scores in many sub-indices. When analyzing the point spread between the best and the worst country in individual criteria, it can be observed that the smallest differences are in the case of the area of “labor” (28.83 pkt.) and the biggest for the criterion of “infrastructure and institutions” (78.74 pkt.). This means that, in the area of “labor”, the conditions in the analyzed countries are the most similar whereas, in the area of “infrastructure and institutions”, there are the greatest differences between the best and the worst country.

It is worth supplementing the detailed analysis concerning the year of 2016 with the data concerning the changes in the Country Index for Family Businesses ranking in time. In Table 4, there are presented the positions of individual countries in the previous editions of the report. All the available data were recalculated in accordance with the latest methodology, therefore, they may differ from the data presented in the previous editions of the report.

Table 4. Positions of selected countries in the Country Index rankings in 2006-2016

Country	Rank					
	2016	2014	2012	2010	2008	2006
Switzerland	1	1	1	1	3	2
United Kingdom	2	2	3	2	1	1
Finland	3	3	2	3	2	3
Luxembourg	4	4	5	4	6	8
Netherlands	5	5	8	9	11	12
Denmark	6	6	4	5	4	5
USA	7	7	6	6	5	4
Sweden	8	8	7	7	8	7
Ireland	9	9	9	8	7	6
Austria	10	10	10	10	10	9
Germany	11	11	11	11	12	10
Czech Republic	12	12	12	13	13	13
Poland	13	13	15	15	17	17
Slovakia	14	14	13	12	9	11
France	15	15	14	14	14	14
Belgium	16	16	16	16	16	15
Spain	17	17	17	17	15	16
Italy	18	18	18	18	18	18

Source: Brütigam et al., 2016, p. 88

The scores differ from the ones presented in Figure 1 since, as indicated in the research methodology, in the between period comparisons, the area of “energy” is not included. After exclusion of this criterion from the analysis it occurs that Luxembourg dropped from the leading position to the fourth place whereas Finland ranked up to the top three positions. In the case of other countries, the change in the number of sub-indices and their weight brought slight changes.

For the whole analyzed period the top three positions were occupied by the same countries and Switzerland has been the leader of the ranking since 2010. On the other hand, Italy has been constantly in the last position since the first edition of the research. Over the years, most countries in the ranking changed the places by 1-2 positions or their positions remained unchanged. The exception is Holland which ranked up from the 12th position in 2006 to the 5th one in years 2014 and 2016. Luxembourg and Poland may also boast of a relatively significant rise. The largest falls (by 3 positions) were recorded by the USA, Ireland and Slovakia. In the case of major changes in the position of the country in the ranking, it can be assumed that their main driving force is (positive or negative) changes taking place in this country. However, in the case of a rise or a fall by 1-2 positions, their source may also be the changes in the countries occupying neighboring positions in the ranking (if the operating conditions in the A country deteriorate, the B country may rank up without introducing any changes).

An interesting supplement of the analysis of the operation of family businesses in selected European countries can be the comparison of the collected data with the results of the *Doing Business* report assessing the ease of conducting a business activity in individual countries (World Bank 2016). The report indicates that, in Europe, the best conditions for conducting a business are in Denmark (the 3rd position). Among the top ten countries in the world were also United Kingdom (6th position) and Sweden (8th position). Among the countries analyzed in the paper, the lowest position was occupied by Luxembourg. Therefore, these scores significantly differ from the analyzes concerning the conditions for the operation of family businesses. At this point, the conclusion could be that family businesses need radically different conditions to operate efficiently than other enterprises. However, taking into account the differences in the selection of criteria and the methodology of the conducted analyzes and having in mind that family businesses constitute the majority of entities of national economies, this conclusion seems to be unjustified. These comparisons are thus not fully reliable, however, they are an interesting supplement and may serve as a starting point for further research in this field.

4. Conclusion

Family businesses, as the basic element of national economies, deserve interest and support for their activity. Creating the conditions which are friendly to these entities should be one of significant tasks of national authorities. However, none of the countries in Europe, and presumably in the whole world, can boast of the possession of solutions favorable for family businesses in all the areas being the focus of interest of these entities, which prevents from indicating clearly the place where the conditions for the operation of family businesses are the best. Therefore, the values of the aggregated Country Index for Family Business must be treated rather as a clue, not a firm argument in the discussion on the conditions for the operation of family businesses in individual countries.

The results presented in this paper can be used in two ways. First of all, they can be used by family businesses, which consider moving the business to another country. The comparison of operating conditions in different areas indicates in which country should be the easiest to act for these entities. Secondly, they can provide important information for state administration bodies and institutions designed to support the functioning of family businesses. They indicate from which countries an example can be taken and in which areas the current solutions should be improved.

The main constraint of the conducted research is the fact that, in the report whose data constitute the grounds for the paper, the analyzes were conducted in relation to large entities. The distinguished areas are certainly very important also for the activity of small entities, however, there is no doubt that, in order to achieve the fuller picture of the conditions of the operation of family businesses in the countries of Europe, it is necessary to conduct further research in this field, particularly taking into account the conditions typical of smaller entities constituting the majority of family businesses.

The issue of the conditions of the operation of family businesses in different countries has a huge potential for further exploration. As emphasized above, it is worth considering what factors bring about that family entrepreneurship finds more favorable conditions for development in smaller countries. An interesting challenge can also be an attempt to explain the paradox concerning the fact that the countries where the share of family businesses in the overall structure of enterprises is the highest in Europe are the least friendly to these entities. This may be particularly surprising in the case of Spain where family entrepreneurship is the object of a great interest and support of scientific circles. An important supplement of the considerations included in the paper can also be an in-depth comparative analysis of organizational and legal conditions influencing the operation of family businesses in individual countries, and also, among others, relating to the issues associated with the processes of succession (e.g. inheritance tax, legal transfer of ownership of the company).

References

- Arteaga, R., Menendez-Requejo, S. (2017). Family Constitution and Business Performance: Moderating Factors. *Family Business Review*, vol. 30, iss. 4, pp. 320-338.
- Bräutigam, R., Dutt, V., Evers, M.T., Heinemann, F., Kraus, M. (2016). *Länderindex Familienunternehmen. 6 Auflage*. Munich: Stiftung Familienunternehmen.
- Cano-Rubio, M., Fuentes-Lombardo, G., Vallejo-Martos, M.C. (2017). Influence of the lack of a standard definition of “family business” on research into their international strategies. *European Research on Management and Business Economics*, vol. 23, pp. 132-146.
- Carney, M., (2005). Corporate Governance and Competitive Advantage in Family-Controlled Firms. *Entrepreneurship: Theory & Practice*, vol. 29, iss. 3, pp. 249-265.
- Danmark Statistik (2017). *Family Businesses in Denmark*, [online]. Available: <http://www.europeanfamilybusinesses.eu/publications/75/29/Family-Businesses-in-Denmark> [2017, November 10].
- Della Piana, B., Vecchi, A., Cacia, C. (2012). Towards a better understanding of Family Business Groups and their key dimensions. *Journal of Family Business Strategy*, vol. 3, pp. 174-192.
- Dyer, W.G. (2006). Examining the family effect on firm performance. *Family Business Review*, vol. 19, iss. 4, pp. 253-273.
- Ernst & Young (2017). *Family Business Yearbook*, [online]. Available: <https://familybusiness.ey-vx.com/fb-yearbook-flipbook-2017/mobile/index.html#p=1> [2017, November 10].
- Frankovský, M., Birknerová, Z. (2017). Cognitive distortions in managerial work – Differences between male and female managers. *Polish Journal of Management Studies*, vol. 15, iss. 2, pp. 47-57.
- Instituto de la Empresa Familiar (2015). *La Empresa Familiar en España*, [online]. Available: <http://www.iefamiliar.com/publicaciones/la-empresa-familiar-en-espana-2015> [2017, November 10].
- Jankiewicz, J. (2017). GDP, time allocation and annual time worked per adult in central and eastern European countries. *Economics and Sociology*, vol. 10, iss. 1, pp. 94-111.
- Kot, S., Dragon, P. (2015). Business Risk Management in International Corporation. *Procedia Economics and Finance*, vol. 27, pp. 102-108.
- Lemańska-Majdzik, A. (2016). Otoczenie i jego wpływ na funkcjonowanie przedsiębiorstw rodzinnych – wyniki badań empirycznych. *Przedsiębiorczość i Zarządzanie*, vol. 17, iss. 6, part.1, pp. 273-284.
- Leszczewska, K. (2016). *Przedsiębiorstwa rodzinne. Specyfika modeli biznesu*. Warszawa: Difin.
- Lewandowska, A., Więcek-Janka, E., Hadrys-Nowak, A., Wojewoda, M., Tylczyński, Ł. (2016). *Firma rodzinna to marka*. Poznań: Instytut Biznesu Rodzinnego.
- Litz, R.A. (2008). Two Sides of a One-Sided Phenomenon: Conceptualizing the Family Business and Business Family as a Möbius Strip. *Family Business Review*, vol. 21, iss. 3, pp. 217-236.
- Machek, O. (2016). Comparative performance of foreign and domestic family firms in Czech Republic. *Journal of International Studies*, vol. 9, iss. 1, pp. 205-218.
- Mandl, I. (2008). *Overview of Family Business Relevant Issues. Final Report*, Wiedeń: KMU Forschung Austria.
- Martín Castejón, P.J., Aroca López, B. (2016). Corporate social responsibility in family SMEs: A comparative study. *European Journal of Family Business*, vol. 6, pp. 21-31.
- Meyer, D.F., Meyer, N. (2017). Management of small and medium enterprise (SME) development: An analysis of stumbling blocks in a developing region. *Polish Journal of Management Studies*, vol. 16, iss. 1, pp. 127-141.
- Okręglicka, M., Mynarzová, M., Kaňa, R. (2015). Business Process Maturity in Small and Medium-Sized Enterprises. *Polish Journal of Management Studies*, vol. 12, iss. 1, pp. 121-131.
- San Martín-Reyna, J.M., Duran-Encalada, J.A. (2012). The relationship among family business, corporate governance and firm performance: Evidence from the Mexican stock exchange. *Journal of Family Business Strategy*, vol. 3, pp. 106–117.
- Soler, I.P., Gémar, G. (2016). The impact of family business strategies on hotel room prices. *European Journal of Family Business*, vol. 6, pp. 54-61.
- Surdej, A., Wach, K. (2010). *Przedsiębiorstwa rodzinne wobec wyzwań sukcesji*. Warszawa: Difin.
- Ślusarczyk, B., Baryń, M. (2016). Diagnosis of the situation of family business in Poland. *Modern Management Review*, vol. 21, iss. 23, pp. 139-149.
- University of St. Gallen (2017). *Global Family Business Index*, [online]. Available: <http://familybusinessindex.com/> [2017, November, 10].
- Winnicka-Popczyk, A. (2016). *Finansowanie innowacji w polskich firmach rodzinnych*. Łódź: Wydawnictwo Uniwersytetu Łódzkiego.
- World Bank (2016). *Doing Business 2016: Measuring Regulatory Quality and Efficiency*, [online]. Available: <http://www.doingbusiness.org/reports/global-reports/doing-business-2016> [2017, November 10].

Zapletalov, Š. (2017). Competitive Strategies of the SMEs: Empirical Evidence from the Czech Republic. *Forum Scientiae Oeconomia*, vol. 5, iss. 3, pp. 9-26.

Vladimíra Štefancová¹ *

University of Žilina
Slovakia

Eva Nedeliaková²

University of Žilina
Slovakia

Radovan Soušek³

University of Pardubice
Czechia

81. CONNECTION OF THEORY OF CONSTRAINTS AND LEAN SIX SIGMA IN RAILWAY TRANSPORT OPERATION

Abstract: Considering the current passenger requirements, the great emphasis has been placed on the efficiency and quality of the provided transport services. The main aim of the article was to point to the possibility of linking multiple qualitative approaches and their tools and to propose a general algorithm for accurately determining the sequence of steps in order to streamline the transport processes. Positive synergy effect for improving transport service was created by cooperation of Theory of Constraints and Lean Six Sigma philosophy. While Six Sigma focused on reducing variability and errors, Lean management sought to eliminate any waste in the process and simultaneously Theory of Constraints identified and removed of bottlenecks in the transport process. Moreover, there were determined significant facts which process affected the most. In railway transport could be identified a number of bottlenecks. They subsequently prevented the service from providing the required quality. Statistical approach of Lean Six Sigma concept made it possible to reduce the error to provide high-quality outputs and achieve customer satisfaction. The article dealt with the implementation of improvement qualitative approaches to the rail transport sector and practical application to the processes related to ensuring quality of services and safety of railway transport.

Keywords: Lean, process, Six Sigma, Theory of Constraints, quality management.

JEL Classification: L92, R41

1. Introduction

The term globalization is closely linked to the conceptual framework of the EU whereby the transport represents a significant dimension of the global economy. Companies have been forced to increase their standards of economic efficiency due to influence by globalization (Staníčková, 2014). As competition intensifies, due to the impact of globalization and liberalization in Slovak Republic, many transport companies improve the quality of provided services (Buková et al., 2017; Mojžíš, Kyncl, Drdla, 2003). A gradual opening of the market for passenger and freight transport stands for a part of the EU's transport policy.

Railway transport has become a major conveyance forming the backbone of public transport. In recent years, the railway infrastructure has been modernized significantly because of accession to the European Union and its grants for transport infrastructure (Golnik, Golnik 2017). Railway transport is characterized by high fixed costs because of expensive equipment and therefore investments of railway infrastructure from the EU funds are indeed necessary. Difficulties in railway transport operation may be related to the state of the railway infrastructure as well as to the precise planning and coordination of the processes. The traffic department is taking advantage of transportation management and therefore fully responsible for correct planning and scheduling efficient transport operation (Bowersox, Closs, Cooper 2013). Environmental protection is one of the EU's priorities to make rail transport more competitive compared to environmentally harmful mode of transport. Railway transport represents environmentally friendly manner of transport which leads to reduction of

¹ Ing. Vladimíra Štefancová; Univerzita 1, 010 26 Žilina, Slovakia, vladimira.stefancova@fpedas.uniza.sk

² Assoc. Prof. Ing. Eva Nedeliaková Ph.D.; Univerzita 1, 010 26 Žilina, Slovakia, eva.nedeliakova@fpedas.uniza.sk

³ Assoc. Prof. Ing. Radovan Soušek Ph.D.; Studentská 95, 532 10 Pardubice 2, Czechia, radovan.sousek@upce.cz

* Corresponding author

road infrastructure congestions and therefore has considerable impact on transport safety as presented by Kudláč, Majerčák and Mańkowski (2017a). As indicated by Nedeliaková, Dolinayová and Nedeliak (2015a) “the European Union supports increasing the competitiveness of rail passenger services in the interests of the environment and enhancing the quality of provided services”.

The vast majority of companies consider customer service to be an important aspect of their business as mentioned by Rushton, Croucher and Baker (2010). Business success also depends on customer satisfaction and therefore it is necessary to determine what the customer expects and what the customer experiences (Sahno, Shevtshenko, Zahharov, 2014). According Lusková, Hudáková and Buganová (2013) dimensions of service quality are used to evaluate the quality of provided services. These include reliability, politeness, credibility, accessibility, safety, communication and also understanding customer needs. Demand for transport is expressed as a variable reflecting demand for transport services between several railway stations (Berežný, 2017). From the point of view of passengers, it is required to transfer them from the starting to ending points as well as to provide additional services with adequate quality. The important role of logistics is provided good customer service from which it follows that many principles can be applied to passenger transport (Vojtek et al., 2017).

According to the EU priorities, it is necessary to support the development of rail transport as a major transport system. Due to the need for broad modernization of the transport system, it is an important step to identify areas where investment is most necessary. The goal of this article is to highlight the possibilities of using qualitative and statistical tools that support decision making and correctly set sequence based on precedence analysis.

2. Research Methodology

The key factor for achieving success and prosperity of transport companies are managerial functions such as planning and effective control as mentioned by Bureš and Pivodová (2014). As presented by Waters (2010) “logistics customer service has its roots in the marketing discipline and logisticians can use and learn from marketing techniques and methodologies to investigate customer services”. Growth in productivity is mainly influenced by accurate logistics planning (Kovalský, Mičieta, 2017). Transport logistics belongs to an important component of the logistics chain and it plays a crucial role in ensuring the transport service of the established territory. The essence of ensuring accurate transport logistics in passenger railway transport is to ensure the proper functioning of all the processes. According Nedeliaková, Dolinayová and Nedeliak (2015b) “a process can be understood as the sum of mutually arranged activities changing inputs to outputs while consuming certain resources in controlled conditions”. As pointed out by Mojžiš (2003) before the quality evaluation, it is necessary to clearly define the object of the assessment (process, technological procedures or service).

As described by Nedeliaková and Sekulová (2016) “railway companies are currently focused on process management, whose purpose is to streamline the company's business processes and customer service support”. Many progressive management approaches are based on the company's process management. Through Lean Management, process wastage is eliminated and simultaneously high productivity and better processes between customer and service provider are achieved. Theory of Constraints as one of the controlling methods aims to eliminate weaknesses and create stable and powerful system consisted of downstream processes. According George (2003) many companies are satisfied with Lean and Theory of Constraints, but Six Sigma approach can encourage transport companies to a more rigorous use of data to make such important managerial decisions. The abovementioned approaches consist of a toolbox, which further define these concepts. While Lean concept creates scope for generating slimmer processes based on lean-based methods (such as Kaizen, Just in Time, Value stream mapping), Six Sigma tools are coming out of DMAIC method that includes especially a number of statistical tools (for example Histogram, Pareto diagram, Control charts). The Theory of Constraints is focused on bottleneck analysis, which allow to recognize of risk areas and in conjunction with the Lean Six Sigma tools there is possibility to recognize the improvement projects that are most appropriate.

2.1. Lean Six Sigma

Recently, interconnected qualitative approach “Lean Six Sigma” is really popular within improving processes. Each of these approaches focuses on a certain area in process improvement, they do not exclude each other, and on the contrary common methodology create a logical approach to the mutual improvement of processes.

Lean Management relieves to optimize processes by eliminating waste and it occurs in various areas such as Lean Office and Lean Production (Bauer, 2015). In Lean philosophy, non-value-added activities are removed and thereby improve the performance of the processes. As Brue (2005) emphasizes “the Six Sigma approach can help companies to reduce defects and rework that cost them time, money, opportunities, and customers”. Six Sigma is focused on minimizing defects and achieving stable processes by engaging top management as well as company employees. It has a great value in achieving operational excellence and its tools are linked into an overall improvement cycle (Yang, Hsieh, 2009).

The basis of the Six Sigma approach is the sequence of the individual improvement phases (define, measure, analyze, improve, control) which are referred to as the DMAIC cycle. The DMAIC cycle creates a unified framework and represents a sequence of steps to progressively improve processes. In the initial phase, the processes are accurately mapped and there are defined the key areas for further improvement. In accordance with the process information, it is possible to graphically display individual relationships by elaborating a SIPOC map. It shows the relationships between process inputs and outputs as well as suppliers and end customers. The current performance of the process is determined in the second phase according to established criteria based on individual requirements. Process variability is the major reference value of Six Sigma, which can be simply represented by a dot diagram or a histogram. According to graphical and numerical outputs, it is possible to clearly assess the performance of the process as the basis of the analytical phase. In the penultimate phase, the proposed improvement ideas are subsequently implemented in the processes. The control phase constantly monitors the performance of processes and creates subsequent standardization of procedures. Among the benefits of the DMAIC cycle is its focus on customer requirements. Measuring the current state of the process and its subsequent comparison in the final phase is a key step in achieving real results.

2.2. Theory of Constraints

The Theory of Constraints is associated with the term “bottleneck” what it means any resource whose capacity is equal to or less than the request to the source as mentioned by Kudláč, Štefancová and Majerčák (2017b). The assumption of Theory of Constraints is the fact that each enterprise has some process flow problems that seek to eliminate these capacity constraints (Svozilová, 2011). Decomposing a business into partial processes is very important for correctly understanding and identifying the weakest point in the system. As pointed out by Basl, Majer and Šmíra (2003) the main aim of the transport company according Theory of Constraints is making money now and in the future. Within Theory of Constraints, “the cost and throughput world” are recognized, which suggests that the effort is to achieve low costs and a large capacity flow.

As pointed out by Šukalová and Ceniga (2014) Goldratt's Theory of Constraints methodology is also known as the Thinking Process, which is applicable in any problem-solving situation. It can also be applied in managerial decision-making when selecting an adequate improvement project. In consideration of Theory of Constraints, the perception of the service value is based on the expected benefits of the provided transport service.

3. Results and Discussion

Every qualitative approach applied in the enterprise aims to improve processes through its individual methods. In the case of a thoughtful connection of logically related elements, the assumptions arise for capturing and mutual integrating positive effects. The proposed algorithm combines previously mentioned qualitative approaches. This decision procedure is based on DMAIC cycle with five basis phases complete with Lean and Theory of Constraints methods. First of all, it is important to choose right railway improvement project along with the formulation of the project's goal and scope. In order to compare the current state with the new one, the clearly defined measurement variables have to be listed which depend on the nature of the project. It can be technical parameters, improving design parameters or parameters related to the provision of transport services by staff. Continuous railway traffic is the basis for the satisfactory provision of railway services. Its premise is sufficiently modernized and renewed sections of railway infrastructure as well as rolling stock. Theory of Constraints supports to identify of bottlenecks which prevent continuous throughput. Considerable impact on quality of railway infrastructure have the reconstruction of its parts related to raising speed

limit, modernizing signaling equipment, the renewal of turnouts at stations, the installations of electrical interlocking and automatic track blocking systems at the stations. In the meaning of Lean management, the waste will be removed from the processes. This is a cyclical process when another problem emerges over time that needs to be resolved. From the point of view of railway traffic management, it is possible to focus on the modern arrangement of the traffic management center, where the operation is managed and controlled from one place. Finally, a control system with clearly defined standards should be introduced that ensuring maintained improved status of transport processes.

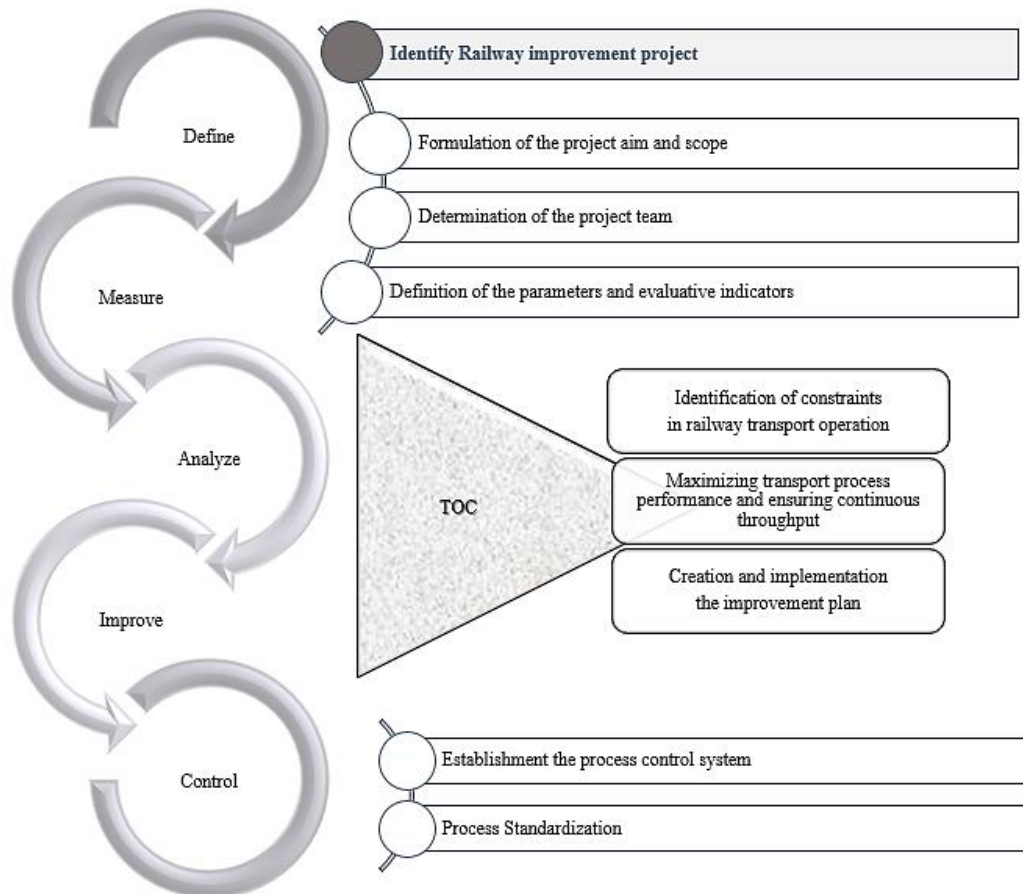


Figure 1. Lean Six Sigma and Theory of Constraints algorithm

Source: Authors

The quality of transport services is dependent on various factors that influence daily railway operation (Kendra, Babin, Šulko, 2013). Transport services may be provided within the frame of normal or extraordinary circumstances (Nedeliaková, Panák, 2017). Every finding of bottlenecks can be defined as an opportunity for improvement. In railway transport operation, there is possible to identify a number of weak points that ultimately negatively affect the fluency of railway traffic and finally the quality and impression of the provided service from the point of view of customers. On global competitiveness and the operating condition on the railway transport market has also impact quality of railway infrastructure and rolling stocks (Palei, 2014). The most important investments in the transport infrastructure are mainly the modernization of particular components on the main railway corridors. The factors that mostly influence the selection of the investment project are favorable geographic location, the length of railway line, electrification, track (single-track line, double track-line), track capacity, number of level crossings, overpasses and bridges. Crisis traffic situations cause negative consequences related to environmental damage, destruction of property and harm of human health (Soušek, Kopčák, 2004). These negative circumstances on the railway transport network of Slovak infrastructure manager are illustrated on a Figure 2.

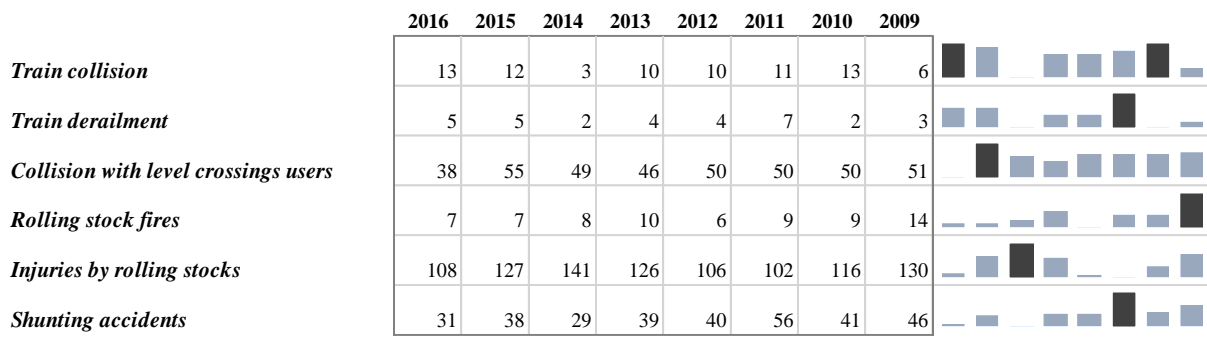


Figure 2. Railway transport safety

Source: ŽSR annual report

Data collection has special importance for determining the most critical elements of processes that affect them the most. It is convenient to analyze the situations according to the Pareto principle and to depict them through Six Sigma graphical tools. As pointed out by Nedeliaková, Sekulová, and Nedeliak (2015c) it is necessary to point out the need of a detailed analysis of serious problems, such as the threat of accident and incidents at level crossing. The infrastructure managers draw up train paths which is closely associated with the capacity of the railway transport network (Zitrický, Černá, Abramovič, 2017). Simulation enables to better understand the linking of particular processes in transport through direct visualization as it is described by Čamaj, Mašek and Kendra (2015). For this reason, it is possible to predict the necessary capacity of railway transport to avoid misconceptions.

Through Lean's approach and Six Sigma methodology, benefits and optimal results are achieved, thus greatly influencing competitiveness (Nonnemacher, Pacheco, 2017; Siddh et al., 2014). Linking the above-mentioned approaches allows them to mutually highlight their positive effects within the process of achieving their goals (Nonnemacher, Pacheco, 2017). Identifying bottlenecks in transport processes is a very important aspect on which further direction of process improvement depends. Selecting the right improvement project in railway transport is identified as a bottleneck. Within this paper, critical points related to the two main areas were defined, namely the quality and especially the safety of the transport process. The selection of bottlenecks related to safety and modernization of railway transport has been followed in recent years, according to annual reports by the Infrastructure Manager. This article has contributed to the formation of a general algorithm linking multiple concepts that can be used in various areas of the transport process (transport, transportation, logistics, modernization, administration, etc.).

4. Conclusion

Process improvement methodologies make similar assumptions and appear to be driving towards common tools and concepts that extensive refinement of the existing processes is being made (Nave, 2002). Utilizing interconnected Lean Six Sigma methodology with Theory of Constraints, the positive synergy effects will appear in enhancing the quality and performance of processes. The main result of this article pointed out to positive implication of integration of three managerial approaches with precedence analysis in context of quality and safety of railway transport. Collecting the significant data about processes forces managers to understand importance of variation and determine a process capability. Moreover, creating a diagram about critical conditions and circumstances in railway transport operation helps to detect reasons affecting the quality of services and the capacity of railway permeability. The EU is geared towards environmentally friendly and sustainable transport and, therefore, rail investment is an important step towards achieving this goal. Transport companies should be oriented towards increasing quality of transport services on international and domestic markets and also allocating considerable financial resources to improve safety of railway transport. Despite the difficult situation on the railway transport service market, it is necessary to continuously increase the level of provided services by investing in railway infrastructure as well as the proper organization of work and process connectivity. In order for the passenger to be satisfied with the provided services, it is necessary to assume responsibility for the fulfillment of the inevitable processes related to railway transport operation. In order to develop railway infrastructure from EU funds and to obtain modern rolling stock, it is essential to select such improvement projects that will

benefit the public. For this purpose, an algorithm has been outlined leading to the correct decision making and selection of critical situations. The advantage is its general use in a wide range of transport processes, with graphical tools being able to analyze the situation and capture changes over a period of time. In addition to positive benefits, limits may also occur that will negatively affect the results. Among the factors that most constrain continuous process improving include lack of education, employee reluctance, lack of innovative ideas, or subjectivity in decision-making. It is needful to get people excited about new quality approach and by using that methods to improve the process performance and the quality of the provided services.

Acknowledgements

This research was financially supported by the project KEGA 010ŽU-4/2017 New methods of teaching quality management in the study program Railway transport with a focus on optimization of extraordinary events in terms of customer orientation.

References

- Basl, J., Majer, P., Šmíra, M. (2003). *The Theory of Constraints in Business Practice - Improving business performance with TOC tools*. Praha: Grada Publishing.
- Bauer, M., Haburaiová, I. (2015). *Leadership with Kaizen and Lean*. Brno: BizBooks.
- Berežný, R., Konečný, R. (2017). The Impact of the Quality of Transport Services on Passenger Demand in the Suburban Bus Transport. In *Transcom 2017: International scientific conference on sustainable, modern and safe transport*, pp. 40-45. Slovakia: University of Žilina.
- Bowersox, D., Closs, D., Cooper, M.B. (2013). *Supply Chain Logistics Management*. United States of America: The McGraw-Hill Companies.
- Brue, G. (2005). *Six Sigma for Managers 24 Lessons to Understand and Apply Six Sigma Principles in Any Organization*. United States of America: The McGraw-Hill Companies.
- Buková, B., Brumerčikova, E., Kondek, P., Groma, P. (2017). The Usage of Cognitive Maps in the Comparison of Marketing Mix of Railway Passenger Transport. In *10th International Scientific Conference Transbaltica: Transportation Science and Technology*, pp. 498-503. Lithuania: Vilnius Gediminas Technical University.
- Bureš, M., Pivodová, P. (2014). Comparison of Time Standardization Methods on the Basis of Real Experiment. In *25th DAAAM International Symposium on Intelligent Manufacturing and Automation*, pp. 466-474. Vienna, Austria.
- Čamaj, J., Mašek, J., Kendra, M. (2015). Simulation of the Transport Centre Process by Using Special Tools. In *9th International Scientific Conference Transbaltica*, pp. 224-230. Lithuania: Vilnius Gediminas Technical University.
- George, M. (2003). *Lean Six Sigma for Service How to Use Lean Speed and Six Sigma Quality to Improve Services and Transactions*. United States of America: The McGraw-Hill Companies.
- Golnik, R., Golnik, W. (2016). Management in Shared Services Center. In Okręgllicka, M., Gorzeń-Mitka, I., Lemańska-Majdzik, A., Sipa, M., Skibiński, A. (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management, CITPM 2016* pp. 89-94. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Kendra, M., Babin, M., Šulko, P. (2013). Interaction Between Railway Infrastructure Parameters and Quality of Transportation Services. In *BulTrans-2013: anniversary scientific conference on aeronautics, automotive and railway engineering and technologies*, pp. 95-97. Sofia, Bulgaria.
- Kovalský, M., Mičieta, B. (2017). Support Planning and Optimization of Intelligent Logistics Systems. In: *Transcom 2017: International scientific conference on sustainable, modern and safe transport*, pp. 451-456. Slovakia: University of Žilina.
- Kudláč, Š., Majerčák, J., Mańkowski, C. (2017a). The Proposal of Coordination the Rail and Bus Passenger Transport on the Relation Žilina–Ružomberok. In *Transcom 2017: International scientific conference on sustainable, modern and safe transport*, pp. 510-515. Slovakia: University of Žilina.
- Kudláč, Š., Štefancová, V., Majerčák, J. (2017b). Using the Saaty Method and the FMEA Method for Evaluation of Constraints in Logistics Chain. In *10th International Scientific Conference Transbaltica: Transportation Science and Technology*, pp. 749-755. Lithuania: Vilnius Gediminas Technical University.
- Lusková, M., Hudáková, M., Bugarová, K. (2013). *Quality and Risk Management - Integration, Principles, Methods*. Žilina: EDIS.
- Mojžiš, V., Kyncl, J., Drdla, P. (2003). *Quality of Transport and Transportation Processes*. Pardubice: Institut Jana Pernera.
- Nave, D. (2002) How to Compare Six Sigma, Lean and the Theory of Constraints – A Framework for Choosing What's Best for Your Organization. *Quality Progress*, vol. 35, iss. 3, pp. 73-78.

- Nedeliaková, E., Dolinayová, A., Nedeliak, I. (2015a). *Rail Transport Management*. Bratislava: DOLIS.
- Nedeliaková, E., Dolinayová, A., Nedeliak, I. (2015b). *Transport Service Quality Assessment Methods*. Bratislava: DOLIS.
- Nedeliaková, E., Sekulová, J., Nedeliak, I. (2015c). A New Approach to the Identification of Rail Risk at Level Crossing. In *9th International Scientific Conference Transbaltica*, pp. 40-47. Lithuania: Vilnius Gediminas Technical University.
- Nedeliaková, E., Sekulová, J. (2016). *Evaluation of Quality in Railway Transport*. Žilina: EDIS.
- Nedeliaková, E., Panák, M. (2017). Methodology for Quality Assessment Within Transportation Chain. In Okręglicka, M., Gorzeń-Mitka, I., Lemańska-Majdzik, A., Sipa, M., Skibiński, A. (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management, CITPM 2016*, pp. 309-314. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Nonnemacher, G.L., Pacheco, D.A.D. (2017). Analysis of Integration of Theory of Restrictions and Lean Manufacturing in Small Company Context. *Revista Geintec-Gestao Inovacao E Tecnologias*, vol. 7, iss. 3, pp. 3998-4012.
- Palei, T. (2014). Assessing the Impact of Infrastructure on Economic Growth and Global Competitiveness. In *2nd Global Conference on Business, Economics, Management and Tourism*, pp. 168-175. Prague, Czech Republic.
- Rushton, A., Croucher, P., Baker, P. (2010). *The Handbook of Logistics & Distribution Management*. Great Britain: Kogan Page.
- Sahno, J., Shevtshenko, E., Zahharov, R. (2014). Framework for Continuous Improvement of Production Processes and Product Throughput. In *25th DAAAM International Symposium on Intelligent Manufacturing and Automation*, pp. 511-519. Vienna, Austria.
- Siddh, MM., Soni, G., Gadekar, G., Jain, R. (2014). Integrating Lean Six Sigma and Supply Chain Approach for Quality and Business Performance. In *2th International Conference on Business and Information Management*, Durgapur, India.
- Soušek, R., Kopčák, P. (2004). *Crisis Management in Rail Transport*. Pardubice: Institut Jana Pernera.
- Staničková, M. (2014). Classifying the EU Competitiveness Factors using Multivariate Statistical Methods. In *2nd Global Conference on Business, Economics, Management and Tourism*, pp. 313-320. Prague, Czech Republic.
- Svozilová, A. (2011). *Improving Business Processes*. Praha: Grada Publishing.
- Šukalová, V., Ceniga, P. (2014). Application of The Theory of Constraints Instrument in The Enterprise Distribution System. In: *2nd Global Conference on Business, Economics, Management and Tourism*, pp. 134-139. Prague, Czech Republic.
- Vojtek, M., Kendra, M., Zitrický, V., Daniš, J. (2017). Principles of Logistics Applied to Railway Passenger Transport. In: *18th International Scientific Conference - LOGI 2017*, vol. 134. České Budějovice, Czech Republic.
- Waters, D. (ed.) (2010). *Global Logistics: New Directions in Supply Chain Management*. Great Britain and United States: Kogan Page.
- Yang, T., Hsieh, Ch. (2009). Six Sigma Project Selection Using National Quality Award Criteria and Delphi Fuzzy Multiply Criteria Decision- Making Method. *Expert Systems with Applications*, vol. 36, iss. 4, pp. 7594-7603.
- Zitrický, V., Černá, L., Abramovič, B. (2017). The Proposal for the Allocation of Capacity for International Railway Transport. In *Transcom 2017: International scientific conference on sustainable, modern and safe transport*, pp. 994-999. University of Žilina, Slovakia.

Hana Štverková ^{1*}

VŠB – Technical University of Ostrava
Czechia

Monika Mynarzová²

VŠB – Technical University of Ostrava
Czechia

82. STARTING A BUSINESS IN THE CZECH REPUBLIC, POLAND AND SLOVAKIA – EMPIRICAL APPROACH

Abstract: The article focuses on the procedure of starting a business in three selected V4 countries: Czech Republic, Slovak Republic and Poland. These countries are from geographical and cultural perspectives interesting for all potential entrepreneurs from selected countries. The countries are geographically close to each other and the cross border business is usual for some decades. The micro sized entrepreneurship presents 93 percent of all non-financial business in the European Union. The most common type of business entity is the Limited liability Company between small and medium sized enterprises in these V4 countries. Main objective of the paper is through an analysis of steps for establishing Limited Liability Company in the Czech Republic, Poland and Slovakia with special emphasis on the area of legislative steps in the year 2017 to 2018, to select the country with the optimal condition for setting up a company – LLC.

Keywords: European Union, Limited Liability Company, small and medium-sized enterprises.

JEL Classification: M16, L26, O57.

1. Introduction

One of the primary requirements for setting up a business is to abide by the legal requirements set by European Union and harmonized state rules and regulations. Abiding by these rules allows entrepreneurs to start their business off on the right path to help them avoid legal issues regarding the business structure in the future. Many different elements go into starting a new business. When the entrepreneurs have an entrepreneurship's vision, they have to decide which business structure they want to establish: sole proprietor, corporation, Limited Liability Company or a partnership.

A limited liability company is the most common form of legal entity in V4 countries. Therefore, the authors decided to compare the legislative and administrative burdens for establishing Limited Liability Company in the Czech Republic, Poland and Slovak Republic. These three countries were chosen from a geographic point of view and because the cross border cooperation is typical in these countries. It is common for entrepreneurs from Poland to establish their businesses in the Czech Republic or Slovakia and vice versa. For these reasons, it is appropriate to address the business environment, legislative aspects and administrative burdens in setting up businesses in these countries.

Main objective of the paper is through an analysis of steps for establishing Limited Liability Company in the Czech Republic, Poland and Slovak Republic with special emphasis on the area of legislative steps in the year 2017 to 2018, to select the country with the optimal condition for setting up a company - LLC.

2. Theoretical Background

Companies, especially small and medium enterprises (SMEs), have a significant role as engines of economic and social development (Dziwiński, 2016; Okręglicka, Mynarzová, Kaňa, 2015; Havierníková, 2016). Empirical studies confirm that entrepreneurship is accepted as the critical component of economic growth and employment creation (Barcik, 2016; Pellešová, 2016; Štverková, Humlová, 2016). The SMEs are considered to be the backbone of the national economy (Mynarzová,

¹ Ing. Hana Štverková Ph.D.; Sokolská třída 33, 701 21 Ostrava 1, Czechia, hana.stverkova@vsb.cz

² Ing. Monika Mynarzová Ph.D.; Sokolská třída 33, 701 21 Ostrava 1, Czechia, monika.mynarzova@vsb.cz

* Corresponding author

Štverková, 2015). The SMEs ensure the social stability and the freedom. They give a chance to free finding of entrepreneurs, to a self-realization of citizens in the economic sphere. SMEs represented 99.8% of businesses in the non-financial business EU economy. The total SME value added in 2015 was 57.4%; number of persons employed in SMEs was 66.8% (European Commission, 2017; Rensmann, 2017).

In Yıldırım, Çakır and Aşkun (2016) opinion business is not a simple plan-and-to act. It is a behavior that results from the attitude that reflects individual's motivation and capacity to identify an opportunity and to pursue it in order to produce new value or economic success. If the economy is to achieve higher economic growth, we need more new companies more entrepreneurs willing to embark in innovative ventures. Entrepreneurship is an essential factor for competitiveness, because of new entrepreneurship projects increasing competitive pressures, which force other companies to react in the form of increased efficiency or introducing innovation, thereby strengthening the competitive power of the whole economy (Mynarzová, Kaňa, Okřeřlicka, 2016; Jakubiec, 2016; Havierníková, 2015).

The main areas in which the SMEs sector contributes are in job creation, innovation and the creation of competition. Interest in the role of SMEs in the process of transition has developed apace in recent years. In most market economies, there are significant real barriers to both business entry and growth. The key barriers hindering the growth of entrepreneurship development included environment including bureaucracy, and to external financial constraints including the high cost of capital (Barlett, Bukvic, 2001; Beck, Demirguc-Kunt, Levine, 2005).

The phenomenon of small and medium-sized enterprises has been known for decades. The importance of these businesses is important both from the perspective of macroeconomic and social. The small companies have been often presented as a hidden giant. The SMEs have the key position in the national economy in terms of creating of healthy entrepreneurial surroundings; they are of high importance for the development of the national economy, regions, individual towns and villages. They help to create the healthy entrepreneurial surroundings and increase the market dynamics. The development of small and medium-sized enterprises is generally regarded as a main factor of economic development and this in disregard of economic advancement of the country (Štverková, 2013; Blecharz, Štverková, 2014; Jasińska-Biliczak, Kowal, Hafner, 2016).

3. Business by Prism of Easy of Doing Business

A variety of methodological approaches can be used to evaluate the quality of the business environment. For the purpose of evaluating the quality of the business environment in the selected countries (Czech Republic, Poland and Slovak Republic), the World Bank's Doing Business 2018 analytical material was used. Doing Business World Bank's ranking compares and evaluates (since 2003) legislation regulating business, focusing on small and medium-sized enterprises (SMEs). The study, based on a clear system of 10 indicators, evaluates the ease of doing business in almost all countries of the world (in 190 economies in 2018). The data comes from four sources of information: Doing Business respondents, relevant laws and regulations, Doing Business economics governments, and World Bank regional staff. Report Doing Business sheds light on how easy it is for a local entrepreneur to open and run a small to medium-size enterprises. Doing Business measures and tracks changes in regulations affecting eleven areas in the life cycle of a business: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, resolving insolvency and labor market regulation (see Figure 1).

The rankings provide useful information for assessing how easy or difficult it is for an entrepreneur to start a business. The Table 1 shows the Doing Business indicators in the Czech Republic, Poland and Slovak Republic in 2018. The Czech Republic ranks first in the following indicators: Starting a Business, Getting Electricity and Trading across Borders. Poland occupied first place in six indicators, namely in: Dealing with Construction Permits, Getting Credit, Protecting Minority Investors, Trading across Borders, Enforcing Contracts, Resolving Insolvency. The Slovak Republic has ranked best in the monitored country in: Register Property, Paying Taxes and Trading across Borders.

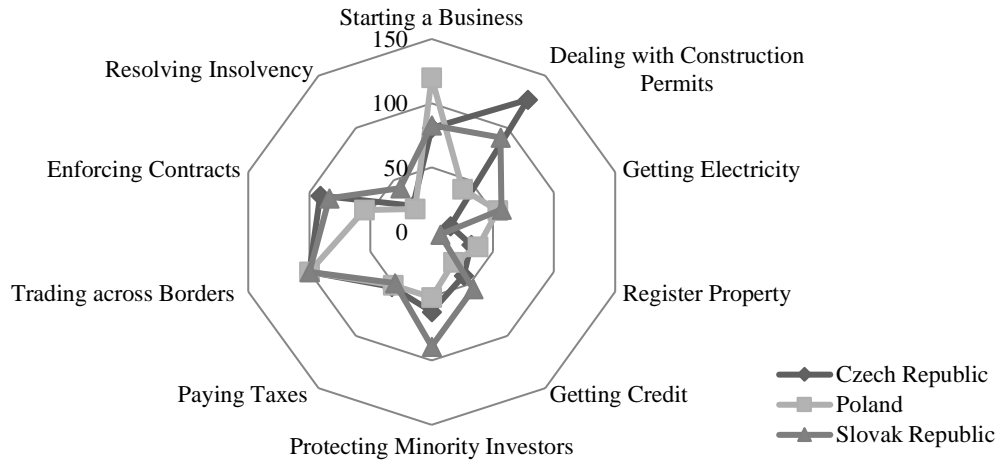


Figure 1. Monitored criteria of easy of doing business in Czech Republic, Poland and Slovakia (DTF score)

Source: Doing Business, 2018; own processing

Table 1. Doing Business Indicators in Czech Republic, Poland and Slovak Republic (rank)

Indicator	Czech Republic	Poland	Slovak Republic
Starting a Business	1. (81)	3. (120)	2. (83)
Dealing with Construction Permits	3. (127)	1. (41)	2. (91)
Getting Electricity	1. (15)	2. (54)	3. (57)
Register Property	2. (32)	3. (38)	1. (7)
Getting Credit	2. (42)	1. (29)	3. (55)
Protecting Minority Investors	2. (62)	1. (51)	3. (89)
Paying Taxes	3. (53)	2. (51)	1. (49)
Trading across Borders	1. (1)	1. (1)	1. (1)
Enforcing Contracts	3. (91)	1. (55)	2. (84)
Resolving Insolvency	2. (25)	1. (22)	3. (42)

Source: Doing Business, 2018; own processing

In 2018, the best placed from the selected countries was Poland, which reached the total 77.30 DTF Scores (see Figure 2). In the total of 190 countries surveyed, it placed itself in an excellent 27th position. Poland approximates the regional average (OECD high income), which is 77.46. The second best business environment from monitored countries was evaluated in the Czech Republic. The Czech Republic with a total of 76.27 DTF Scores took the 30th place. The Slovak Republic with a total of 74.90 DTF Scores ranks among in the total number of monitored economies at 33rd place. From the selected countries, the business environment in Slovak Republic was the least favorable.

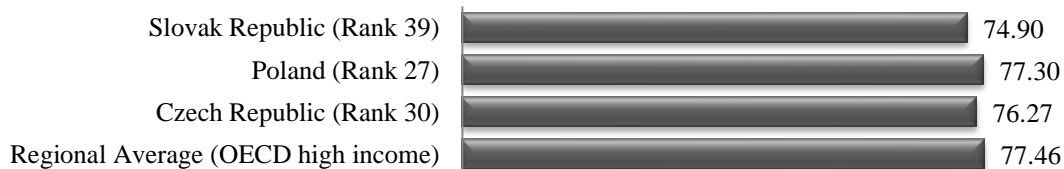


Figure 2. Easy of Doing Business in Czech Republic, Poland a Slovak Republic (DTF rank)

Source: Doing Business, 2018; own processing

4. Starting a Business

Starting and doing business in V4 countries is being considered as the similar process. The Czech, Polish and Slovak laws have been harmonized with the EU law which regulates many areas of business since the year 2004, when these V4 countries were entering the European Union. Till the year 2004, they were more or less homogeneous in their development paths. The Central Europe and especially countries of the Visegrad Group have to keep up with a lot of changes - historical development, new rules of the European Commission or the 2008 crisis (Chytilová, 2016). The World

Bank have been reporting about doing business among the V4 countries. “On the other hand, the main obstacles to doing business include social and political environment, access to various sources of funding, legislative, and administrative measures, and availability of human resources. The results show that entrepreneurs in V4 countries are facing similar problems and obstacles” (AmCham Slovakia, 2017).

The establishment of the company is based on the entrepreneur’s vision. The procedure to setting up business, in the EU countries, is based on these steps:

- Idea of the business – uniqueness of the proposed company name.
- Notarize articles of association and related documents, including Lease Agreement.
- Pay capital contributions, confirmation of the administrator of the capital contribution of the company, bank account.
- Apply for trade license, Register in the Business Registry of the Regional Commercial Court etc.
- Register for Taxes.
- Register for social security and health insurance.

Before setting up a business and establishing a company, it is advisable to have an established business plan. The planning process is certainly needed at all stages of the company's life cycle. The planning process is based on the entrepreneur's personal goals and business goals. It is highly desirable to cross over these two objectives. There is a number of concepts of the business plan structures, according to Fotr and Souček (2005) should be the division of the business plan into the basic parts, namely: implementation resume, the characteristics of the company and its objectives, organization of management and management team, the nature and content of the technical and economic study, the conclusions and conclusions, attachments.

The business plan should be brief and clear, but also understandable to all stakeholders, should demonstrate the benefits of the product or service to the user, orienting himself towards the future. It should be realistic, but it should not hide weaknesses and project risks. It is important to note that even the high quality of the business plan does not guarantee the success of the project as it is still a risky project.

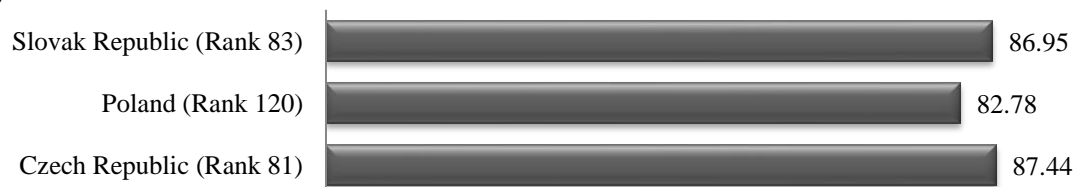


Figure 3. Easy of Doing Business in Czech Republic, Poland a Slovak Republic

Source: Doing Business, 2018; own processing

From the selected countries, the ease of starting and business was best rated in the Czech Republic. Czech Republic ranked 81st in the global comparison, with the 87.44 DTF Score. The second place in this category was occupied by Slovak Republic, which won a total of 86.95 DTF Score. The third place in the V4 countries was the Czech Republic, which with the 86.86 DTF Score took the 81st place overall. Criterion ease of starting a business was assessed as the least favorable in Poland, which were placed with the 84.22 DTF Score to 107th position (see Figure 3).

4.1. The Research Description and Methodology

For the research authors used some of the basic methods of the scientific research to obtain information necessary to the complex systemic processing of the issue. The authors predominantly used methods of qualitative research but of quantitative research too. The research methods used in this paper are: the study of literature, the analysis and comparison of the secondary data. In the paper the statistical data processed by World Bank has been used.

Taking into consideration the main objective of this paper, the following research hypothesis has been put forward:

Hypothesis 1: Based on the analysis and observation of the legislative and administrative procedures for the setting up of the limited liability company's business, it can be concluded that the optimal conditions between selected 3 V4 countries for the establishment of the limited liability company are in the Czech Republic.

4.2. Starting a Business on the Example of a Limited Liability Company – Empirical Characteristic

The most frequent type of Business Entity in the selected countries is the Limited Liability Company. The basic data considering to the core capital for all countries are shown in Table 2.

Table 2. Core Capital for Establishing the Limited Liability Company (1 EUR = 25,4 CZK)

Selected Country	Paid-in minimum capital requirement
Czech Republic	CZK 1 = 0.04 EUR
Poland	PLN 5,000 = 1 198.82 EUR
Slovakia	EUR 2,500

Source: Doing Business, 2018; own processing

In the Gantt diagrams are detailed summaries of the bureaucratic and legal hurdles faced by entrepreneurs wishing to incorporate and register a new firm in V4 countries. It examines the procedures, time and cost involved in launching a commercial or industrial firm with between 10 and 50 employees and start-up capital of 10 times the economy’s per-capita GNI. These information has been collected as part of the Doing Business project, data collection were completed in November 2017. The establishing procedure and the bureaucratic steps in the countries was collected as part of the Doing Business project (2018) and elaborated using the Gantt Project Software.

Starting a business in the Czech Republic consist of the most steps from all the three countries – 8 steps, see Figure 4. Total time for establish is 9 days, most of the steps could be done through a data box or a different online platform. Costs of establishing 22 066.77 CZK, i.e. 868.74 EUR.

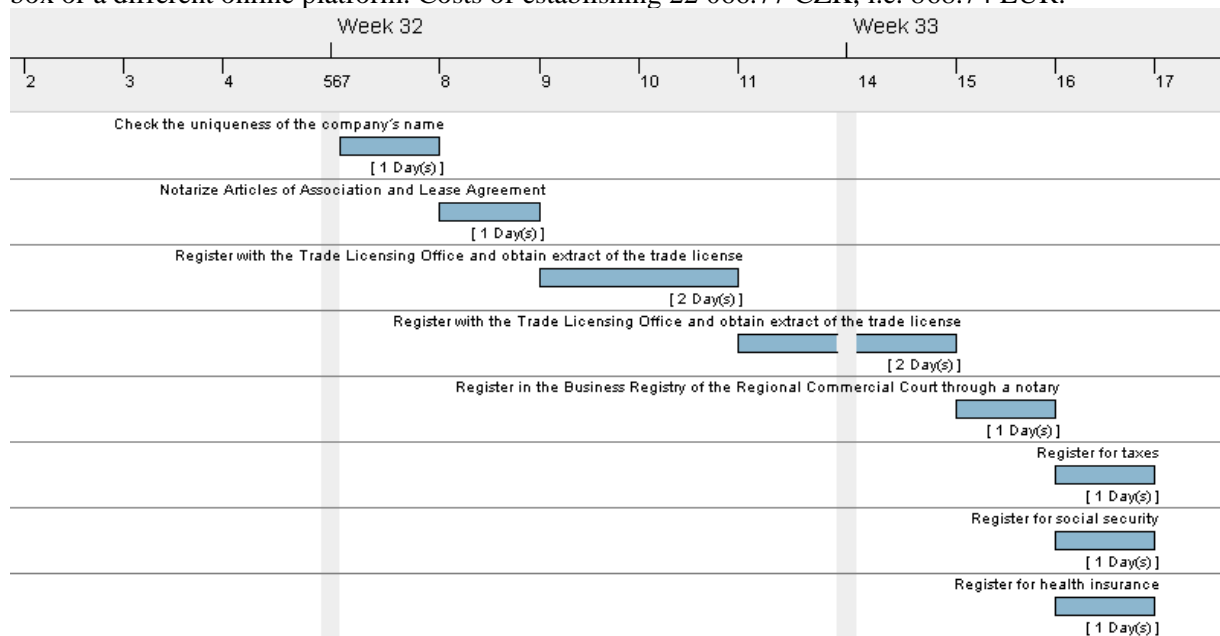


Figure 4. Gantt Project – Starting a Business in Czech Republic

Source: Doing Business, 2018; own processing

The procedure to establish The Limited Liability Company in Poland consist of only 4 steps, see figure 5. First step is notarize company agreement, the second Deposit paid-in capital at the bank, third File for company registration at the National Court Register, last one is Register for taxes and VAT. First step the associated costs to Notary are PLN 1,010 + 0.4% of the amount of share capital over PLN 60,000 + 6 PLN cost per page (typically 10 pages are purchased) + (the amount of share capital – (Notary fee + 23% VAT) + Court fees)*0.5% civil law transactions tax, but maximum amount cannot exceed PLN 10,000 plus VAT and civil law transaction tax (Doing Business, 2018). The registration with the National Court Register determines the creation of a new business entity and is binding for other authorities such as: Tax Office, Statistical Office and Social Insurance Office. This step is very time-consuming – 4 weeks. Total amount for setting up a business in Poland is 2,520 EUR, i.e. 10,510.34 PLN.

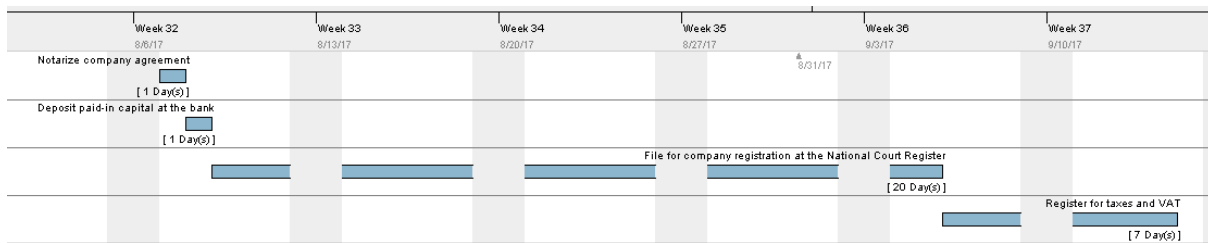


Figure 5. Gantt Project – Starting a Business in Poland

Source: Doing Business 2018; own processing

In the Slovak Republic the procedure consists of six steps: 1. Check the uniqueness of the company’s name, 2. Notarize articles of association and related documents, 3. Pay capital contributions and receive an affidavit from a custodian funds, 4. Apply at the One-stop shop for trade license, register for income tax and with the District Court, 5. Obtain at the tax authority office a form showing the partners tax arrears, 6. Register with pension, sickness, and disability insurance and unemployment at the local social insurance company, see the Figure 6.

In the second step there is necessary to focus on the fee. The fee for the verification of a signature at a Notary Public is EUR 2.39 (excluding VAT), i.e., EUR 11.95 (excluding VAT) for the verification of five signatures. The fee for the verification of a signature at the Registrar’s Office is EUR 1.50, i.e., EUR 7.50 for the verification of five signatures. Both options are commonly available and used in practice. The Registrar’s Office of a municipality and the District Authority are authorized to verify signatures pursuant to Act No. 599/2001 Coll. On the Verification of Documents and Signatures on Documents by District Offices and Municipalities, as amended. The fee for the verification of a signature is stipulated in Act No. 145/1995 Coll. On Administrative Fees, as amended. And the minimum shareholder’s contribution is EUR 750. Before registering a company, at least 30% of each shareholder’s contribution and 50% (EUR 2.500) of the minimum registered capital must be paid. The last step is to register with pension, sickness, and disability insurance and unemployment insurance at the local social insurance company (Doing Business, 2018). Totally the setting up a business in The Slovak Republic is 11.5 days and the total costs are 169.95 EUR. The summarization of all individual indicators under the Start and Business in V4 Countries criteria are shown in Table 3.

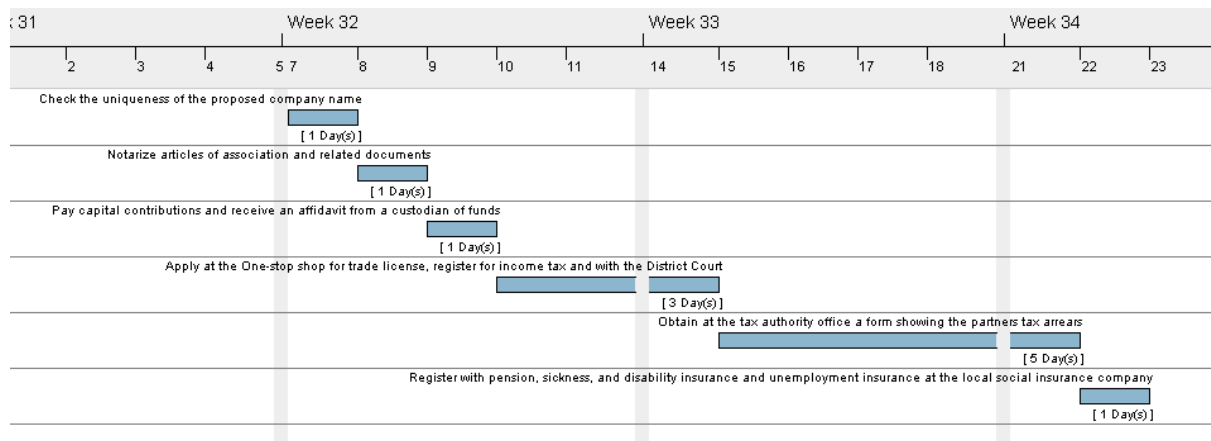


Figure 6. Gantt Project – Starting a Business in Slovak Republic

Source: Doing Business, 2018; own processing

Table 3. Starting a Business Indicators in Czech Republic, Poland and Slovak Republic

Indicator	Czech Republic	Poland	Slovak Republic
Starting a Business (Rank)	81	120	83
Starting a Business (DTF Score)	87.44	82.78	86.95
Procedure (number)	8	5	7
Time (days)	9	37	12.5
Cost (% of income per capita)	1	1.2	1.1
Paid-in min. capital (% of income per capita)	0	10.7	17.2

Source: Doing Business, 2018; own processing

The indicator Procedure (number) expresses the total number of procedures required for to register a firm. In this area, the Czech Republic is ranked last with a total of 8 procedures, while the least number has Poland 5, Slovakia has 7 procedures. The process of setting up the company is the shortest in the Czech Republic, there is it 9 days. In Slovak Republic, the company's founding process is 12.5 days. The longest is setting up a company in Poland, up to 37 days. Cost indicator, is recorded as a percentage of the economy's income per capita. Here, the winner is Czech Republic, with a value of 1%, the Slovak Republic ranks second with 1.1% and Poland is the last with 1.2%.

4.3. Business Environment in Selected Countries

The Czech business environment is localized in the center of Europe, gateway to both eastern and western markets, less than two hours by air from most European destinations. It is said, based on the information of Association for foreign investment (AFI, 2017) that in the Czech Republic there are creative, experienced and internationalized professionals at lower costs. According to reports of WTB, Doing Business and AFI, in The Czech Republic there is high degree of entrepreneurship and good conditions for doing business (above average within EU27) and GDP per person by purchasing power parity - the highest in Central and Eastern Europe. The Czech Republic has a well-developed infrastructure.

“It can be said that the business environment in Slovakia is worsening in the long run and that Slovakia is becoming less competitive with neighboring countries (the Visegrad group countries and Austria) as well as other post-communist countries in the EU” Martin Hostak of the National Union of Employers (RÚZ) told The Slovak Spectator. “The latest proposals to change legislation in the social sector only confirm this. The costs keep increasing due to legislative changes and this worsens competitiveness.” (Slovak Spectator, 2017).

Poland has been successful in improving its business environment over the past decade as evidenced by its move up in international rankings comparing countries in terms of competitiveness and ease of doing business.

It is possible to summarize, all selected countries, Czech Republic, Poland and Slovak Republic have the key competitive advantage – the regulatory and patent environment in accordance with EU standards. The hypothesis had been based on the analysis and observation of the legislative and administrative procedures for the setting up of the limited liability company's business, it can be concluded that the optimal conditions between selected three countries for the establishment of the limited liability company are in the Czech Republic. The hypothesis is not dismissed.

5. Conclusion

Most economists agree that small and medium-sized enterprises are the driving force of the whole economy (for example Staniewski, Szopinski and Awruk, 2016; Havierníková, 2015; Štverková, 2013; etc.). In the article, the selected aspects of setting up the Limited Liability Company in the Czech Republic, Slovak and Poland, in the context of the legislative and administrative procedures had been discussed. The main objective of the paper was through an analysis of steps for establishing Limited Liability Company in the Czech Republic, Poland and Slovak Republic with special emphasis on the area of legislative steps in the year 2017 to 2018, to select the country with the optimal condition for setting up a company - LLC. Based on the observation, content analysis and secondary research can be stated that the Czech Republic has the most suitable prerequisites for the establishment of a limited liability company from selected three V4 countries in terms of administrative closures, legislative procedures and costs. The business environment of the selected countries appears to be equivalent in terms of economic indicators. It is possible to focus further research related to setting up a business on a statistically significant correlation exists between the recitals that take up economic activities and the choice of the type of the business entity.

References

- AFI. (2017). *Association for foreign investment – Czech Business Environment*, [online]. Available: <http://www.afi.cz/czech-business-environment>. [2017, October 11].
- AmCham Slovakia. (2017). *Slovakia Did Best in a Survey on Doing Business in V4 Countries*, [online]. Available: http://www.amcham.sk/news/4151_slovakia-did-best-in-a-survey-on-doing-business-in-v4-countries. [2017, October 11].
- Barcik, A. (2016). Co-opetition of Enterprises in Terms of the European Competition Policy. *Proceedings of the 3rd International Conference on European Integration 2016*, pp. 190-196. Ostrava: VSB – Technical University of Ostrava.

- Barlett, W., Bukvic, B. (2001). Barriers to SME growth in Slovenia. *Economic Policy in Transition Economies*, vol 11, iss. 2, pp. 177-195.
- Beck, T., Demircuc-Kunt, A., Levine, R. (2005). SMEs, growth, and poverty: cross-country evidence. *Journal of economic growth*, vol. 10, iss. 3, pp. 199-229.
- Blecharz, P., Štverková, H. (2014). Assessing the service quality in small and medium-sized companies. *Actual Problems of Economics*, vol. 154 (4), pp. 206-217.
- Chytilová, L. (2016). Banking efficiency in the Visegrad Group according to Data Envelopment Analysis with the risk component. *Proceedings of the 8th International Scientific Conference on Managing and Modelling of Financial Risks 2016*, pp. 345-350. Ostrava: VSB – Technical University of Ostrava.
- Dziwiński, P. (2016). Restructuring of Small and Medium-sized Enterprises – the European Perspective. *Proceedings of the 3rd International Conference on European Integration 2016*, pp. 190-196. Ostrava: VSB – Technical University of Ostrava.
- European Commission. (2017). *2016 SBA Fact Sheet Czech Republic*, [online]. Available: https://ec.europa.eu/growth/smes/business-friendly-environment/performance-review_en. [2017, October 14].
- Fotr, J., Souček, I. (2005). *Podnikatelský záměr a investiční rozhodování*. Praha: Grada Publishing.
- Haviernikova, K. (2015). The Sources' Risk Identification of Small and Medium Sized Enterprises in the Process of the Cluster's Cooperation from the View of Femal Entrepreneurs. *International Scientific Conference on Knowledge for Market Use – Women in Business in the Past and Present*, pp. 190-198. Olomouc: Palacky University.
- Haviernikova, K. (2016). The Identification and Classification of Risks in Terms of Cluster Cooperation. In M. Okręglicka, I. Gorzeń-Mitka, A. Lemańska-Majdzik, M. Sipa, A. Skibiński (Eds.) *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management CITPM 2016*, pp. 130-136. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Jakubiec, M. (2016). Innovation actions as a factor of company's development. *Nauki o Zarządzaniu*, vol. 1 (26), pp. 63-76.
- Jasińska-Biliczak, A., Kowal, J., Hafner, J. (2016). Innovative Capacity in Small Regional Enterprises in Transition Economies: An Exploratory Study in Poland. *Proceedings of the Twenty-second Americas Conference on Information Systems (AMCIS)*. [online]. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2824602. [2017, December 12].
- Mynarzová, M., Kaňa, R., Okręglicka, M. (2016). Selected Aspects of Public Support for Small and Medium-sized Enterprises in European Union through the Prism of Block Exemption Regulation. In M. Okręglicka, I. Gorzeń-Mitka, A. Lemańska-Majdzik, M. Sipa, A. Skibiński (Eds.) *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management CITPM 2016*, pp. 294-301. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Mynarzová, M., Štverková, H. (2015). Veřejná podpora jako významný faktor konkurenceschopnosti malých a středních podniků na vnitřním trhu Evropské unie. In *Zborník vedeckých prác Aktuálne problémy podnikovej sféry 2015*, pp. 452-461. Bratislava: Ekonomická univerzita Bratislava, Fakulta podnikového manažmentu, Katedra podnikovohospodárska.
- Okręglicka, M., Mynarzová, M., Kaňa, R. (2015). Business Process Maturity in Small and Medium Sized Enterprises. *Polish Journal of Management Studies*, vol. 12, no. 1, pp. 121-131.
- Pellešová, P. (2016). Selected Macroeconomic Factors of the Business Environment and their Development since the Czech Republic Joined to European Union. In: *International Conference on European Integration 2016. Proceedings of the 3rd International Conference on European Integration 2016*, pp. 755-762. Ostrava: VŠB-TU Ostrava.
- Rensmann, I. (2017). *Small and Medium-Sized Enterprises in International Economic Law*. Oxford: Oxford University Press.
- Staniewski, M.W., Szopinski, T., Awruk, K. (2016). Setting up a business and funding sources. *Journal of Business Research*, vol. 69 (6), pp. 2108-2112.
- Štverková, H. (2013). *The SMEs competitiveness & service quality evaluating not only in the CZ*. Saarbrücken: LAP LAMBERT Academic Publishing.
- Štverková, H., Humlová, V. (2016). Assessment of the Competitiveness of SMEs through BEE Model in the Moravian-Silesian Region. In *Proceedings of 1st international conference contemporary issues in theory and practice of management: CITPM 2016*, pp. 423-429. Częstochowa: Częstochowa University of Technology, Faculty of Management.
- The Slovak Spectator. (2017). *Entrepreneurs call for improving the Business Environment*. [online]. Available: <https://spectator.sme.sk/c/20722251/entrepreneurs-call-for-improving-the-business-environment.html>. [2017, December 14].
- The World Bank. *Doing Business 2018*. (2017). [online]. Available: <http://www.doingbusiness.org/rankings> [2017, October 14].
- Yıldırım, N., Çakır, Ö., Aşkun, O.B. (2016). Ready to Dare? A Case Study on the Entrepreneurial Intentions of Business and Engineering Students in Turkey. *Procedia - Social and Behavioral Sciences*, vol. 229, pp. 277-288.

83. OCCUPATIONAL RISK MANAGEMENT ASSESSMENT USING THE LINGUISTIC AGGREGATION OPERATOR

Abstract: The objective of this paper is to analyse the possibility to use linguistic aggregation operator to assess occupational risk management w selected companies, in the situation whereby linguistic variables (verbal grades) were used in the assessment process. Within the work health and safety area, including occupational risk management, there are not enough well-verified tools which could be used by decision-makers in their decision-making processes regarding assurance of safe and healthy conditions at work. Due to the fact that assessment of the occupational risk management process involves assessment of performance particular components of this process, the following subprocesses were adopted for assessment purposes: Identification of hazards, Risk appraisal, Risk assessment, Analysis of preventive options, Making decisions on ways to use preventive measures, Implementation of preventive measures, Monitoring preventive measures, and Assessment of effectiveness of preventive measures. For each of these subprocesses, a checklist of ten questions was compiled concerning actions being performed within the frameworks of subprocesses. Based upon the answers we received, each subprocess was assigned a respective verbal grade from the set of the following grades: *Completely Bad*, *Very Weak*, *Weak*, *Mediocre*, *Good*, *Very Good*, and *Excellent*. The use of the uncertain linguistic aggregation operator made it possible for us to rank the companies from the point of view of occupational risk management assessment for the companies that were the best and the worst in this area.

Keywords: making decision, OHS, risk management, SMEs

JEL Classification: C44, J28, L29, M11

1. Introduction

Since human thinking is quite complex and obscure in nature, in it is often better to use the information that pertains to quality rather than quantity. This is especially true for practical assessment and decision-making problems (Delgado et al., 1998; Herrera et al., 2009; Martínez, Herrera, 2012; Schubert et al., 2015). In many situations, a decision-maker must handle linguistically expressed information, e.g.: bad, mediocre, good, or excellent. Within the linguistic approach, words or sentences expressed in a natural or artificial language are treated as variables that are processed as part of some determined procedures (Xu, Da, Liu, 2010; Liu et al., 2014).

Occupational risk management constitutes integral part of safety management in companies, no matter how big they are. Studying the level of performance of any risk management process (not only occupational risk management process) is especially significant for companies which use the integrated approach to safety management issues (Majerník et al., 2017; Holubová, 2016).

The need to possess some decision-making support tools relates to various areas of management within a company, and these tools are used in various areas to a larger or lesser extent (Frankovský, Birknerová, Zbihlejová, 2016; Rajnoha, Dobrovič, 2017). However, in the work health and safety management area, there are not enough tools which would be well-verified in practice, and which could be used while making decisions regarding assurance of safe and healthy conditions at work. Therefore, it is justified to take steps and perform research work in order to change this trend.

2. Significance of Occupational Risk Management

Occupational risk management is a continuous process of assessment and eliminating or limiting occupational risks. The occupational risk management process model itself is complex, which affects the number of assessment criteria. In principle, this process consists of the following two main

¹ Ing. Joanna Tabor Ph.D.; Dąbrowskiego 69, 42-201 Częstochowa, Poland, joanna.tabor@wz.pcz.pl

* Corresponding author

sections: risk analysis and assessment, and risk control (ISO, 2009). Risk analysis and assessment covers the following four basic actions: collecting information required for risk assessment purposes, identification of hazards, risk appraisal, and determination of its acceptability levels; whereas risk control covers the following five basic actions: analysis of options regarding implementation of preventive measures, making decisions on selecting appropriate measures, implementation of these measures, and monitoring and assessment of their effectiveness. Determined problems may occur at each stage of the occupational risk management process.

Identification of hazards is the first stage in the entire risk management process. It consists in recognising the hazard and drawing up its description. Proper performance of this subprocess comprises identifying the source of a hazard, determining the type of event and suggesting its possible effects, because one and the same hazard can cause different accident events and different effects (ISO, 2010). The key issue here is proper selection of sources of information required to identify hazards and making use of appropriate data gathering methods.

The following stage is risk appraisal using a method that is most appropriate for a given situation. There are many risk appraisal methods (van Duijne, Schuoten, van Aken, 2008). Above all, we should consider the character of the hazards we have identified, and select methods that are appropriate for measurable, non-measurable, ergonomic, and other factors. The basic problem that occurs at this stage is proper selection of methods in the context of identified hazards.

Risk assessment from the point of view of risk acceptability levels is the next stage in the occupational risk management process. The key issue here is to properly define the risk level at which the risk can be tolerated (no preventive actions are required), at which the risk must be controlled (it is necessary to use appropriate preventive measures), and at which the risk is not acceptable, (which is frequently connected with discontinuation of work till the time the risk level is lowered). Determination of these levels is extraordinarily important and affected by various (financial, HR, organizational, and other) conditions (Moseman, 2012).

Analysis of preventive options covers all possible manners of lowering the risk, which should be considered from the standpoint of such factors as: effectiveness of a given solution, its cost-effectiveness, viability and completion time, psychological effect, involved employees' subjective attitude towards it, etc. (Manuelle, 2005). What is important at this stage is to work out proper methodology of selecting the right risk-lowering solutions.

Making decisions on ways to use preventive measures is the stage at which actions are properly scheduled, resources are allocated, persons in charge are appointed, and the completion deadline is set. Decisions being taken in this respect must account for the possibility of performance at a given point in time. Implementation of preventive measures covers practical performance scheduled preventive actions in line with the adopted schedule. Monitoring preventive actions is the stage that makes it possible to control the scheduled actions performance on a regular basis for compliance with the schedule. Assessment of effectiveness of preventive measures is the last stage within the risk management cycle, which is aimed at verifying whether or not the achieved results of preventive actions are compliant with assumptions, and whether or not they have effectively resulted in a lower risk level, e.g. measured with the number of potential accidents.

Due to problems that may occur at the particular stages of the occupational risk management process, the employer may fail to achieve the objective of this process, which is to continuously and actually improve work health and safety conditions (Fernández-Muniz, Montes-Peón, Vázquez-Ordás, 2009). Comparison and assessment of the actions being performed in the occupational risk management area, between the particular companies, can become a significant source of information for employers, telling them what exactly should be improved within the actions they perform.

Due to a high complexity of the occupational risk management process, comparison and assessment of its performance level can be treated as a decision-making problem that involves many criteria and a finite number of possible decision-making variants; and a selected method in the decision-making area can be used to solve this problem.

3. Uncertain Linguistic Aggregation Operator

Recently, the decision-making process has become a very popular domain of scientific research works (Ma, Lu, Zhan, 2014; Ballesteros-Pérez et al., 2015; Feng, Lai, 2014). Solving decision-making problems is connected with collecting information on the values of the criteria and their significance,

in many cases not only from a single person but also from groups of persons. In order to solve decision-making problems, representative results must be compiled, segregated, and linked together. The process that consists in linking the collected information together into a determined representative value is referred to as information aggregation (Riera, Torrens, 2014). This is why aggregating operators are so significant for the decision-making processes. To put it simply, the aggregating operator deals with merging information in decision-making problems.

Based on the review of literature, it can be said that there are two main approaches to linguistic information aggregation and modelling: the approach that uses calculation models, and the approach that is based upon linguistic information aggregation. In the calculation approach, calculation models are used to manipulate linguistic information, whereas in the aggregating approach, aggregating operators are used. Many aggregating operators have already been described in the literature. The basic ones include: conjunctive operators, disjunctive operators, averaging or median operators, and mixed operators (Mas, Monserrat, Torrens, 2014; Cao, Wu, 2011; Park, Park, Kwun, 2013; Lan et al., 2013).

In this work, we used a new linguistic aggregation operator in the linguistic environment, elaborated by J. Lane (Lan et al., 2015), in order to assess occupational risk management processes in selected companies, in the situation when verbal expressions are used for assessment purposes. The latter operator is different from the remaining ones in that it transforms linguistic variables into a value within the range [0, 1], using the linguistic scale function. This operator's most fundamental advantage is that allows us to obtain aggregated results in the form of linguistic terms that are easy to understand. In order to solve a decision-making problem using the uncertain linguistic aggregation operator ULA_F , and with the assumption that criterion weights are unknown, the following steps are required:

- 1) Compile a decision-making matrix, covering alternatives A and criteria K, including determined subscripts that corresponded to linguistic expressions;
- 2) Determine the weight based upon Wang's maximum deviation method (Wang, 1998), using formulas (1), (2), and (3):

$$d(l_i, l_j) = |u(l_i) - u(l_j)| \tag{1}$$

$$H_{ij} = \sum_{k=1}^m d(a_{ij}, a_{kj}), i \in \{1,2,3, \dots, m\}, j \in \{1,2,3, \dots, n\} \tag{2}$$

$$H_j = \sum_{i=1}^m H_{ij}, i \in \{1,2,3, \dots, m\}, j \in \{1,2,3, \dots, n\} \tag{3}$$

- 3) Calculate the weight vector w^T for the criteria, using formula (4):

$$w = (w_1, w_2, \dots, w_n)^T \quad w_j = \frac{H_j}{\sum_{j=1}^n H_j} \tag{4}$$

- 4) Select the linguistic scale function (Wang, Wu, Wang, Zhang, Chen, 2014), in compliance with the pessimistic (5), neutral (6), and optimistic (7) formula:

$$u_1(l_x) = (x/g)^s, (x \in [0, g]), 0 < s < 1 \tag{5}$$

$$u_1(l_x) = x/g, (x \in [0, g]) \tag{6}$$

$$u_1(l_x) = (x/g)^t, (x \in [0, g]), t > 1 \tag{7}$$

- 5) Calculate the aggregated grade value for each alternative in line with formula (8):

$$u(l_{\bar{x}}) = \sum_{i=1}^n w_i u(l_{x_i}), w_i \geq 0, (i = 1,2,3, \dots, n), \sum_{i=1}^n w_i = 1 \tag{8}$$

- 6) Use the operator ULA_F , in line with formula (9) to consolidate information and to determine collective grade value for each alternative:

$$\min_{l_x \in L} F(l_x) = \sum_{i=1}^n w_i (d(l_{x_i}, l_x))^2 = \sum_{i=1}^n w_i (u(l_{x_i}) - u(l_x))^2 \tag{9}$$

- 7) Streamline the alternatives according to ULA_F values, and select the best alternative in line with formula (10):

$$ULA_F(l_{x_1}, l_{x_2}, \dots, l_{x_n}) = \min\{l_j | F(l_j) = \min_{l_x \in L} F(l_x)\} \tag{10}$$

4. Methodology of Research

The objective of our research work was to analyse the possibility to use the uncertain linguistic aggregation operator ULA_F to assess occupational risk management processes in selected companies, in the situation whereby linguistic variables (verbal grades) were used in the assessment process.

As part of streamlining the problem, we determined criteria C (attributes) of assessment of the level of performance of the occupational risk management process, which corresponded to the successive stages of this process: C_1 – Identification of hazards, C_2 – Risk appraisal, C_3 – Risk assessment, C_4 – Analysis of preventive options, C_5 – Making decisions on ways to use preventive measures, C_6 – Implementation of preventive measures, C_7 – Monitoring preventive measures, and C_8 – Assessment of effectiveness of preventive measures.

Having set the assessment criteria, we arrived at possible, alternative solutions A , based upon six furniture manufacturing companies $A_1, A_2, A_3, A_4, A_5,$ and A_6 , with similar product mix, market position, and employment level from 50 to 99 persons.

At the problem modelling stage, using a specially prepared questionnaire, six auditors assessed criterion C for each of the A companies separately, and then they averaged their assessments. Performance of each subprocess (or criterion) was assessed irrespective of results of assessment criteria for the remaining companies. Auditors used a seven-degree scale for assessment purposes: 1 – *Completely Bad*, 2 – *Very Weak*, 3 – *Weak*, 4 – *Mediocre*, 5 – *Good*, 6 – *Very Good*, and 7 – *Excellent*.

Our research work is significant in that within the work health and safety area, including occupational risk management, there are not enough well-verified tools that could be used by decision-makers in their decision-making processes regarding assurance of safe and healthy conditions at work, especially in the situation whereby assessments are made verbally.

5. Results of Research

Based upon verbal grades for the particular subprocesses carried out in the particular companies, a decision-making matrix was drawn up, see Table 1.

Table 1. Linguistic decision matrix

Alternatives	Criteria							
	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8
A_1	l_1	l_4	l_5	l_4	l_3	l_3	l_3	l_1
A_2	l_2	l_3	l_5	l_3	l_4	l_4	l_1	l_2
A_3	l_2	l_3	l_3	l_5	l_5	l_5	l_4	l_2
A_4	l_1	l_3	l_4	l_1	l_3	l_5	l_3	l_1
A_5	l_2	l_1	l_4	l_2	l_4	l_4	l_3	l_2
A_6	l_1	l_3	l_3	l_3	l_2	l_2	l_2	l_1

Source: Own research

The companies we studied constituted six possible alternatives from A_1 to A_6 , whereas the subprocesses constituted eight adopted criteria, from C_1 to C_8 . Verbal grades were substituted with grades with determined subscripts, from 0 to 6. It should be noted that in fact the auditors used five grades only. None of the criteria obtained any extreme grades, such as *Completely Bad* or *Excellent*.

Following that, due to the fact that it was assumed that weights of the particular criteria were not known, such weights were calculated using Wang's maximum deviation method (Wang, 1998), in line with formulas (1), (2) and (3), see Table 2.

Table 2. Summary weights for each assessment criteria

	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8
H_j	9	15	16	26	19	21	18	9
w_j	0.0677	0.1128	0.1203	0.1955	0.1429	0.1579	0.1353	0.0677

Source: Own research

As an example, weight for the criterion C_1 was calculated as follows: $9/133 = 0.0677$. After rounding up the weight values, the weight vector w^T for criteria was:
 $w = (0.07, 0.11, 0.12, 0.20, 0.14, 0.16, 0.13, 0.07)^T$

The following step was to select the linguistic scale function. A neutral scale was adopted, as presented in formula (6), which means that $u(l_x) = x/6, (x \in [0,6])$. When the neutral linguistic scale was selected, aggregated grade values were calculated for each alternative in line with formula (8). Table 3 first presents an example of calculations carried out in line with formula (8) for alternative A₁, and then the list of aggregated estimates for the particular alternatives.

Table 3. Summary of aggregate estimates for individual alternatives

	An example of calculations according to the formula (8)					Estimate
A ₁	$= w_1 * u(l_1) + w_2 * u(l_4) + w_3 * u(l_5) + w_4 * u(l_4) + w_5 * u(l_3) + w_6 * u(l_3) + w_7 * u(l_3) + w_8 * u(l_1) = 0.0677 * 1/6 + 0.1128 * 4/6 + 0.1203 * 5/6 + 0.1955 * 4/6 + 0.1429 * 3/6 + 0.1579 * 3/6 + 0.1353 * 3/6 + 0.0677 * 1/6 = 0.0113 + 0.0752 + 0.1003 + 0.1303 + 0.0714 + 0.0789 + 0.0677 + 0.0113 = 0.5464$					0.5464
Alternatives	A ₁	A ₂	A ₃	A ₄	A ₅	A ₆
Estimates	0.5464	0.5226	<u>0.6654</u>	0.4624	0.4774	0.3822

Source: Own research

The next step was to use the ULA_F operator in line with formula (9) to consolidate information and to determine the collective grade value for each alternative. Table 4 first presents an example of calculations carried out in line with formula (9) for alternative A₁, and then a list of collective estimates for the particular alternatives.

Table 4. Summary of the collective estimations for each alternative

	An example of calculations according to the formula (9)					Estimate
A ₁	$F(l_1) = w_2 * [u(l_4) - u(l_1)]^2 + w_3 * [u(l_5) - u(l_1)]^2 + w_4 * [u(l_4) - u(l_1)]^2 + w_5 * [u(l_3) - u(l_1)]^2 + w_6 * [u(l_3) - u(l_1)]^2 + w_7 * [u(l_3) - u(l_1)]^2 = 0.1128 * 0.25 + 0.1203 * 0.4444 + 0.1955 * 0.25 + 0.1429 * 0.1111 + 0.1579 * 0.1111 + 0.1353 * 0.1111 = 0.0282 + 0.0535 + 0.0489 + 0.0159 + 0.0175 + 0.0150 = 0.1790$					0.1790
	$F(l_3) = w_1 * [u(l_1) - u(l_3)]^2 + w_2 * [u(l_4) - u(l_3)]^2 + w_3 * [u(l_5) - u(l_3)]^2 + w_4 * [u(l_4) - u(l_3)]^2 + w_5 * [u(l_1) - u(l_3)]^2 = 0.0677 * 0.1111 + 0.1128 * 0.0278 + 0.1203 * 0.1111 + 0.1955 * 0.0278 + 0.0677 * 0.1111 = 0.0075 + 0.031 + 0.0134 + 0.0054 + 0.0075 = 0.0370$					0.0370
	$F(l_4) = w_1 * [u(l_1) - u(l_4)]^2 + w_3 * [u(l_5) - u(l_4)]^2 + w_5 * [u(l_3) - u(l_4)]^2 + w_6 * [u(l_3) - u(l_4)]^2 + w_7 * [u(l_3) - u(l_4)]^2 + w_8 * [u(l_1) - u(l_4)]^2 = 0.0677 * 0.25 + 0.1203 * 0.0278 + 0.1429 * 0.0278 + 0.1579 * 0.0278 + 0.1353 * 0.0278 + 0.0677 * 0.25 = 0.0169 + 0.0033 + 0.0040 + 0.044 + 0.0038 + 0.0169 = 0.0493$					0.0493
	$F(l_5) = w_1 * [u(l_1) - u(l_5)]^2 + w_2 * [u(l_4) - u(l_5)]^2 + w_4 * [u(l_4) - u(l_5)]^2 + w_5 * [u(l_3) - u(l_5)]^2 + w_6 * [u(l_3) - u(l_5)]^2 + w_7 * [u(l_3) - u(l_5)]^2 + w_8 * [u(l_1) - u(l_5)]^2 = 0.0677 * 0.4444 + 0.1128 * 0.0278 + 0.1955 * 0.0278 + 0.1429 * 0.1111 + 0.1579 * 0.1111 + 0.1353 * 0.1111 + 0.0677 * 0.4444 = 0.0301 + 0.0031 + 0.0054 + 0.0159 + 0.0175 + 0.0150 + 0.0301 = 0.1172$					0.1172
	A ₁	A ₂	A ₃	A ₄	A ₅	A ₆
F(l ₁)	0.1790	0.1667	-	0.1437	0.1295	0.0597
F(l ₂)	-	0.0758	0.1456	-	0.0537	<u>0.0157</u>
F(l ₃)	<u>0.0370</u>	<u>0.0405</u>	0.0627	<u>0.0576</u>	<u>0.0334</u>	0.0272
F(l ₄)	0.0493	0.0608	<u>0.0353</u>	0.0980	0.0687	0.0942
F(l ₅)	0.1172	0.1366	0.0635	0.1938	-	-

Source: Own research

The last stage was to streamline the alternatives according to ULA_F values, and to select the best alternative, in line with formula (10). It follows from our calculations that:

$u(l_{\bar{x}}^{A_6}) < u(l_{\bar{x}}^{A_4}) < u(l_{\bar{x}}^{A_5}) < u(l_{\bar{x}}^{A_2}) < u(l_{\bar{x}}^{A_1}) < u(l_{\bar{x}}^{A_3})$; which means that the best alternative from the point of view of the occupational risk management process is alternative A₃. Table 5 lists our calculation results.

Table 5. Summary of results of the calculations

Alternatives	$u(l_{\bar{x}}^{A_m})$	min		Verbal evaluation
A ₃	0.6654	0.0353	$ULA_F(l_2, l_3, l_3, l_5, l_5, l_5, l_4, l_2) = l_4$	Mediocre
A ₁	0.5464	0.0370	$ULA_F(l_1, l_4, l_5, l_4, l_3, l_3, l_3, l_1) = l_3$	Weak
A ₂	0.5226	0.0405	$ULA_F(l_2, l_3, l_5, l_3, l_4, l_4, l_1, l_2) = l_3$	Weak
A ₅	0.4774	0.0334	$ULA_F(l_2, l_1, l_4, l_2, l_4, l_4, l_3, l_2) = l_3$	Weak
A ₄	0.4624	0.0576	$ULA_F(l_1, l_3, l_4, l_1, l_3, l_5, l_3, l_1) = l_3$	Weak
A ₆	0.3822	0.0157	$ULA_F(l_1, l_3, l_3, l_3, l_2, l_2, l_1) = l_2$	Very Weak

Source: Own research

The last column in Table 5 contains aggregated results of our assessments in the form of clear, easy-to-understand verbal expressions.

This research used the linguistic aggregation operator ULA_F which represents novelty in the literature of occupational risk management. There are no practical examples of using this operator in the literature in this area.

8. Discussion and Conclusion

Due to the fact that the occupational risk management process is inherently complex and cannot be described using a single variable, it seems that the best approach to this process performance assessment is multi-dimensional analysis, and, in consequence, multi-dimensional (multi-criterial) methods. Due to the specificity of the particular occupational risk management subprocesses, most frequently verbal expressions are used to assess their performance levels. Therefore, the objective of our research work was to analyse the possibility to use the uncertain linguistic aggregation operator ULA_F to assess occupational risk management process in six selected manufacturing companies.

Advantages: The approach proposed by Lane turned out to be relatively simple, and mathematical operations could be run using the spreadsheet format, which is especially important in case of small- and medium-size businesses. Equally important is the fact that final results obtain the form of verbal grades, which makes it much easier to interpret them.

Limitations: A more comprehensive look at the occupational risk management process suggests that *Identification of hazards* should be considered the key subprocess, as any wrong identification, especially of critical hazards, may affect the objective of this process, irrespective of substantive correctness of its successive stages. Therefore, it seems advisable to consider using a different approach to the way weights of the particular assessment criteria should be calculated, in such a way as to account for impacts they may exert upon achievement of the objective of the occupational risk management process.

Possible Applications: The research work as discussed above confirmed that the operator ULA_F was useful in the work health and safety area to assess, compare, and identify companies that were the best and the worst at the performance of their occupational risk management processes. This can be used in the benchmarking process.

In the context of the results we have obtained, further research is planned, including practical verification of usability of various methods in solving decision-making problems concerning the remaining key phenomena in the work health and safety management area.

References

- Ballesteros-Pérez, P., del Campo-Hitschfeld, M.L., Mora-Meliá, D., Domínguez, D. (2015). Modeling bidding competitiveness and position performance in multi-attribute construction auctions. *Operational Research Perspectives*, vol. 2, pp. 24-35.
- Cao, Q.W., Wu, J. (2011). The extended COWG operators and their application to multiple attributive group decision making problems with interval numbers. *Applied Mathematical Modelling*, vol. 35, iss. 5, pp. 2075-2086.
- Delgado, M., Herrera, F., Herrera-Viedma, E., Martínez, L. (1998). Combining numerical and linguistic information in group decision making. *Information Sciences*, vol. 107, pp. 177-194.
- Feng, B., Lai, F.J. (2014). Multi-attribute group decision making with aspirations: A case study. *Omega*, vol. 44, pp. 136-137.
- Fernández-Muniz, B., Montes-Peón, J.M., Vázquez-Ordás, C.J. (2009). Relation between occupational safety management and firm performance. *Safety Science*, vol. 47, pp. 980-991.
- Frankovský, M., Birknerová, Z., Zbihlejšová, L. (2016). Managerial Decisions. *Polish Journal of Management Studies*, vol.14, iss. 2, pp. 61-70.
- Herrera, F., Alonso, S., Chiclana, F., Herrera-Viedma, E. (2009). Computing with words in decision making: foundations, trends and prospects. *Fuzzy Optimization and Decision Making*, vol. 8, pp. 337–364.
- Holubová, V. (2016). Integrated Safety Management Systems. *Polish Journal of Management Studies*, vol. 14, iss. 1, pp. 106-118.
- ISO, 2009, ISO 3100: 2009 Risk management – Principles and Guidelines. International Organization for Standardization.

- ISO, 2010, ISO 12100: 2010 Safety of Machinery – General Principles for Design – Risk Assessment and Risk Reduction. International Organization for Standardization.
- Lan, J.B., Sun, Q., Chen, Q.M., Wang, Z.X. (2013). Group decision making based on induced uncertain linguistic OWA operators. *Decision Support Systems*, vol. 55, pp. 296-303.
- Lan, J., Chen, Y., Ning, M., Wang, Z. (2015). A New Linguistic Aggregation Operator and Its Application to Multiple Attribute Decision Making. *Operational Research Perspectives*, vol. 2, pp. 156-164.
- Liu, J., Li, W.J., Chen, S.W., Xu, Y. (2014). An axiomatizable logical foundation for latticeordered qualitative linguistic approach for reasoning with words. *Information Sciences*, vol. 263, pp. 110-125.
- Ma, J., Lu, J., Zhan, G.C. (2014). A three-level-similarity measuring method of participant opinions in multiple-criteria group decision supports. *Decision Support Systems*, vol. 59, pp. 74-83.
- Majerník, M., Daneshjo, N., Sančiová, G., Chovancová, J. (2017). Design of Integrated Management Systems According to the Revised ISO Standards. *Polish Journal of Management Studies*, vol.15, iss. 1, pp. 135-143.
- Manuelle, F.A., (2005). Risk assessment and hierarchies of control – their growing importance to the SH&E profession. *Professional Safety*, vol. 50, iss. 5, pp. 33-39.
- Martínez, L., Herrera, F. (2012). An overview on the 2-tuple linguistic model for computing with words in decision making: extensions, applications and challenges. *Information Sciences*, vol. 207, pp. 1-18.
- Mas, M., Monserrat, M., Torrens, J. (2014). Kernel aggregation functions on finite scales. Constructions from their marginals. *Fuzzy Sets and Systems*, vol. 241, pp. 27-40.
- Moseman, J. (2012). New risk acceptance criteria for process safety. *Process Safety Progress*, vol. 31, iss. 1, pp. 6-8.
- Park, J.H., Park, J.M., Kwun, Y.C. (2013). 2-Tuple linguistic harmonic operators and their applications in group decision making. *Knowledge Based Systems*, vol. 44, pp. 10–19.
- Rajnoha, R., Dobrovič, J. (2017). Managerial Information Support for Strategic Business Performance Management in Industrial Enterprises in Slovakia. *Polish Journal of Management Studies*, vol. 15, iss. 2, pp. 194-204.
- Riera J.V., Torrens J. (2014). Aggregation functions on the set of discrete fuzzy numbers defined from a pair of discrete aggregations. *Fuzzy Sets and Systems*, vol. 241, pp. 76–93.
- Schubert, J., Moradi, F., Asadi, H., Luotsinen, L., Sjöberg, E., Hörling, P., Linderhed, A., Oskarsson, D. (2015). Simulation-based decision support for evaluating operational plans. *Operational Research Perspectives*, vol. 2, pp. 36–56.
- van Duijine, F.H., Schuoten, E.G., van Aken, D. (2008). Considerations in developing complete and quantified methods for risk assessment. *Safety Science*, vol. 46, pp. 245-254.
- Wang, Y.M. (1998). Using the Method of Maximizing Deviations to Make Decision for Multi-Indices. *Journal of Systems Engineering and Electronics*, vol. 7, pp. 24-26.
- Wang, J.Q., Wu, J.T., Wang, J., Zhang, H.Y., Chen, X.H. (2014). Interval-valued hesitant fuzzy linguistic sets and their applications in multi-criteria decision-making problems. *Information Sciences*, vol. 288, pp. 55-72.
- Xu, Y.J., Da, Q.I., Liu, X.W. (2010). Some properties of linguistic preference relation and its ranking in group decision making. *Journal of Systems Engineering and Electronics*, vol. 21, pp. 244-249.

84. COOPERATION BETWEEN BUSINESSES AND BUSINESS ENVIRONMENT INSTITUTIONS BASED ON THE EXAMPLE OF COMPANIES FROM PODLASKIE REGION (THE CONSTRUCTION SECTOR PARTICULAR)

Abstract: Modern businesses are faced with increasingly difficult and complicated conditions for development, while existing circumstances force them to cooperate on many levels, including with business environment institutions. Literature studies and national and regional research on cooperation (especially cooperation with business environment institutions) are meagre, which is why this article aims to fill the gap regarding cooperation on a regional level. The aim of this article is to identify the level of cooperation with business and business environment institutions in Podlaskie region (the construction sector in particular) and the possibilities of strengthening this cooperation in the near future. The research problem was answered through posing the following questions: which factors affect the level of cooperation with business environment institutions? How do respondents rate the current level of cooperation with business environment institutions? To what degree do individual factors affect the current level of cooperation of businesses with business environment institutions? What is the level of interest of the researched firms in strengthening cooperation with business environment institutions? To what extent could positive changes in individual factors lead to an improvement in the cooperation of businesses with business environment institutions in the near future? The research encompassed 381 businesses and a separate analysis was made of firms in construction industry – 76. The data was interpreted with the use of tables, descriptive statistics and nonparametric statistics. The research carried out indicated both a low level of current cooperation of businesses with business environment institutions and an average level of interest in strengthening this in the future.

Keywords: business, business environment institutions, construction, cooperation, region.

JEL Classification: L22, L26

1. Introduction

Businesses operate in close relation with the environment and act in various relationships with its participants - competitors, buyers, suppliers, stakeholders, investors, business environment institutions etc. The scientific analysis of the business relationship network most often concerns relations between enterprises as key to their competitiveness. However, more and more often the attention is drawn to the need for building relationships with other market players as well (Karwacka, 2016), especially facing conditions of strong competition (Powell, 1990; Noteboom, 1999; Powell, Koput, Shimith-Doerr, 1996; Świadek, Wiśniewska, 2015).

This was the reason for considering the role of potential cooperation animators - business environment institutions whose mission is to support building relationships between organizations. Cooperation with BEI seems to be an opportunity for development and enhancement of companies competitiveness, especially in the insufficiently invested areas since competitiveness of individual market players determines competitiveness of regions, which seems to be particularly important in the context of the EU policy on financing the future development of regions, based on smart specializations (Dąbrowska et al., 2015).

This article attempts to investigate whether companies based in the Podlaskie Voivodship, with particular emphasis on construction companies, see the benefits of cooperation with business environment institutions. The aim of this article is to identify the level of cooperation with BEI in relation to companies in Podlasie in general and in construction industry as well as prospects for its strengthening in the near future.

¹ Anna Tomaszuk Ph.D.; O. St. Tarasiuka 2, 16-002 Kleosin/Białystok, Poland, a.tomaszuk@pb.edu.pl.

*Corresponding author

2. Literature Review

Many terms to define cooperation can be found in the literature (Karwacka, 2016; Daniluk, Tomaszuk, 2016; Gnyawali, Madhavan, 2006; Strzyżewska, 2011). However, most authors emphasise that it is a prerequisite for functioning and enhancing the potential of the various areas (Hamel, 1991; Håkansson, 1987; Inkpen, Crossan, 1996).

Next to cooperation between businesses (Karwacka, 2016; Wasiluk, 2016; Wasiluk, 2017) a dynamic development of various forms of cooperation between economic entities can also be observed in the modern global economy (Strzyżewska, 2011). Supporting entrepreneurship and innovation processes includes the provision of specific services and development of economic-social environment favourable to entrepreneurs and conducive to independent business (Hillebrand, Biemas, 2003).

The main tasks of the business environment relate to a variety of activities aimed at increasing creativity, entrepreneurship, and innovation. This leads to a more efficient use of regional and local growth factors. Different motives for innovation implementation by companies are presented in the economic literature. One of the most important is to create a competitive advantage of both cost and the company's proposal resulting from differentiation (Tu, Hwang, Wong, 2014; Nurullah, Nihat, Oyku, 2012).

One of the areas of cooperation is cooperation of companies with business environment institutions. In the initial phase of their operation the primary objective of BEI was to support the development of entrepreneurship and adaptation of Polish enterprises to new conditions after the transformation of the state system, including the legal conditions connected with Poland's accession to the European Union. Initially, BEI development was based on assistance from European funds, the World Bank and the British Know-How Fund (Jabłońska, 2015).

Since 2004, most of the research reports on business environment institutions have been defined as the following: “institutions non-profit, which do not operate for profit or allocate profit for statutory purposes, as defined in the statute or equivalent document, operating in Poland. A separate business-related institution should have the material, technical and human resources as well as competences necessary to provide services to the SME sector (Burdecka, 2004). However, limiting the definition of business environment institutions to non-profit entities does not seem to be an appropriate approach to business entities which create favorable conditions for business development on commercial basis, providing high quality services (Dąbrowska et al., 2015).

In the Minister of Regional Development Regulation on providing assistance to strengthen the potential of BEI within the regional operational programs it was assumed that the business environment institution is an entrepreneur, regardless the legal form, that does not work for profit or allocates profit for statutory purposes and conducts activities aimed at creating favorable conditions for the development of entrepreneurship (Dz.U. No 85, item 719).

Three basic groups of business environment institutions are most often distinguished (Bąkowski, 2014):

- entrepreneurship centers – whose task include broad promotion and incubation of entrepreneurship (often in discriminated groups), provision of support services to small businesses and activation of peripheral regions or the ones in structural crisis,
- innovation centers – whose task include broad promotion and incubation of innovative entrepreneurship, technology transfer and provision of pro-innovation services as well as activation of academic entrepreneurship and cooperation of science and business,
- parabanking financial institutions – whose task is to reduce the financial discrimination of newly established and small businesses without a credit history and to provide financial services tailored to the specific needs of new business ventures.

One of the areas of cooperation is cooperation of businesses with business environment institutions, which can include (Filipiak, Ruszała, 2009):

- national administration entities,
- national government entities,
- public-private partnerships,
- R&D facilities,
- employers and employees organizations,

- chambers and associations of producers,
- training and consulting institutions,
- higher education sector,
- institutions that support entrepreneurship,
- networks that support entrepreneurship and innovation.

The business environment institutions are also the important elements of the efficient innovation system. They support companies and facilitate the flow of knowledge and technology between science and businesses entities. These institutions strongly complement the contemporary logic of building the competitiveness of companies and socio-economic development of regions. They are such organisations whose activity is significant because of the direct contacts with local entrepreneurs. The cooperation of business environment institutions would enable presenting coherent and comprehensive services of business environment institutions to investors, as well as strengthening regional institutions in the domestic market (Daniluk, 2016; Leight, Blakley, 2013; Patel, Pettit, Wilson, 2012).

3. Methodology of the Research

The research part of this article presents partial results of the international research project "Enterprise Readiness for Cross-border Networking" carried out as a result of an agreement between the Polish Academy of Sciences and the Belarusian State Academy of Sciences in the years 2014-2016. Polish managers of companies established in the Podlaskie Voivodship took part in the study. The survey of 381 enterprises from key sectors of the Podlaskie Voivodship was conducted.

Additionally, the aim of comparative analysis, separate analysis was conducted for constructing enterprises, represented by 76 entities.

Following desk research analysis (e.g. Bengtsson, Kock, 2014) and discussions with experts in business and science environment six levels of cooperation were identified:

- between businesses within the industry,
- between competing businesses,
- between businesses and business environment institutions,
- between businesses and scientific research sector,
- between businesses and local authorities,
- between businesses and national authorities.

The next step was to investigate what factors affect each of the separated areas. Analysis of the area of enterprises cooperation with BEI has allowed distinguishing 9 factors:

- possibility of carrying out common research and development initiatives,
- access to research institutions/research infrastructure,
- access to financial institutions and support programs,
- business consulting and advice,
- commercialization of results of the research,
- access to databases,
- assistance in business expansion,
- assistance in the transfer of technology,
- previous experience of cooperation.

Respondents were asked to assess the level of cooperation in each of the analyzed areas and indicate how each factor influenced the level of cooperation in the analysed area (1-7 scale). Respondents then identified the degree of their interest in strengthening cooperation in the near future (2-3 years) and indicated to what extent the positive changes in the individual factors could influence the level of cooperation (1-7 scale also).

The aim of this article is to identify the level of enterprises cooperation in general and to identify the level of cooperation between the construction industry and BEI, and the prospects for tightening it in the near future.

4 research questions were posed: How do respondents rate the current level of cooperation with business environment institutions? To what degree do individual factors affect the current level of cooperation of businesses with business environment institutions? What is the level of interest of the researched firms in strengthening cooperation with business environment institutions in the near

future? To what extent could positive changes in individual factors lead to an improvement of cooperation with business environment institutions in the near future?

Tabular forms of data presentation were used to interpret the data, which allowed for determining how are the individual categories distributed in the research sample; descriptive statistics that determine the relation between an individual variant of the answer and all the answers; nonparametric statistics that allowed for validation of significant differences in responses (Spearman's rank correlation). The analyses were carried out using a statistical package STATISTICA 12.5.

4. Analysis of the Results

Studying the current level of cooperation with business environment institutions (Table 1) the low level of cooperation and the low level of interest in its strengthening in the future can be noted in the case of both examined groups (in a scale of 1-7 the average level is 4). The level of current cooperation with business environment institutions was evaluated lower by construction companies (the average was 2.84) than the average for the surveyed companies in general as it was 3.07. Worth noting is also the value of the dominant ratio - in both cases it is low and in the construction industry it is 1, which should be interpreted as the absence of any cooperation. Analyzing the respondents' interest in strengthening cooperation with BEI the results are somewhat more optimistic and convergent - in the case of arithmetic average the difference of only 0.01 can be observed and also the difference in dominant ratings is higher, which does not change the fact that companies in Podlasie are not interested in undertaking cooperation with business environment institutions and are unaware of the benefits of cooperation in this regard.

Table 1. Evaluation of the current level of cooperation and the degree of interest in its strengthening in the future

		\bar{x}	M_e	D	n_D	V
Total	Level of cooperation with business environment institutions	3.07	3	3	93	49.88
	Degree of interest in strengthening cooperation within the next 2-3 years	3.69	4	4	84	43.49
	Spearman's rank correlations					
	Evaluation of the current level of cooperation and possibilities of its strengthening in the future					0,644566
Construction	Level of cooperation with business environment institutions	2.84	3	1	18	53.61
	Degree of interest in strengthening cooperation within the next 2-3 years	3.68	4	3	21	40.43
	Spearman's rank correlations					
	Evaluation of the current level of cooperation and possibilities of its strengthening in the future					0.630760

Source: Author's research results

Links between the current level of businesses and business environment institutions cooperation and the interest in strengthening it were also analysed (using Spearman's rank correlation). A high positive correlation was observed in responses of representatives from both groups. A higher rating of the current level of contact with business environment institutions translates to a greater readiness for cooperation in the future.

Then the impact of the identified factors on the current level of cooperation between business and business environment institutions was analyzed (Figure 1 presents a comparative analysis of representatives of the surveyed enterprises in general and construction companies by the prism of arithmetical mean).

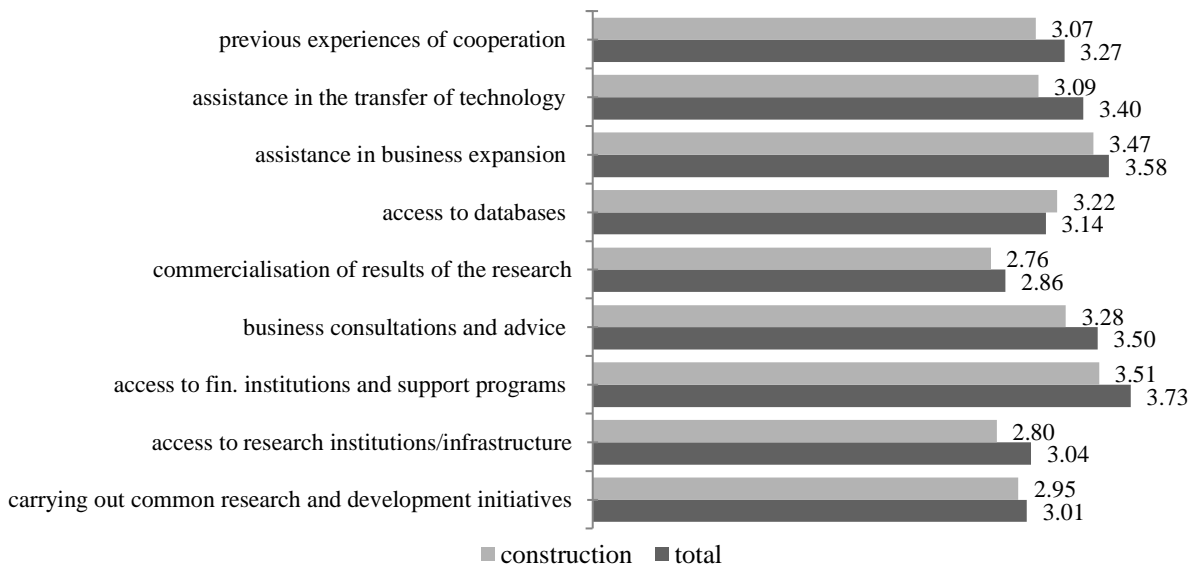


Figure 1. Impact of the identified factors on the level of cooperation with business environment institutions

Source: Author’s research results

The analysis of the graph allows us to conclude that no particularly important factor can be specified for any of the groups. Almost all factors (except for access to databases) were rated lower by the construction industry representatives (their lowest rated was commercialization of research results - 2.76 and the highest rated was access to financial institutions and support programs - 3.51). The same factors were rated the lowest and most significant for the surveyed companies in general (2.86 and 3.51 respectively).

Respondents were also asked to what degree the positive changes in individual factors could improve the level of cooperation with business environment institutions (Figure 2).

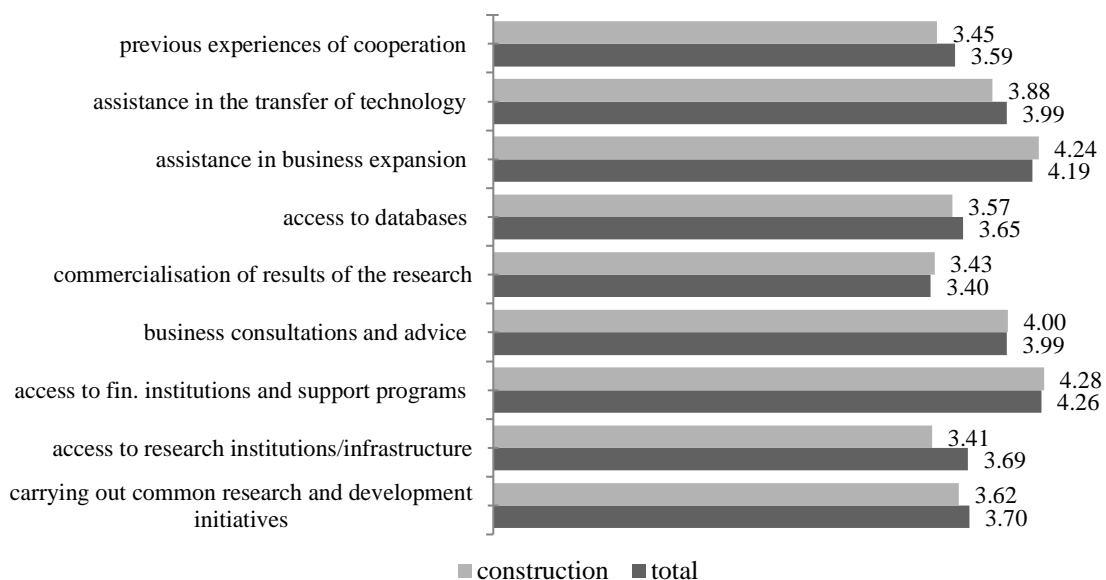


Figure 2. Influence of positive changes in individual factors on improving the level of cooperation with business environment institutions

Source: Author’s research results

In this case also the responses of both groups are significantly different. Most positive changes would be less relevant for construction companies (except for assistance in business expansion, commercialisation of results of research, business consultation and advice and access to financial institutions and support programs). No change in any factor would have a significant impact on

improving the level of cooperation with BEI. In the opinion of respondents in general two factors of average influence can be determined (assistance in business expansion and access to financial institution and support programs), three factors are of medium importance in the opinion of respondents in the construction industry (assistance in business expansion and access to financial institution and support programs and business consultation and advice). In the case of other factors any positive changes would be of minor importance.

The relationships between the evaluations of the influence of different factors on existing cooperation and the influence of positive changes in individual factors on cooperation improvement in the future were also analysed. The Spearman's rank correlation showed a high positive correlation (ranging from 0.674 to 0.792) within all factors in the two groups of respondents. An increase in the ratings regarding individual factors affecting the current level of cooperation between businesses and business environment institutions is accompanied by an increase in the average rating of the effect of positive changes in these factors on engaging in cooperation in the future.

5. Conclusion

The article deals with the topic of businesses and business environment institutions cooperation. Two groups of respondents were analysed - representatives of Podlaskie companies and representatives of construction companies based in Podlasie. The conducted studies show that in the researched groups at most moderate interest in cooperation with the BEI is observed, with almost all the indicators being lower in the construction industry. The resulting picture differs from the many opinions presented in the section devoted to the literature review at the beginning of this text.

Entrepreneurs in the Podlaskie region do not notice the benefits of cooperation in general (Daniluk, Tomaszuk, 2016; Wasiluk, 2016; Wasiluk, 2017) including cooperation with BEIs - due to, among others, negative stereotypes regarding the support of BEI (Misterec, 2013). Lower rates of cooperation in the surveyed area in the case of construction companies may result from the fact that this sector is characterized by high rivalry and low cooperation between competitive enterprises, which may also affect the other areas of cooperation. It is also worth paying attention to the fact that the respondents are sceptical about previous experiences of cooperation with BEI.

The literature however, emphasizes that previous cooperation reduces uncertainty (Gulati, Gargiulo, 1999), helps partners to acquire and deepen their knowledge about themselves (Mayer, Argryges, 2004) allows to develop methods of cooperation (Reuer, Ariño, 2007) and strengthens the perception of relationships as stable (Poppo, Zhou, Ryu, 2007).

Nevertheless, presented results fit the image of Polish businesses - research on innovation shows that Polish firms have little interest in research and development initiatives (Baczko 2012; Polska Agencja Rozwoju Przedsiębiorczości, 2015), and expenses meant for innovation were used for the purchase of machines and appliances rather than for conducting research and development (Bromski, 2013).

This allows concluding that the population in question is clearly lacking in positive reflections on the benefits of this form of cooperation, which is of particular importance for the SME sector and the under-invested regions. Therefore, it is crucial to get to know the reasons for so reluctant attitude to cooperation, to convince and encourage entrepreneurs to engage in it.

Acknowledgements

The research was conducted within the statutory work of the Department of Organization and Management at Bialystok University of Technology and was financed from Polish Ministry of Science and Higher Education funds.

References

- Baczko, T. (2012). *Raport o innowacyjności gospodarki Polski w 2012 roku*. Warszawa: Instytut Nauk Ekonomicznych PAN.
- Bąkowski, A. (2014). *Ośrodki innowacji w Polsce (z uwzględnieniem inkubatorów przedsiębiorczości)*. Raport z badania. In M. Mażewska (Ed.), Warszawa PARP.
- Bengtsson, M., Kock, S. (2014). Coopetition – Quo Vadis? Past accomplishments and future challenges. *Industrial Marketing Management*, vol. 43, iss. 2, pp. 180-188.

- Bromski, K. (Ed.). (2013). *Współpraca nauki i biznesu. Doświadczenia i dobre praktyki wybranych projektów w ramach Programu Operacyjnego Innowacyjna Gospodarka na lata 2007-2013*. Warszawa: PARP.
- Burdecka, W. (2004). *Instytucje otoczenia biznesu*. Warszawa: PARP.
- Daniluk, A. (2016). Conditions of cooperation between enterprises and business environment institutions using the podlasie region as an example, *Economics and Management*, vol. 8, iss. 4, pp. 18-27.
- Daniluk, A., Tomaszuk, A. (2016). Conditions for development of companies' cooperation and entrepreneurship. *Proceedings of the 9th International Scientific Conference Business and Management 2016*. Vilnius: Vilnius Gediminas Technical University.
- Dąbrowska, E., Dębkowska, K., Ejdyś, J., Fiedorczuk, M., Muczyński, M., Panfiluk, E., Szpilko, D. (2015). *Zapotrzebowanie przedsiębiorstw na usługi świadczone przez instytucje otoczenia biznesu w regionie podlaskim*. Białystok: Urząd Marszałkowski Województwa Podlaskiego.
- Filipiak, B., Ruszała, J. (2009). *Instytucje otoczenia biznesu. Rozwój, wsparcie, instrumenty*. Warszawa: Difin.
- Gnyawali, D.R., Madhavan, J., He, R. (2006). Impact of co-opetition on firm competitive behaviour. An empirical examination. *Journal of Management*, vol. 32, iss. 4, pp. 507-509.
- Gulati, R., Gargiulo, M. (1999). Where Do Interorganizational Networks Come From? *American Journal of Sociology*, vol. 104, iss. 5, pp. 1439-1493.
- Håkansson, H. (1987). *Industrial technological development. A network approach*. London: Croon Helm.
- Hamel, G. (1991). Competition for competence and inter-partner learning within international strategic alliances. *Strategic Management Journal*, vol. 12, pp. 83-104.
- Hillebrand, B., Biemas, D. (2003). The relationship between internal and external cooperation: Literature review and proposition. *Journal of Business Research*, vol. 56, no. 9, pp. 9-10.
- Inkpen, A.C., Crossan, M. (1996). Believing is seeing: Joint ventures and organizational learning. *Journal of Management Studies*, vol. 32, no. 5, pp. 596-618.
- Jabłońska, D. (2015). *Krajowa Polityka Regionalna a instytucje otoczenia biznesu*, [online]. Available: https://www.mir.gov.pl/rozwoj_regionalny/Polityka_regionalna/KSRR_2010_2020/Ekspertyzy/Documents/Jablonska_Krajowa_Polityka_Regionalna_a_BEI.pdf. (National Regional Policy and BEI), [2017, November 15].
- Karwacka, M. (2016). *Siła współpracy. Relacje przedsiębiorstw z organizacjami pozarządowymi w kontekście społecznej odpowiedzialności biznesu*. Kraków: Nomos.
- Leigh, N.G., Blakely, E.J. (2013). *Planning Local Economic Development. Theory and Practice*. Fifth Edition. London: SAGE Publications.
- Mayer, K.J., Argyres, N.S. (2004). Learning to Contract: Evidence from the Personal Computer Industry. *Organization Science*, vol. 15, iss. 4, pp. 394-410.
- Mistereck, W. (2013). Bariery we współpracy przedsiębiorstw innowacyjnych z instytucjami otoczenia biznesu. *Annales Universitatis Mariae Curie-Skłodowska, sectio H – Oeconomia*, vol. 47, iss. 2, pp. 113-122.
- Noteboom, B. (1999). The dynamic efficiency of networks. In A. Grandori (Ed.), *Interfirm networks: Organization and industrial competitiveness*. London: Routhledge.
- Nurullah, G., Nihat, A., Oyku, N. I. (2012). A Conceptual Model Proposal for Determinants, Form, Functions and Structure Choice in Strategic Alliances. *Procedia Social and Behavioral Science*, vol. 58, pp. 1594-1600.
- Patel, H., Pettitt, M., Wilson J. M. (2012). Factors of collaborative working: A framework for a collaboration model. *Applied Ergonomics*, vol. 43, pp. 1-26.
- Polska Agencja Rozwoju Przedsiębiorczości (2015). *Innowacyjna przedsiębiorczość w Polsce. Odkryty i ukryty potencjał polskiej innowacyjności. Raport*. Warszawa.
- Poppo, L., Zhou, K.Z., Ryu, S. (2007). Alternative Origins to Interorganizational Trust: An Interdependence Perspective on the Shadow of the Past and the Shadow of the Future. *Organization Science*, vol. 19, iss. 1, pp. 39-55.
- Powell, W.W. (1990). Neither market nor hierarchy: Network form of organization. *Research in Organizational Behaviour*, vol. 12, pp. 295-336.
- Powell, W.W., Koput, K.W., Smith-Doerr, L. (1996). Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology. *Administrative Science Quarterly*, vol. 41, pp. 116-145.
- Reuer, J.J., Ariño, A. (2007). Strategic alliance contracts: Dimensions and determinants of contractual complexity. *Strategic Management Journal*, vol. 28, iss. 3, pp. 313-330.
- Strzyżewska, M. (2011). *Współpraca między przedsiębiorstwami – odniesienie do polskiej praktyki*. Warszawa: Oficyna Wydawnicza SGH.

Świadek, A., Wiśniewska, J. (Eds.). (2015). *Współpraca przedsiębiorstw a innowacje i transfer technologii: wybrane aspekty*. Szczecin: Naukowe Wydawnictwo IVG.

The Minister of Regional Development Regulation of 20 May 2009 on providing assistance to strengthen the potential of business environment institutions within the regional operational programs, Dz.U. No 85, item 719.

Tu, C., Hwang, S.H., Wong, J.Y. (2014). How does cooperation affect innovation in micro-enterprises? *Management Decision*, vol. 52, iss. 8, pp. 1390-1409.

Wasiluk, A. (2016). Prerequisites for undertaking and developing cooperation by industrial and construction companies. Proceedings of the 9th International Scientific Conference Business and Management 2016. Vilnius: Vilnius Gediminas Technical University.

Wasiluk, A. (2017). Pro-innovative Prerequisites for Establishing the Cooperation between Companies (in the Perspective of Creation and Development of Clusters). *Procedia Engineering*, vol. 182, pp. 755-762.

Wybieralski, P. (2015). *Alianse technologiczne a strategiczne zachowania korporacji międzynarodowych na rynkach niedoskonałych*. Toruń: Adam Marszałek.

Magdaléna Tupá ¹ *

University of Alexander Dubcek in Trencin
Slovakia

Herbert Strunz ²

University of Alexander Dubcek in Trencin
Slovakia

Marcel Kordoš ³

University of Alexander Dubcek in Trencin
Slovakia

85. ECONOMIC FALLOUTS OF ILLEGAL MIGRATION IN SWEDEN

Abstract: The consequences of refugee crisis in Europe, which began in 2014/2015, are starting to come through in full extent. Sweden, as a country with pro-immigration-oriented policy, has become one of the most preferred target countries, so the consequences are most pronounced in this country. The study, based on development of illegal migration and selected economic indicators, identifies the consequences of illegal migration in Sweden and their impact on economy and public finances. The study defines a set of economic criteria and, by means of statistical calculations; the losses and benefits of illegal migration for the country and society are to be recalculated. The implementation of calculations is based on available statistical data from national and international databases, but also on empirical surveys data available in professional publications. The result is a balance of losses and benefits in terms of illegal migration in Sweden, and in long run it also deals with the returns of governmental spending on integration of immigrants into society.

Keywords: economic fallout, illegal migration, immigration, migration policy, target country.

JEL Classification: F22

1. Introduction

Illegal migration of third-country nationals to European Union today represents a significant economic and socio-economic problem more than anytime before. Currently there are at least 27 armed conflicts in the world, of which 11 have more than 1,000 victims (Uppsala Conflict Data Program). It is the war being the main reason for refugee migration, when the citizens of warring states are fleeing beyond the borders of their countries (Adepoju, Van Noorloos, Zoomers, 2010; Žáková, Berová, 2014; Andersson, 2016). Human life protection or protection from persecution was the basis of Human Rights Declaration adopted in 1948 in San Francisco by all developed and democratic countries, responding to the events of the Second World War (Všeobecná deklarácia ľudských práv). The highest number of refugees having been arriving into Europe since 2014 is from Afghanistan, Pakistan, Iraq, Syria and Eritrea. Along with the first wave of refugees during this migration crisis, there is a help coming from the most developed countries in Europe (Masárová, 2016b). The open immigration policy, in particular, in Germany, Austria and Sweden, evokes further and further refugees waiting on borders with the desire to cross them. Target countries see immigration as a way how to solve their socio-economic problems - aging, lack of qualified labor force (brain-drain), cheap labor force, and others iné (Kazlauskienė, Rinkevičius 2006; Daugeliene, 2007; Lee, 2008; Blanchflower, Shadforth, 2009; Andrijasevic, Sacchetto, 2016). They are launching an avalanche, when refugees are entering the EU not being managed or organized, in big crowds; they are not leaving their countries because of the fear of their lives or persecution, but in the hope of better lives, generous benefits and hospitality of welcoming countries (Masárová, 2016a).

¹ Ing. Magdaléna Tupá Ph.D.; Študentská 3, 950 11 Trenčín, Slovakia, spisiakovam@gmail.com

² Prof. Ing. Mag. Dr. Herbert Strunz Ph.D.; Študentská 3, 950 11 Trenčín, Slovakia, herbert.stunz@tnuni.sk

³ Ing. Marcel Kordoš Ph.D.; Študentská 3, 950 11 Trenčín, Slovakia, marcel.kordos@tnuni.sk

* Corresponding author

How many illegal refugees can the country take without being the asylum integration of seekers too expensive for the country? What is the most optimal ratio between working migrants from EU countries and illegal migrants? How many illegal refugees have come to the country because of fear from being persecuted or threatening of their life? What management tools in the country's migration management can maximize profits and minimize losses from migration, but with respect to life protection?

The main objective of this study is to identify, on the basis of the development of illegal migration and selected economic indicators, the consequences of illegal migration in Sweden and their impact on economy and public finances. To achieve this goal a set of economic criteria will be used, and by means of mathematical and statistical calculations the losses and benefits of illegal migration regarding the government and society will be quantified. We want to point out that there is a possibility to manage the migration policy in target country effectively. It is imperative that migration management in Sweden would deal with the issues of economic difficulties to secure the basic living needs of asylum applicants and subsequently asylum seekers, first of all their urgent integration, especially within the labor market and consequently within the majority society life.

The implementation of calculations is based on available statistical data from national and international databases, but also on data from empirical surveys available in professional publications. The result is an assessment of migratory policy in Sweden and how to deal with the government spending return within the integration of immigrants into society in the long run.

2. Methodology

In order to reach this goal, we will calculate both the costs and profits stemming from the immigration. We also assess the costs and the profits connected with refugee crisis such as costs of asylum procedures, costs of measures aiming to foster refugees' integration into the society and labor market and the potential economic gains from such integration along with the return on spent public finances in the long term.

We have used statistical data on the number foreign nationals in Sweden and their position on the Sweden labor market. We have also data on the number of refugees and asylum seekers (IOM, 2016, World bank, OECD, Eurostat). Data on the number of refugees, the state expenses for their care and protection, their placement on the labor market, integration and the contributions to the state budget were gained from the various state institutions' (Swedish Migration Agency, Sweden Sverige).

The study uses general scientific methods of induction, deduction, scientific abstraction and comparison, analysis and synthesis of selected facts, phenomena and processes. To calculate the data acquired, statistical and mathematical calculations were implemented.

3. Swedish Background in Terms of Migration – Theoretical and Statistical Overview

Sweden is a country with a long history in terms of migration. Between 1850 and 1939, Sweden had to cope with the enormous emigration wave when 1.5 million Swedes decided to leave the country and emigrate to America or Australia. The main reasons were enormous poverty, religious persecution, and so they sought a better future for themselves and their families in foreign countries. By the end of the Second World War, Sweden again became an immigrant country; when many Swedes were coming back home, but many foreigners from Baltic States remain in country. In the 1950s and 1960s most immigrants were coming from neighboring countries (mainly from Finland), while in labor immigration the country saw the indispensable tool how to set the tax base necessary for the public sector expansion and generous social policy security. Between 1972 and 1999 many asylum seekers were coming into Sweden from countries being affected by civil wars or dictatorships. Iraq, Iran, Lebanon, Syria, Eritrea, and the South American countries with dictatorship but also Central and Eastern European countries are the source of immigrants, whose Sweden, by supporting the multinational model of migration and integration, accepts with arms wide open. In 2001 Sweden entered the Schengen area, encouraging the labor immigration into the country (Favell, 2014). The year of 2011 shows very interesting statistical data on emigration from the country (34,091 people) to neighboring countries, but also to the US and China, exceeding the level of emigration in 1887, when the biggest number of people left the country in Swedish history. The year of 2014 was a breakthrough in terms of the number of asylum seekers - more than 80,000 being the largest number of admitted refugees after Germany. The highest number of refugees came from Syria, Eritrea, and

with no nationality. Up to 9% of all asylum seekers they are the unaccompanied minors (35,250 persons in 2015) being a specific group of migrants who require an increased protection under international conventions.

At present times every sixth person in Sweden was born abroad. Sweden has led a pro-immigration policy with a reputation regarding a generous attitude towards immigrants. The generosity of immigration policy - a generous social system, high standard of education, high-level healthcare - is considered as an exemplarily model. However, the "open door" immigration policy, which invited to the country the highest number of refugees per capita from all the EU countries in 2016, has begun to jeopardize the welfare state model. The events in 2014 and 2015 showed that the policy being pursued had several very negative consequences. The unintended entry of asylum seekers into the country has led to increased crime, problems of their integration; incoming immigrants have low education, they are lacking language education, and are therefore highly likely to remain unemployed; by pressure on public finances to secure the basic welfare of asylum seekers. However, immigrants are largely employed illegally, they are a cheap labor force for small and medium-sized entrepreneurs, but by expanding the gray economy, public revenue sources are leaking from the state treasury, unlike the usual economic losses that the target country is losing because of immigration, e.g. the pressure on wage levels, the impact of domestic population on unemployment and so on (Divinský, 2007).

The unsustainable way how to ensure the basic living conditions of refugees coming to Sweden with refugee status in the years of migration crisis has led to the adoption of restrictions in the country's pro-immigration policy such as stricter border controls (the need to prove identity at the entrance to the country and to prove the right to stay under the current legislation, with no limit to apply for protection or asylum), changes in legislative standards (more difficult process to obtain a residence permission and family reunification). The high number of asylum seekers caused the Sweden's inability to take care of the basic living needs of immigrants such as the lack of accommodation capacity, health care, limited number of vacancies in schools and more (Ahlander, Yosufzai, 2017).

In 2016, 163 005 people immigrated into the country. Many of immigrants who came to the country in 2015 became Swedes not until 2016, thus this increase was so dramatic. The number of asylum seekers dropped from 163 000 in 2015 to 29 000 in 2016. Positive asylum decisions were granted in more than 60% in 2016. For the given amount of asylum applications being received, the decision-taking time in each case is about 8.4 months at the beginning of 2016, assuming it will be extended to 12 months. During this time, after the application for asylum has been lodged, individuals can work to ensure their living conditions, providing that they were exempt from the work permit requirement. Asylum seekers have the right to a daily subsistence allowance of SEK 71 (€ 7.7) per day for an adult or 24 SEK (€ 2.43) per day for food if the accommodation is secured free of charge. As the decision-making process is getting longer the amount of public finances is increasing (Swedish Migration Agency).

3.1. Negative Consequences of Refugee Immigration

In order to ensure immigrants coming into the country between 2014 and 2015 in the number of 160 000 people, government had to spend a tremendous amount of public money to provide them accommodation, clothing, food, health care, education, or functioning all of the offices being in charge of immigration and asylum policies. The long-term investment plans in terms of refugee integration process include the extension of accommodation capacities, capacities in schools and school facilities, completion and extension of roads and local infrastructure. In 2016 the initial immigration costs budget was 4.06 billion. € (two budget chapters - immigration, equality and settlement), representing an increase about € 1.2 billion. € in 2010. Those are just the initial costs of recruiting the migrants. Only the operation of Swedish Immigration Agency should take 476 mil. €. The forecast for the cost to admit immigrants for the next year is almost 10 billion. €, which represents such a high amount spending for Sweden's state budget that additional saving measures would have to be applied in addition a loan to be taken (Sweden Sverige). The cost for minor aged refugees arriving alone without parents is even a bigger burden for public finance. Taking care for one such refugee is about 101 thousand €. In 2016 more than 35,000 such minors came to the country. However, the abuse of generous social system and entire immigration policy of Sweden appears to be the reverse side,

because a lot of immigrants claim to be minors in the asylum procedure, being difficult to be proved as they enter the country without documents. The Swedish government has begun to run checkups and surveys made by anthropologists, but this also requires considerable costs.

The quality of country's healthcare and education system is among the best in the world (OECD, 2009). Within the inflow of refugees, healthcare facilities are being filled by patients and waiting times are rapidly prolonging, in some hospitals in so called no-go zones, the healthcare system has collapsed. Health check-ups, health monitoring in asylum process, health care within the integration process requires an increased inflow of finances into this sector, an increased number of doctors and other healthcare personnel.

The education system is also experiencing a surge of immigrants, and the capacity of schools in no-go zones is inadequate. In some classes, only immigrants are educated and no regulated segregation is going on. Immigrants do not have Swedish language skills and their English is limited, thus their education shows very slow progress. Mixed population in classes has the same problem, but the consequences have much more significant nature, as not being able to speak the language it makes impossible to follow the curriculum. This meant that quality of education in country is getting worse, when in international comparison Sweden reached the 10th notch; currently it is the 30th place.

A huge negative aspect is the employment of refugees with insufficient education and working qualification, which in combination with the lack of language skills at the beginning of integration appears to be a difficult obstacle to be managed. Consequently, being unemployed with generous social benefits and psychological and social consequences of this condition on a mankind cause that only one fourth of asylum seekers can find full-time job in the country during the first 8 years (Bloomberg). The data from another study suggests that 10 years after entering the country at least 31% of working-age immigrants are dependent on social support from government in the long-term. (Sweden Sverige)

The increase of crime in the country is emerging as a huge negative aspect. The Swedish National Crime Board issued a report showing that 11 007 immigrants were convicted of criminal offenses and were sentenced to deportation from the country. Swedish authorities do not see the link between migration and the growth of crime. Interim reports from Sweden on acts being committed by immigrants are out of phase with statistics that capture only selected categories under the Criminal Code and the degree to which the investigation and trial process has been finished.

3.2. Positive Consequences of Refugees' Immigration

The net disposable income of one Swedish household is € 24,572, which represents a higher amount of money than in the US, Japan or France. One of the highest income tax rates, being 60%, brings enough money to state budget. The money is then redistributed back to people in the form of free health care, schooling, a comprehensive program of subsidies for childcare and housing in the safest and most modern places of the world. Government spending in the country is in surplus (1.1%). In 2016 the surplus was higher than in the previous year, like in all the countries with a pro-immigration-oriented policy. We can find a link within restrictive measures regulating the admission of immigrants into the country, as well as improving economic situation in the world and accelerating economic growth. The country's internal debt declined to 42.2% in 2016, which was 2% less than in the previous year.

Interestingly, under the influence of immigration, the country's economy is growing faster than being assumed. The world economy has been stabilized and the country's economic growth has generally been recorded. Sweden, however, comparing to the best growing countries has its economic growth two or three times bigger than other countries. According to economists, it's just due to an increasing consumption followed by a multiplier effect. Immigrants have received 145 to 458 million € per year in form of the pocket money being spent on the goods and services of everyday consumption (Švédsko a utečenci...).

During the asylum procedure, they can work; their jobs generate additional income that they spend in the country, even though many of them are part of a gray economy. Population of 20% in the country is made up of people over 65 years of age, average life expectancy in Sweden exceeded 80.5 years, living up to 70.8 years in good health conditions, which makes the country ranking one of the best qualities of life levels in the world. Immigrants coming into the country make one third of persons being younger than 18 years of age, which contributes to the average age reduction of population and labor force incensement.

3.3. Findings

According to data on GDP growth in Sweden, we can see a decline in years when migration crisis broke out and culminated, despite increasing number of workers in national economy of Sweden. As a result, labor productivity is declining, being affected by the mass immigration that has hit the country. From a closer look at labor market, we can see that the job vacancy rate ranged from 0.7 in 2011 to 1.1 in 2016, while having been rising since 2014. In 2016 Sweden needed to fill up more than 67 thousand working places, which number has been decreasing since 2014.

Table 1. GDP development in Sweden between 2007 and 2016

year	GDP in mil. USD	%	Numb. of inhabitants in mil.	GDP per capita in USD	workers	GDP per worker
2007	487.8	-	9.148	53324.38	4.07	13101.81
2008	514	5.37	9.22	55746.84	4.075	13680.21
2009	429.7	-16.40	9.299	46207.06	3.926	11769.50
2010	488.4	13.66	9.378	52076.26	4.029	12925.36
2011	563.1	15.29	9.449	59593.29	4.099	14538.49
2012	543.9	-3.41	9.519	57134.08	4.149	13770.57
2013	578.7	6.40	9.6	60283.25	4.175	14439.10
2014	573.8	-0.85	9.696	59180.20	4.215	14040.38
2015	495.7	-13.61	9.799	50585.26	4.290	11791.44
2016	511	3.09	9.903	51599.87	-	-

Source: World Bank, 2017

Immigration is one of the possible sources of labor. Immigration of refugees represents a potential labor force for the country within jobs in which domestic workers do not want to be employed for wages being offered or they lack sufficient qualifications. At the same time, the wages of immigrants are significantly below the wage average in particular profession, as being proved by the statistics of SCB (Statistics Sweden).

The problem of refugees on labor market is education. Primary education is missing in 15% of refugees, 65% of them have primary or secondary education, and 20% of refugees are university graduates. This, together with the lack of language knowledge, raises the premise that asylum seekers will remain recorded in job offices as job seekers and they are also beneficiaries of social aid from government.

3.4. Discussion

The multicultural model of immigrant integration, which was so admired in Sweden because of the largest number of refugees on the number of people in the country, is failing. In a country, where immigrants make up 12.2% of all population, the immigration is seen as a potential for economic growth, a partial solution to rapid population aging, and securing the economy by labor. These positive effects of migration come with immigrants from EU / EEA countries, but not very much with refugees. A skilled migrant with a high qualification and language skills (though not Swedish, but at least English) represents a real benefit for the country in the short and long term too (Daugeliene, 2007; Divinský, 2009). Missing labor force, free job vacancies in Swedish economy give it an opportunity to apply mainly for highly skilled jobs with high added value, which is a driving force for economic growth in the country. Wages within the wage average level on labor market and their high tax burden generate financial sources being transferred into public budgets, the reimbursement burden into health and social security systems. Life in target country requires consumption that brings economic value in the form of taxes on consumption but also increasing demand for goods and services that positively influence the economic output or the multiplier effect that accompanies these processes. The age of working immigrants, health status and education level creates the premise for an inexpensively prepared labor force at the most productive age, drawing from the sources of health and social insurance a just a fraction of what it puts into them. Working immigrants are willing to work hard, the value they create by their work is indeed a great contribution to the country. At the same

time, the affinity of cultures and internal incentives leading to migration are a prerequisite for a high degree of integration during a relatively short time. Immigrants are generally in reproductive age, which has a positive effect on the country's demographics, and then again on a higher degree of integration and assimilation.

Within refugee migration, we can say that negatives prevail over the positives, despite the deep conviction of Swedes about the merits of immigration. Regarding the hospitality of this nation Swedes want to help people who in their home countries are threatened with life or persecution. They consider the protection of life as the duty and expression of humanism. The willingness of domestic population to share the public sources generated by their work with those who had to leave their homes is considerable. Building a multicultural society, where everyone is working for a common good, is a noble model, which is collapsing under the pressure of a huge number of refugees in the years of 2014, 2015 and 2016. The amount of money necessary from public sources, which is related only to the initiation costs and basic needs of asylum seekers, or the social aid for asylum-seekers with a positive asylum resolution, or the resources necessary for immigrants' deportation with a negative asylum resolution, etc., at the end of every year, is increasing. This development is unsustainable for the country and it is not possible to ensure the lives of asylum-seekers at the level of domestic population from public funding, despite the fact that this is one of the main pillars applied in the observed country. The costs on asylum seekers will increase along with the arrival of others and the country will now have to take restrictive decisions on immigration policy. A prerequisite it is also to get a loan for the country's rising costs resulting from the high immigration of refugees. Refugees come from countries with a low level of education, a high number of illiterates and no language skills, which usually creates an insurmountable barrier within the process of employment. Therefore, one-third of refugees are unable to get full-time employment after ten years of living in the country. One of the starting points is that they remain in the state's social support during their whole lives or are employed illegally and support the gray economy of the country (OECD, 2000; Pšenková, Gullerová 2016). But this is how they threaten the social pillars of the state. The positive outlook for the future can be seen in minors, who are coming to the country in large numbers. By means of education and integration, it is possible to obtain from these sources a workforce that will be a benefit the country. However, the integration process cannot be done separately (in so-called no-go zones in Sweden). Then No-go zones have become the target of rising criminality in recent years and are out of phase with basic standards in Swedish society.

For Sweden, the admission of refugees to the country is the cost of:

- basic healthcare – every refugee must be insured, even without having an access to Swedish labor market,
- the asylum process – from the filing of application to the court's decision (missing judges, prolonging the asylum process, making it increase the need for bureaucracy),
- minimum care – needs of accommodation and meals, daily subsistence allowance of € 7.7 per day for an adult or € 2.43 per day for food if accommodation is secured free of charge,
- family benefits,
- health care – in addition to preventive screening and treatment from common diseases, refugees and, in particular, children use the help of psychiatrists and psychologists,
- school attendance – in Sweden each child is school age, except for education costs, which are on average 8400 € per year for a student (schooling in Sweden is completely free),
- integration and active labor market policy, institutional security,
- interpreting services during the asylum procedure,
- the transport of refugees to their home country in the event of an unsuccessful asylum procedure,
- lost taxes being paid on the illegal income of asylum seekers working within the gray economy of a country.

By means of proper migration management it can be achieved a development to the benefit of the country (Cekanavicius, Kasnauskiene, 2009; Simkus, Fominiene, Ivanová, 2014). However, it is necessary to analyze these processes, to identify and find out deeper contexts. Then it is possible to maximize the profits for the country and at the same time to protect the lives of people whose lives are in danger or would be persecuted in their home country. People abusing the refugee protection system

for personal economic benefits are threatening refugees the same way as political or opposing structures in the countries of origin being tossed by wars.

It is necessary for economic illegal migrants to show that the country does not admit them and deports them back to their country of origin within this type of migration. The initial costs will be higher, but it will give pending migrants a signal on Sweden's migration policy. Similarly it is necessary to combat the illegal employment of asylum appliers and subsequently asylum seekers by tightening the controls, imposing fines, sanctions for illegal employment; the spread of enlightenment within the domestic population and others. Language learning, retraining of immigrants according to the labor market needs, the support for legal employment could contribute to making the country's migration policy more effective.

4. Conclusion

An ideal strategy in the ongoing migration crisis would be the win-win strategy. People at risk of living in their home country are looking for help in developed countries in Europe. They expect a positive approach, entry admission into the country where they ask for asylum. During the asylum procedure they are supported by public sources of receiving country, which at the same time assures the possibility to acquire language at basic level or the retraining, which would help them be enforced on domestic labor market. The possibility to work at least for part-time job during the asylum process would greatly assist the integration process. On the other hand, the asylum seeker's approach is responsible to integration and they are very helpful to the system during the asylum process and also after their final decision has been issued. During the one year, the employment rate should be at 50% and the level of full employment in the country should be reached after the fifth year. An immigrant should receive an adequate remuneration for his/her job and work under similar conditions to domestic population as well as have a similar entitlement to social and health insurance or access to education and public goods and services.

In a situation when uncontrollable masses of immigrants are coming into Europe, being mostly economic migrants waiting for generous social benefits and securing their living conditions without their active economic activation, the pillars of a multicultural model of immigration policy will collapse. Countries will take restrictive measures and cut public sources. Missing sources to ensure just the basic living conditions of immigrants will evoke social tensions between the domestic population and immigrants. At the same time, crime will grow, regardless of the diversity of cultures and religions, which will exacerbate the tension.

Therefore it is necessary to assess migration and its consequences in a long run and, on the basis of results being obtained, to take decisions on managing the migration policy in order to maximize profits and minimize losses.

Acknowledgements

This publication was created within the frame of the project funded by VEGA agency „Balance of economic gains and losses from labor mi-gration” (č.1/0679/17).

References

- Adepoju, A., Van Noorloos, F., Zoomers, A. (2010). Europe's Migration Agreements with Migrant-Sending Countries in the Global South: A Critical Review. *Journal of International Migration*, vol. 48, iss. 3, pp. 42-75.
- Ahlander, J., Yosufzai, M. (2017). Sweden intensifies crackdown on illegal immigrants, [online]. Available: <https://www.reuters.com/article/us-sweden-immigration-crackdown/sweden-intensifies-crackdown-on-illegal-immigrants-idUSKBN19Y0G8> [2017, October 12].
- Andersson, R. (2016). Hardwiring the frontier? The politics of security technology in Europe's 'fight against illegal migration'. *Security Dialogue*, vol. 47, iss. 1, pp. 22-39.
- Andrijasevic, R., Sacchetto, D. (2016). From labour migration to labour mobility?: The return of the multinational worker in Europe. *Transfer: European Review of Labour and Research*, vol. 22, iss. 2, pp. 219-231.
- Blanchflower, D. G., Shadforth, Ch. (2009). Fear, Unemployment and Migration. *The Economic Journal*, vol. 119, iss. 535, pp. F136-F182.
- Cekanavicius, L., Kasnauskiene, G. (2009). Too High or Just Right? Cost-Benefit Approach to Emigration Question. *Inzinerine Ekonomika-Engineering Economics*, vol. 1, pp. 28-36.

- Daugeliene, R. (2007). The position of knowledge workers in knowledge-based economy: migration aspect. *European Integration Studies*, vol. 1, pp. 103-112.
- Divinský, B. (2007). *Labor market – migration nexus in Slovakia: time to act in a comprehensive way*. Bratislava: IOM.
- Divinský, B. (2009). *Migračné trendy v Slovenskej republike po vstupe krajiny do EÚ (2004 – 2008)*. Bratislava: Medzinárodná organizácia pre migráciu.
- Eurostat [online]. Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Migration_and_migrant_population_statistics [2017, October 12].
- Favell, A. (2014). The fourth freedom: Theories of migration and mobilities in 'neo-liberal' Europe. *European Journal of Social Theory*, vol. 17, iss. 3, pp. 275-289.
- Kazlauskienė, A., Rinkevičius, L. (2006). The Role of Social Capital in the Highly-Skilled Migration from Lithuania. *Engineering Economics*, vol. 4, pp. 69-75.
- Lee, T. (2008). Brain drain or brain circulation: evidence from OECD's international migration and R&D spillovers. *Scottish Journal of Political Economy*, vol. 5, pp. 81-92.
- Masárová, T. (2016a). Management of social protection measures in the unfavourable social situation of migrants in Slovakia. In M. Okreglicka, I. Gorzeń-Mitka, A. Lemańska-Majdzik, M. Sipa, A. Skibiński (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management, CITPM 2016*, pp. 288-293. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej,
- Masárová, T. (2016b). Civil and political participation of migrants. *3rd international multidisciplinary scientific conference on social sciences and arts SGEM 2016: Psychology & psychiatry, sociology & healthcare, education. Conference proceedings*. Book 1, pp. 257-263.
- OECD. (2009). Skills beyond School - The OECD Review of Postsecondary Vocational Education and Training, [online]. Available: <http://www.oecd.org/education/skills-beyond-school/43638823.pdf> [2017, October 01].
- OECD. (2000). Boj proti nelegálnemu zamestnávaniu zahraničných pracovníkov. [online]. Available: <http://www.oecdbookshop.org/en/browse/title-detail/?k=5LMQCR2KBJQ6> [2017, October 15].
- Pšenková, J., Gullerová, M. (2016). Illegal work and illegal employment in the European context. [online]. Available: http://knowledgeconference.upol.cz/downloads/2016-Knowledge_for_Market_Use_Proceedings.pdf [2017, October 01].
- Simkus, A., Fominiene, V.B., Ivanová, E. (2014). Management of volunteers as human resources in non-governmental organisations: case of sport industry. *Transformations in business & economics*. vol. 13, iss. 2A, pp. 396-415.
- Swedish Migration Agency; Migrationsverket. Facts and statistics. [online]. Available: <https://www.migrationsverket.se/English/About-the-Migration-Agency/Facts-and-statistics-.html> [2017, October 01].
- Sweden Sverige. Sweden and migration [online]. Available: <https://sweden.se/migration/> [2017, October 01].
- Švédsko a utečenci: Ďalšia neuveriteľná správa, tamojší experti v šoku. [online]. Available: <http://www.parlamentnelisty.sk/arena/monitor/Svedsko-a-utecenci-Dalsia-neuveritelna-sprava-tamojsi-experti-v-soku-278654> [2017, October 12].
- Všeobecná deklarácia ľudských práv. [online]. Available: http://www.snslp.sk/CCMS/files/Vseobecna_deklaracia_ludskych_prav.pdf. [2017, October 12].
- World Bank. [online]. Available: <http://www.worldbank.org/en/who-we-are/ibrd> [2017, October 12].
- Žáková, M., Berová, L. (2014). Public opinions on migrants and its integration in Slovakia. *International Multidisciplinary Scientific Conference on Social Sciences and Arts SGEM 2014, Bulgaria book 1*, vol. 2, pp. 697-704.

Seyyed Amir Vafaei^{1*}

Szent István University
Hungary

Iman Azmoon²

Islamic Azad University Kerman Branch
Iran

Maria Fekete Farkas³

Szent István University
Hungary

86. THE RELATIONSHIP BETWEEN ORGANIZATIONAL SIZE AND LEADERSHIP EFFECTIVENESS PERCEPTION IN IRAN

Abstract: Leadership plays a significant role in the success of any kind of organization and it is now more than ever in critical focus. Understanding how employees perceive leadership effectiveness is one of the crucial factors in organizational behavior and leadership scopes. However, plenty of studies were done in the scope of leadership in Iran; none have done a survey to find any kind of relationships between organizational size and leadership effectiveness. The main objective of the paper is to determine the strength and direction of the relationship of organizational size and leadership effectiveness perception. This study compares employees' perceptions of leadership effectiveness in different organizations based on their size; through a survey of 81 different organizations and 8981 employees in this country by distributing a questionnaire that include 15 questions. Data were analyzed by Pearson correlation which is a measure of the strength of the association between the two variables and the average of points for each category in order to find the correlation between these two variables. The results reveal weak and negative relationships between the size of organization and effectiveness of leadership based on four leadership effectiveness parameters which are mentoring, fairness and justice, empowerment and guidance. Our findings suggest that as number of employees at an organization increase, leaders should consider more different aspects in order to raise leadership effectiveness and subsequently leaders' must be more sensitive in large organizations than medium and consequently medium more than small ones.

Keywords: leadership, leadership effectiveness, organizational size.

JEL Classification: D23, M00

1. Introduction

Iran is the largest country in the Middle East with unique culture which has strong orientations toward achievement and performance, mostly at the individual level has faced different issues concerning leadership after 1979 revolution (Javidan, Dastmalchian, 2003).

In a very simple way, leader defines as a person who leads other people to do something which help organization to achieve its goals and objectives (Ciulla, 1999). However, leadership styles vary from person-to-person, all successful leaders have a common feature, they have a positive impact on employees based on impressive relationship and consequently efficiency of leadership behavior affects organizational objectives (Soriano, Martínez, 2007). Effective organizational leadership seems to be challengeable and defined as how a leader fulfills the leadership role in an organization (Azar, Asiabar, 2015).

On the other hand, however, large sized organizations mostly are more progressive advanced than their small sized peers (Zhu et al., 2008), small and medium sized enterprises have their own interest and play a significant role in economy (Pletnev, Barkhatov, 2016).

In spite of that, few studies have done separately concerning organizational size and leadership effectiveness (Akhavan, Jafari, 2007; Nazarian, Atkinson, 2013; Taleghani, 2011), there have been no direct empirical studies of the relationship between organizational size and leadership effectiveness

¹ Seyyed Amir Vafaei Ph.D. Student; SZIE Kollégium, Páter K. U. 1, Gödöllő, Hungary; S.A.Vafaei@Gmail.Com

² Iman Azmoon Ms.C in Business; No. 26, Mahram 38 St. Yousef Abad, Tehran, Iran; Info@Imanazmoon.ir

³ Maria Fekete Farkas Ph.D. Hab. Prof.; SZIE, Páter K. U. 1, Gödöllő, Hungary, Farkasne.Fekete.Maria@Gtk.Szie.Hu

* Corresponding author

not only in Iran but also in world till we started to do this research and that is why this study has been conducted. Therefore, the main objective of this paper is to determine the strength and direction of the relationship of organizational size and leadership effectiveness perception.

Hence, the paper is organized as follows. An overview of related works concerning leadership effectiveness and organizational size are illustrated in section 2. Section 3 provides the research methodology and hypothesis. Results and discussion are given in Section 4 and at the end; the paper is concluded in Section 5.

2. Literature Review

Current study provides valuable information in the scope of organizational behaviour. A systematic review and conceptual analysis of the academic literature will be conducted. Included here are discussions of two constructs: effective leadership and organizational size. These two concepts will be illustrated in the following sections.

2.1. Leadership Effectiveness

Leadership is one of the most important components in businesses, as it serves to enhance the growth and increase the financial returns. As such, leadership is considered by many scholars as the driving force that not only establishes the relationship between employers and employees, but also the effort that influences the achievement of the set goals. Concisely, a leader is an individual who works with subordinates, harnesses their potential and ensures that the visions and strategies put in place are utilized to achieve the objectives of their organization (Noureddine, 2015).

When considering the 21st century, leadership has proved to be a central feature in the organizational literature, being based on the perspective of influencing a group towards achieving visions or set goals (Robbins, Judge, 2013). Moreover, it is known that the type of leadership approached by an organization determines either its success or its failure (Semuel, Siagian, Octavia, 2017).

Equally, certain studies praised the importance of leadership in enhancing the performance of organizations (Melo, Silva, Parreira, 2014). An example posed by Robins (2013) identifies contextual factors that are connected to an organization's performance, including: adequate resources, effective leadership, trust and availability of a performance evaluation system.

There are numerous models and leadership theories that were pursued and used to present the leadership's success, while also providing subsequent recommendations that should be embraced to address and improve the leadership practice. In this regard, a series of questions arises. How can organizations nurture effective leaders? Why are some leaders more effective than others?

Undeniably, an effective leader is expected to manifest personal managerial attributes that are needed to elicit positive results. As such, leadership effectiveness can be measured using numerous indicators (Girdauskiene, Eyvazzade, 2015). The figure 1 shows the key phases of effective leadership, namely: mentoring, fairness and justice, empowerment and guidance, as identified by the author.

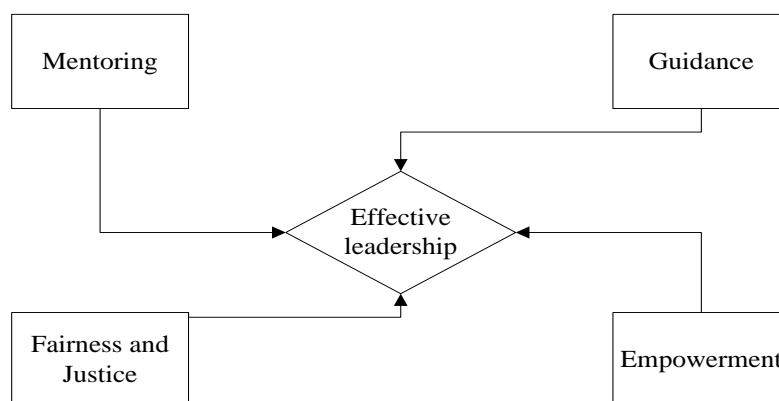


Figure 1. Effective leadership parameters

Source: Melo, Silva and Parreira, 2014; Özbağ, 2016; Cismas, Dona and Andreiasu, 2016; Poirier, Morin and Boudrias, 2017

Empowerment

The immersion of leaders, as they attempt to build the confidence of their subordinates, places them on the platform where they are able to exercise their influence and control (Noureddine, 2015). The existing leadership empowerment behaviours (LEB) can inevitably be modeled by an outgoing leader purposely to enhance the knowledge and skills of other employees, through the delegation of authority, the aspect, and power of making decisions, while also fostering the ability to enable practices derived through coaching and pertinent information sharing. The need to empower employees entails the creation of a favourable environment, where the leaders' device a set of balanced LEB that ensures all components and all the needed conditions for empowerment are covered. Nevertheless, the LEB implementation should be harnessed in a comprehensible manner that depicts the given intensity across the LEB (Poirier, Morin, Boudrias, 2017).

Mentoring

One of the crucial roles of a manager implies the aspect of mentoring and assuming this lead role. Given the vitality of this trait, mentors are expected to develop and harness the potential of other people through a progressive process build on guidance and empathy. Through the process of communicating effectively, managers are able to plan accordingly on how to enhance the individual development of their subordinates (Melo, Silva, Parreira, 2014).

Guidance

Effective leaders lead with the belief that in order to excel there is a need to harness a favourable environment that is not only concerned with success, but also motivates everyone to achieve. Additionally, the leaders expectedly lead their followers towards achieving their stipulated goals through clearly expounding on their subsequent roles and responsibilities (Cismas, Dona, Andreiasu, 2016). According to Robins (2013), a successful leader sets an example and also acts as a role model, which boasts the morale of the team. Nevertheless, employees need guidance in most cases and leaders should be ready to effectively perform this role (Cismas, Dona, Andreiasu, 2016).

Fairness and justice

The last decade has witnessed a growing interest in the connection between leadership and ethics (Simola, Barling, Turner, 2010). When considering the ethical dimensional through the spectrum of leadership, it can be observed that it aims to enhance employee and organizational behaviour. In this regard, leaders are required to lead by the example where they create a moral atmosphere at their respective working places. Moreover, they are required to share their perceptions, acknowledge and rebuke on the right and wrong behaviours, respectively, as well as address various ways through which an organization handles moral issues (Özbağ, 2016).

Fairness and leadership tend to focus on how the workforce responds to the diverse treatment they receive at their workplaces, which include: job satisfaction, commitment, and trust developed with their leaders. Interpersonal fairness is a new expression employed in the ethical dimension of leadership that is concerned with the quality of treatment, such as, dignity, respect, and politeness. Evidence regarding this form or treatment is exhibited by followers giving their assertion that leaders who treat them with dignity usually guide them to inspiration and motivation (Grover, Coppins, 2012).

2.2. Organizational Size

Organizational size is also another important component mentioned as a variable in the organizational behaviour literature (Goldschmidt, Chung, 2001). Despite their differences in terms of revenue, organizations usually fall into the following categories: small organizations, which are known to boast less than 50 employees; medium organizations, which usually boast between 50 and 249 employees, and large organizations, equalling above 250 employees (Eurostat). The categories mentioned above are also use in Iran. However, very little research was carried out to test the existing relationship between organizational size and customer satisfaction.

3. Research Methodology

The study employed a descriptive and correlational study of the relationship between leadership and organizational size. The model was employed because of the interactions with the Federal Employee Viewpoint Survey Results (2012) that fostered the design and formulation of the questionnaire used in the study. The expressed hypothesis was based on relationship testing, as the study aimed to understand the existing differences amongst the groups under study. The data for the study was collected from research subjects through using a questionnaire survey. The questionnaire consisted of 15 questions that assessed leadership skills through different roles; twelve of the items were used to measure leadership effectiveness perception according to the different parameters and rest are related to the demographic aspects. Therefore, the questionnaire, consisting four parts is used to measure leadership effectiveness perception concerning mentoring, fairness and justice, empowerment and guidance; and one part is used to determine gender, type of the organization and age.

The population of this study is employees and the sample size consisted of 81 organizations and 8981 staff members that had a 69% representation from the males' category. Moreover, the time frame for this study covered the period between 24th June and 17th August 2017. Nevertheless, it is imperative to note that variables were not manipulated, an aspect that enhanced the researcher's interference at the minimal.

Participants were asked to indicate on a ten-point Likert scale the degree to which they agreed with each statements. Furthermore, they were informed that the survey is voluntary and their responses would be kept anonymous.

3.1. Research Model

Theoretical construct that represents this study is illustrated in figure 2. As already mentioned, we are seeking for a relationship between organizational size and leadership effectiveness' perception in employees mind. Based on the literature, four different elements were chosen for leadership effectiveness' perception, empowerment, mentoring, guidance and fairness and justice.

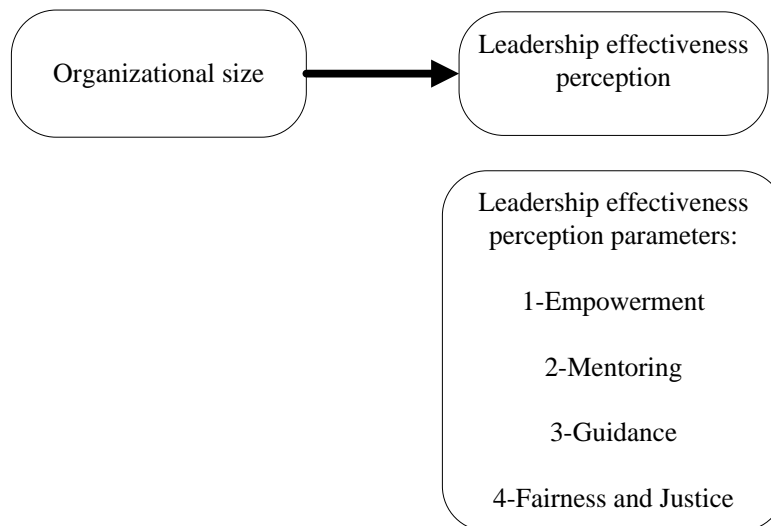


Figure 2. Research model of organizational size and leadership effectiveness perception

Source: Own research hypothesis

3.2. Hypothesis

General hypotheses:

H1 - As the number of employees in an organization grows, leadership effectiveness perception decreases.

Specific hypothesis:

H2 - Employees' perception regarding leadership effectiveness in small enterprises is higher than medium enterprises.

H3 - Employees' perception regarding leadership effectiveness in medium enterprises is higher than large enterprises.

4. Results and Discussion

As already mentioned, 81 different kind of organization were studied in this research which consists of 25 small, 27 medium and 29 large enterprises. Table 1 shows how many employees based on this three categorization were participated in this study.

Table 1. Demographic statistics regarding number of participants and respondents

Type of enterprises	Number of employees	Sample size	Number of recorded answers	Acceptable answers
Small	736	682	555	536
Medium	3008	2246	1808	1508
Large	16285	6053	4773	4439

Source: Own research

Mentioning two points seems necessary for describing table 1. First of all, sample size was determined based on three parameters; 95% for confidence level, 1.05 for confidence interval and number of employees which were different in each category. Secondly, the main reason of difference between number of recorded answers and acceptable answers is some participants refused to answer some questions.

4.1. Testing Hypothesis

The Pearson correlation coefficient measures the strength and direction of a linear relationship between two variables (Sekaran, 2003). Table 2 gives the values of the correlation coefficient tests which were calculated by SPSS 21.

Table 2. Pearson correlation between employees' perception regarding leadership effectiveness and number of employees

	Pearson Correlation			
	Employees' perception regarding leadership			
	Empowerment	Mentoring	Guidance	Fairness and Justice
Number of employees	-0.108434632 Sig. 0.335	-0.185764823 Sig. 0.097	-0.165360101 Sig. 0.14	-0.147576028 Sig. 0.189

Source: Own research

However the Pearson correlation between all four employees' perception parameters regarding leadership and number of employees are negative, significant (p-value) is high which means probably there is not enough "evidence" or in other words, more enterprises should have been studied in this research. By the way, the negative correlation means that as one of the variables increases, the other tends to decrease. In this research it is going to be interpreted, there is a weak negative correlation between number of employees in an organization and employees' perception regarding leadership effectiveness but it is not enough to be sure if this correlation arose by chance or is "real".

Due to high significant in our Pearson correlation, another method for testing hypothesis was used. According to the general hypotheses in this research, as smaller as an organization, employees' perception regarding leadership effectiveness is increasing. Table 3 shows the summary of the data collection for each category based on acceptable answers.

Table 3. Employees' perception regarding leadership effectiveness according to organizational size

Enterprises Size	Employees' perception regarding leadership			
	Empowerment	Mentoring	Guidance	Fairness and Justice
Small	6.7	7.1	7.1	6.04
Medium	6.4	6.7	6.8	6.02
Large	6.2	6.3	6.4	5.6

Source: Own research

As table 3 illustrates, there is a meaningful relationship between employees' perception regarding leadership effectiveness and organizational size. In each 4 parameters, those employees who work in

a small enterprise have a better perception regarding leadership effectiveness than those who work in a medium enterprise. And those who work in a medium enterprise perceive leadership effectiveness more than those who work in a large enterprise.

5. Conclusion

This study explored the relationship between organizational size and leadership effectiveness perception. It measured and tested 4 parameters (mentoring, fairness and justice, empowerment and guidance) in leadership effectiveness perception in different types of organizations. In each 4 parameters, as organizational size is increasing, the effectiveness of leadership perception is decreasing. Therefore, as we have asserted, general hypotheses and specific hypothesis are proven.

Effective leadership is able to ensure a high performance organization. From the results obtained, leaders should be more sensitive in large and big organizations. Moreover, in order to achieve higher organizational performance, different aspects should be taken into consideration as the number of employees increase.

As already mentioned, no studies have been found that have compared employees' perceptions of leadership effectiveness in different organizations based on their size up to the time when this study has been conducted. Consequently, achieved results cannot be compared with other similar results in other academic papers (research limitation).

Addressing this gap in the current academic literature helps us to move forward with more exciting studies. We believe different leadership styles are needed based on organizational size in order to increase leadership effectiveness and this study may provide an opening through which leadership styles can be applicable in terms of effectiveness. For this reason, future research can further develop such insights and assess different leadership styles effectiveness in different organization based on their size.

References

- Akhavan, P., Jafari, M. (2007). Towards learning in SMEs: an empirical study in Iran. *Development and Learning in Organizations. An International Journal*, vol. 22, iss. 1, pp. 17-19.
- Azar, F.E., Asiabar, A.S. (2015). Does leadership effectiveness correlates with leadership styles in healthcare executives of Iran University of Medical Sciences. *Medical Journal of The Islamic Republic of Iran*, vol. 29, iss. 166, pp. 1-5.
- Cismas, S.C., Dona, I., Andreiasu, G.I. (2016). Responsible Leadership. *Procedia - Social and Behavioral Sciences*, vol. 221, pp. 111-118.
- Ciulla, J.B. (1999). The importance of leadership in shaping business values. *Long Range Planning*, vol. 32, iss. 2, pp. 166-172.
- Eurostat. [online]. Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Enterprise_size [2017, December 01].
- Girdauskiene, L., Eyvazzade, F. (2015). The Profile of an Effective Female Leadership in Multicultural Context. *Procedia - Social and Behavioral Sciences*, vol. 10, pp. 11-20.
- Goldschmidt, N., Chung, B.G. (2001). Size does matter: the effect of organizational size on customer satisfaction. *Journal of Quality Management*, vol. 6, iss. 1, pp. 47-60.
- Javidan, M., Dastmalchian, A. (2003). Culture and Leadership in Iran: The Land of Individual Achievers, Strong Family Ties, and Powerful Elite. *The Academy of Management Executive*, vol. 17, iss. 4, pp. 127-142.
- Grover, S.L., Coppins, A. (2012). The intersection of justice and leadership: Testing a moderation model of contingent reward and interpersonal fairness. *European Management Journal*, vol. 30, iss. 6, pp. 490-498.
- Melo, R.C., Silva, M.J., Parreira, P. (2014). Effective Leadership: Competing Values Framework. *Procedia Technology*, vol. 16, pp. 921-928.
- Nazarian, A., Atkinson, P. (2013). Impact of Culture on Leadership Style: The Case of Iranian Organisations. *World Applied Sciences Journal*, vol. 28, iss. 6, pp. 770-777.
- Noureddine, D. (2015). The Problem of Effective Leadership from the Perspective of Corporate Management Development. *Procedia - Social and Behavioral Sciences*, vol. 181, pp. 62-71.
- Özbağ, G.K. (2016). The Role of Personality in Leadership: Five Factor Personality Traits and Ethical Leadership. *Procedia - Social and Behavioral Sciences*, vol. 235, pp. 235-242.
- Pletnev, D., Barkhatov, V. (2016). Business Success of Small and Medium Sized Enterprises in Russia and Social Responsibility of Managers. *Procedia - Social and Behavioral Sciences*, vol. 221, pp. 185-193.

Poirier, L.-A.C., Morin, A.J.S., Boudrias, J.-S. (2017). On the merits of coherent leadership empowerment behaviors: A mixture regression approach. *Journal of Vocational Behavior*, vol. 103B, pp. 66-75.

Robbins, S.P., Judge, T.A. (2013). *Organizational Behavior* (15th ed.). Pearson/Prentice Hall.

Semuel, H., Siagian, H., Octavia, S. (2017). The Effect of Leadership and Innovation on Differentiation Strategy and Company Performance. *Procedia - Social and Behavioral Sciences*, vol. 237, pp. 1152-1159.

Simola, S.K., Barling, J., Turner, N. (2010). Transformational leadership and leader moral orientation: Contrasting an ethic of justice and an ethic of care. *The Leadership Quarterly*, vol. 21, iss. 1, pp. 179-188.

Soriano, D.R., Martínez, J.M.C. (2007). Transmitting the entrepreneurial spirit to the work team in SMEs: the importance of leadership. *Management Decision*, vol. 45, iss. 7, pp. 1102-1122.

Taleghani, M. (2011). The Effects of Organizational Size on Tourism Industry Enterprises in Iran. *Journal of Basic and Applied Scientific Research*, vol. 1, iss. 6, pp. 479-484.

Zhu, Q., Sarkis, J., Lai, K.-H., Geng, Y. (2008). The role of organizational size in the adoption of green supply chain management practices in China. *Corporate Social Responsibility and Environmental Management*, vol. 15, iss. 6, pp. 322-337.

Maxim Vlasov^{1*}
Ural Federal University
Russia
Svetlana Panikarova²
Ural Federal University
Russia

87. ASSESSMENT OF EFFICIENCY FOR THE KNOWLEDGE BASED PROJECTS

Abstract: We often see how insufficient evaluation of initial economic opportunities leads to a halt of many perspective innovation and investment projects and programs because of the lack of financial and economic resources for their completion. It is possible to avoid such situations if at the stage of practical implementation strategy formulation; we exclude “unreachable” projects based on low initial innovative activity of the company. The aim of this research is to formulate methodological approaches to selecting innovative projects based on widespread investment design methods considering peculiarities of investment development strategy. We offer methodological approaches to selection of results of new knowledge generation based on widespread methods of investment design and considering features of innovative development strategy. New methodological approach includes the following stages: company economic opportunities analysis; innovative ideas generation; preliminary innovation selection; presentation of innovation idea in the form of innovation project; innovation project efficacy evaluation from the point of view of investment perspectives; evaluation of innovation project efficacy from company economics point of view; multidimensional analysis of obtained quantitative evaluation with the aim of choosing the most perspective innovation projects. The theoretical importance of result is development of the assessment methods for the projects based on knowledge. The practical importance of the received results is quality improvement for the management decisions in the field of research and development.

Keywords: innovative development, investment design, knowledge generation.

JEL Classification: O32

1. Introduction

Modern market conditions require businesses to find new approaches to corporate management, planning and control. The right choice of direction in introducing new knowledge largely predetermines efficacy of achieving stated objectives (Soldatov, Tanchuk, 2013). We often see how insufficient evaluation of initial economic opportunities leads to a halt of many perspective innovation and investment projects and programs because of the lack of financial and economic resources for their completion. It is possible to avoid such situations if at the stage of practical implementation strategy formulation we exclude “unreachable” projects based on low initial innovative activity of the company.

The main aim of this research is to formulate methodological approaches to selecting innovative projects based on widespread investment design methods considering peculiarities of investment development strategy.

The paper continues with the literature review, the presentation of the methodological approaches to selecting innovative projects; then the research methodology is introduced, followed by a discussion about obtained results. The article concludes with a summary of the findings and recommendations regarding further directions of research.

2. Literature Review

Since the 1990, economic science and practice have been actively using two notions: “knowledge based economics” and “information based economics”. These terms were coined to cover the new sector of economics: together they form the notion of post-industrial society, which have been actively researched since the second half of XX century (Hayek, 1945; Machlup, 1962).

¹ Maxim Vlasov Ph.D.; Uralskay str. 52/1-136, Ekaterinburg, Russia, mvlassov@mail.ru

² Prof. Svetlana Panikarova; Uralskay str. 52/1-136, Ekaterinburg, Russia, panikarova_s@mail.ru

* Corresponding author

American and European researchers started emphasizing the role and meaning not only of information but knowledge which gave rise to a whole set of new definitions for modern society, including “knowledge society” or “knowledgeable society”, etc.

In the article, Meissner and Carayannis (2017) have offered approaches to quantitative assessment of knowledge and technologies transfer. They proved that a long-term and holistic view and is necessary for make transfer of knowledge and technology more impactful and sustainable. In the work of de-Goñi-Oslé and Rodríguez-Castellanos (2018) various aspects in development and realization of effective model for knowledge management in the organizations have been considered. Need of development of quantitative assessment methods for calculating the actual cost and the got advantages as a result of introduction of the knowledge management models is proved. In the researches Besen, Tecchio and Fialho (2017), it is proved that leadership showed influence on efficiency of generation of knowledge (Grigoriou, Rothaermel, 2017; Bierly, Chakrabarti, 1996), on the basis of an empirical research, have proved that the external strategy and sources of new knowledge less effective, than situations when firms can generate new knowledge already internally. Authors have defined that managers have to study attentively internal sources before buying external knowledge as the cost of external sources of knowledge is often overstated. Ravichandran, Han and Mithas (2017) investigate if and how information technology can help firms deal with the challenge of declining returns to research and development. Authors theorize that IT systems can help firms to cope with the complexity and inefficiency in managing innovation when R&D investments scale.

The modularization can help with coordinating of creation of the offer and strengthening of profitability of processes. However, use of modularity in services, and especially in professional firms on service, is still the area which deserves certain researches. Consider implementation of modularity can be in one more way to facilitate the exchange of knowledge connected with offers of services, organizational processes and methods at the enterprises (Grant, 1996; Nätti, Ulkuniemi, Pekkarinen, 2017).

The paper of Krogh, Nonaka and Aben (2001) develops a framework of four strategies for managing knowledge. The study of Shahmarichatghieh et al. (2017) analyses product development sourcing strategies through three strategy formulating theories of transaction cost theory, knowledge-based theory, and resource-based theory over TLC stages. The paper of March (1991) considers the relation between the exploration of new possibilities and the exploitation of old certainties in organizational learning.

Unlike traditional economics, the key role in such economics belongs not to financial capital and material assets but to knowledge, intangible assets and particularly intellectual capital. According to the opinion of several researchers, many economic subjects find themselves in a situation when research organization potential is underused and research products are not always competitive because of discordance between science and manufacture and almost universal gap in communication between them (Goncharenko, Arutyunov Yu, 2011, p. 350). It would be reasonable to start the process of forming strategy for introducing new knowledge into the activity of economic units from the analysis of economic opportunities of the organization. The choice of this or that strategy predetermines formation of a relevant patent, licensing, marketing, manufacturing, staff and other types of functional policy in innovational an economic activity.

Preliminary selection of the most effective innovations can be conducted on the basis of innovation behavior evaluation (Trifilova, 2003, p. 73). Such approach allows for evaluating the scope of perspective reserves appearing as a result of mastering innovations. There are many features according to which we can classify reserves as the source of economic growth. For example, depending on the mobilization period we can point out current and perspective reserves and on the basis of their source – external and internal. Current reserves can be mobilized in the nearest planned period and they usually do not require substantial costs. On the contrary, perspective reserves need considerable financial support as they are related to reconstruction and broadening of production processes. External reserves sources can be macroeconomic (features of state financial, tax and customs systems functioning) and microeconomic (regional monetary, climate relations with customers, investment and other terms of economic functioning).

Areas in which internal reserves can be found largely depend on the practice of economic activities organization at the company and are derived from the analysis of principles and results of managing costs, finance, purchases, price, assortment, retail net, personnel, investments and innovations. In modern economics development reserves of the company can be activated by the following internal and external sources of generating new knowledge:

- intensification of information exchange between organization and external environment, internal units and staff, including those in research sphere,
- more complete knowledge and diverse use of research and development products,
- experience and latent knowledge of staff members in the field of research, technology, organization, management, production, sales, academic and other spheres,
- review of labor division principles, including introduction of innovative production technologies, latest technical developments and computer infrastructure,
- selection of effective innovative projects, offer of unique or new services and improved products, etc. (Korobeinikov, 2000, p. 22).

Evaluation of implementing new knowledge generation results at the stage of forming economic activities strategic policy defines potential reserves appearing due to the introduction of new and improved technologies and answers the question concerning possible changes of external cooperation terms with competitors, consumers, strategic partners, suppliers, shareholders and creditors as the result of innovation commercialization (Makarova, 2012).

In the research Galeitzke et al. (2017), the role of the intellectual capital in innovative management is proved. Innovation ideas are presented in a form of innovation projects and are evaluated based on the ratio between investment costs and further economic results. Evaluation of innovation projects efficacy is a central point in the process of forming innovation strategy management (Popov, Lyapunov, 2007).

A starting point for defining investment efficacy for development and implementation of new technologies can be project evaluation in general or evaluation of its social significance (Krylov, Vlasov, Zhuravkov, 2003). Such sequence of new knowledge evaluation is usually used for the analysis of large scale innovation projects of federal significance. Depending on aims and scope of investments evaluation covers ecological, social, budget and regional efficacy.

For innovation projects of local importance evaluation usually covers efficacy analysis for individual investors and expected financial flows are evaluated according to commercial profit. In that case according to existing practice such indicators as pure discount profit and profit index, internal profit rate and discount term are calculated. Net present value (NPV), profitability index (PI), internal rate of return (IRR), discounted return index (Tok). These indicators are well known and their calculation is widely presented in literature (Popov, Lyapunov, 2007) (see Table 1).

Table 1. Overall scheme of evaluating project participation efficacy

Efficacy indicator	Calculation formula
NPV is a difference between the sum of current effects for calculation period led to basis period and discounted investment sum	$NPV = \sum_{t=0}^T (P_t - C_t) \times a_t$ $IRR > 0$
PI is a balance of presented effects sum to the sum of discounted capital investments for the same moment.	$PI = \sum_{t=0}^T (P_t - C_t) \times a_t / C_u$ $PI > 1$
IRR is the discount norm (EDD), at which the sums of effects led to a basic time moment equals capital investment amount for the same time period	$\sum_{t=0}^T \frac{P_t - C_t}{(1 + E)^t} = \sum_{t=0}^T \frac{K_t}{(1 + E)^t}$
Tok defines the period during which cumulative sum of financial inflows equals discounted investment sum C.	$T_{ok} = \frac{C_u}{P_s}$

Where: i - the number of step in the calculation horizon T, years; E - discount norm (capital efficacy coefficient) equaling income per capital % acceptable for the investor; Pt - results achieved at t-step of calculation in rubles; Ct - costs; Kt - capital investment.

Source: Popov and Lyapunov, 2007

If new investment meets requirements of commercial evaluation of investment efficacy processes of new technology design and implementation should be analyzed from the point of view of internal economic opportunities of the company. One must make quantitative evaluation of costs and understand if it is possible to implement innovation objectives using resources of separate functional units at a certain company considering or its individual development characteristics. In order to do so we can use innovation

perceptiveness and implementation probability indicators for real economic conditions. The final stage of innovation project efficacy can include multi-dimension analysis of obtained qualitative characteristics in order to choose the most perspective options of new technologies or products for financing.

3. Methods

We used a case-method for approbation of the methodological approach offered. At the first investigation stage we have chosen 4 innovative projects which have been developed by the small innovative enterprises of Ural Federal University in 2016:

- a) internet services using individual channels,
- b) telephone connection network,
- c) Wi-Fi services,
- d) hosting services.

At the second stage we have carried out the assessment of projects efficiency by a traditional and author's efficiency assessment method and have compared the received results.

The methodology of a research is based on criterion for evaluation of efficiency – existence or lack of profit on the project. In this case we considered the economic profit, but not the accounting profit, because the economic profit considers the cost of the investment capital. We have carried out the analysis in two directions: a) efficiency assessment of investment expenses; b) assessment of financial solvency of the project.

Efficiency assessment calculates taking into account such indicators as the net present value, profitability index, internal rate of return, discounted return index. Assessment of project financial solvency is carried out on the basis of the settlement account model with control of the positive rest of money in each of the planning periods. The structural method was the main method of the analysis. The specific weight of the separate indicators pays off in the course of this analysis.

4. Results

Let us look at the stages of innovation project selection on the example of telecommunication company growth project.

At the stage of preliminary selection four projects were chosen.

1. Project: broadening the range of internet services using individual channels (the first project).

Individual channel Internet connection is a priority for clients as it provides Internet access with high quality and minimal time lag. Individual Internet access allows for solving such tasks as information host network access, connecting local workstations to the Internet the use of World Wide Web (WWW) servers, email exchange and creation of own post server in the Internet. Permanent access allows for unlimited work of all corporate network stations in the Internet. Besides permanent access to the Internet you can order other services, such as provision and registration of IP addresses set, domain registration, database, e-mail. Project implementation allows for larger number of potential users.

2. Project: broadening telephone connection network (the second project).

Telephone connection in its different forms is a technological basis for all modern business communication. Quality and costs of telephone connection is significant for success of any progressive company. Most of the companies with more than 5 staff members and more than one external phone number must manage telephone connections in the office. Such tasks as call transfer, additional numbers, intellectual answering machine (auto secretary) and others are successfully solved by installing office telephone stations. Implementation of the project would allow for broadening the client base and obtaining more profit.

3. Project: broadening the range of Wi-Fi services (third project).

Wireless technology Wi-Fi has stable demand among customers. Virtually all modern equipment used by businessmen has necessary options for working with the Internet via Wi-Fi access. Project implementation would allow for broadening the area of Wi-Fi coverage, attract new clients and improve company competitiveness.

4. Project on broadening the range of hosting services (the fourth project).

Hosting is a service of providing calculating capacity for physical placement of information at the server with permanent access to the Internet. The term hosting is also used to name the service of placing client's equipment at provider's premises, providing access to high speed channels.

Complex efficacy evaluation for business development with the use of new technologies should start from defining innovation project costs. In order to calculate these costs one must define the sum of innovation costs and group them according to relevant expenses.

Investment costs and basic financial results on innovation project should be structured according to legislative basics of company activities. All costs related to company growth can be subdivided into:

- financial costs,
- salary,
- amortization,
- other costs.

Financial costs usually include costs for purchasing raw materials and spare parts. They also cover purchase of water, fuel, power and all other technology – related costs, as well as costs for production services rendered by external organizations. Costs related to salary include all payments to all employees involved in the project. The next important element in the project cost structure is amortization of laboratory and production equipment and intangible assets. Initial cost of amortization intangible assets is defined by the sum of purchase price and cost of maintenance necessary for its exploitation. The price of intangible assets created by organization itself is defined by the sum of factual costs of their generation and production, including financial costs on labor payment; external organization services; patent and license costs. When forming innovation project costs the sum of amortization on main funds and intangible objects should include the size of costs in the reported period. The forth and the last innovation project cost type is “other costs” category. It covers taxes and other similar payments.

The sum of all four cost categories allows for calculating company costs of an innovation project, that is evaluate the price of broadening innovation activities.

Project costs are grouped according to cost categories (see Table 2).

Table 2. Costs of projects on broadening the range of activities

Cost category	Project costs (thousand rubles)			
	First project	Second project	Third project	Fourth project
1	2	3	4	5
1. material costs	91.2	573.6	60.8	3275.69
2. labor costs	476.4	216	476.4	736.8
3. amortization	18.243	114.73	12.16	655.14
4. other costs	152.45	69.12	150.8	235.78
Total	733.08	973.45	700.16	4 466.64

Source: Own elaboration

NPV, PI, IRR, cost return period serve as project efficacy criteria.

NPV reflects suggested evaluation of company economic potential change as a result of a project. This criterion has additivity criteria that is NPV of different projects can be summed up in order to define the overall effect. PI criterion shows return per cost unit: this is a go to criteria when it comes to structuring independent projects for creating an optimal portfolio in case of limited overall investment amount. This criterion shows maximum level of costs which can be associated with this project. That is if the price of capital attracted for project financing is larger that IRR, the project should be turned down. Criterion $T_{ок}$ demonstrates the number of basic periods in which investments will be compensated by financial returns from the project.

On the basis of commercial efficacy evaluation one can make conclusions concerning economic attractiveness of project under consideration (see Table 3).

From Table 3 we can see rating evaluation of project efficacy for each project. The first project is the least effective, will not reach break - even point and will incur losses. According to efficacy indicators second and third projects are the most attractive in terms of NPV, PI, IRR and time to breakeven point.

Table 3. Overall project efficacy evaluation

Economic analysis indicators	Calculations for each project			
	First project	Second project	Third project	Fourth project
1	2	3	5	4
Pure discounted profit	-80.89	12 461.91	1 584.9	1 441.28
Profitability index	0.113	4.459	27.07	3.513
Internal profitability norm	profit	76.86	318.5	10.77
Investment return period	No profit	1.4	1	1.6
Preliminary project rating position according to NPV	4	1	2	3

Source: Own elaboration

Implementation of these projects at the given company considering its resources and economic growth perspectives seems the most feasible. Therefore company development strategy should be based on the basis of the third project. On the basis of broadening these activities profit will increase significantly, allowing the company work on its further development strategy.

5. Discussion and Conclusion

Thus, it is impossible completely to project the methods of investment projects assessment on the system of efficiency assessment for the projects based on knowledge. Firstly, profitability of innovations has the delayed character. Secondly, activities for knowledge generation proceed in the conditions of the increased risk when it is difficult to estimate the final result of innovations at the initial stage (Lopez-Vega, Tell, Vanhaverbeke, 2016). Process of development and implementation of the innovative project is very long, and the external environment changes very quickly (O'Connell, AbuGhazaleh, Kintou, 2018).

We have defined the efficiency of knowledge generation as their ability to preserve the corresponding number of work, time, resources and money counting on unit of new products, technological systems, and structures.

The effect of knowledge generation is shown in the following values:

1. Improvement of commodity quality and growth of the assortment;
2. Increase in productivity and improvement of working conditions;
3. Growth of management efficiency;
4. Improvement of quality of life.

We suggest estimating efficiency for the knowledge based projects taking into account the following provisions:

1. Complexity, i.e. analysis of all components of effect (economic, scientific and technical, social, etc.);
2. Systematization, i.e. accounting of interrelations and interdependence between participants and stages of the project;
3. Multistaging;
4. To consider the purposes of all participants of the project (Anderson, Hardwick, 2017);
5. To consider time factor;
6. To consider risks of the project.

We suggest new methodological approach to selection of new knowledge generation results for further implementation. It includes the following stages: company economic opportunities analysis; innovative ideas generation; preliminary innovation selection; presentation of innovation idea in the form of innovation project; innovation project efficacy evaluation from the point of view of investment perspectives; evaluation of innovation project efficacy from company economics point of view; multidimensional analysis of obtained quantitative evaluation with the aim of choosing the most perspective innovation projects.

Theoretical importance of obtained results is in the development of methodological approaches to innovation project selection based on widespread methods of investment design considering peculiar

features of innovation development strategy. These methodological approaches can be the basis for designing company activities on new knowledge generation.

Practical importance of obtained results is in increased transparency of activities on new knowledge generation results application in the work of a company by means of improving managerial decisions on developing innovation activities and implementation of innovations.

Acknowledgment

The work was supported by Act 211 Government of the Russian Federation, contract No 02.A03.21.0006.

Reference

- Anderson, A.R., Hardwick, J. (2017). Collaborating for innovation: the socialised management of knowledge. *International Entrepreneurship and Management Journal*, vol. 13, iss. 4, pp 1181-1197.
- Besen, F., Tecchio, E., Fialho, F.A.P. (2017). Authentic leadership and knowledge management. *Gestao e Producao*, vol. 24, iss. 1, pp. 2-14.
- Bierly, P., Chakrabarti, A. (1996). Generic knowledge strategies in the U.S. pharmaceutical industry. *Strategic Management Journal*, vol. 17 (S2), pp. 123-135.
- de-Goñi-Oslé, J.M., Rodríguez-Castellanos, A. (2018). A Model for the Management in Organizations Based on People and Knowledge: Aspects to Be Considered in Its Design. In C. Berger-Vachon, A. Gil Lafuente, J. Kacprzyk, Y. Kondratenko, J. Merigó, C. Morabito (Eds), *Complex Systems: Solutions and Challenges in Economics, Management and Engineering. Studies in Systems, Decision and Control*, vol 125, pp. 63-82, Cham: Springer.
- Galeitzke, M., Steinhöfel, E., Orth, R., Kohl, H. (2017). Intellectual Capital-Driven Technology and Innovation Management. *International Journal of Innovation and Technology Management*, vol. 14, iss. 5, [online]. Available: <https://doi.org/10.1142/S0219877017500286> [2017, November 01].
- Goncharenko, L.P., Arutyunov, Yu, A. (2011). *Innovative policy*. Moscow: KNORUS.
- Grant, R.M. (1996). Prospering in dynamically-competitive environments: Organizational capability as knowledge integration. *Organization Science*, vol. 7, iss. 4, pp. 375-387.
- Grigoriou, K., Rothaermel, F.T. (2017). Organizing for knowledge generation: internal knowledge networks and the contingent effect of external knowledge sourcing. *Strategic Management Journal*, vol. 38, iss. 2, pp. 395-414.
- Hamel, G., Prahalad, C K. (2010). *Competing for the future*. Boston, MA: Harvard Business School Press.
- Hayek, F.A. (1945). The use of knowledge in society. *American Economic Review*, vol. 35, iss. 4, pp. 519-530.
- Korobeinikov, I.O. (2000). *Reserves of development of the enterprises*. N. Novgorod: NSU publishing house of N. I. Lobachevsky.
- Krogh, G.V., Nonaka, I., Aben, M. (2001). Making the Most of Your Company's Knowledge: A Strategic Framework. *Long Range Planning*, vol. 34, iss. 4, pp. 421-439.
- Krylov, E.I., Vlasov, V.M., Zhuravkov, I.V. (2003). *Analysis of efficiency of investment and innovative activity of the enterprises*, M.: Finance and statistics, p. 419.
- Lopez-Vega, H., Tell, F., Vanhaverbeke, W. (2016). Where and how to search? Search paths in open innovation. *Research Policy*, vol. 45, iss. 1, pp. 125-136.
- Machlup, F. (1962). *The production and distribution of knowledge in the United States*. Princeton, (N.J.): Princeton University Press.
- Makarova, I.A. (2012). Mechanism of optimization of innovative policy at the enterprise. *Modern Problems of science and Education*, vol. 3, [online]. Available: <https://www.science-education.ru/en/article/view?id=6249> [2017, November 01].
- March, J.G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, vol. 2, iss. 1, pp. 71-87.
- Meissner, D., Carayannis, E.G. (2017). Value generation from industry-science linkages in light of targeted open innovation. *Journal of Knowledge Management*, vol. 21, iss. 2, pp. 295-307.
- Nähti, S., Ulkuniemi, P., Pekkarinen, S. (2017). Implementing Modularization in Professional Services -The Influence of Varied Knowledge Environments, *Knowledge and Process Management*, vol. 24, iss. 2, pp. 125-138.
- O'Connell, V., AbuGhazaleh, N., Kintou, A. (2018). The impact of R&D programme success on the decision to capitalise development expenditures in European firms. *Technology Analysis & Strategic Management*, vol. 30, iss. 1, pp. 15-30.
- Popov, V.M., Lyapunov, S. I. (2007). *The analysis of financial decisions in business*. Moscow: Knorus.
- Shahmarichatghieh, M., Härkönen, J., Haapasalo, H., Tolonen, A. (2017). Product development sourcing over technology life-cycle. *International Journal of Procurement Management*, vol. 10, iss. 6, pp. 729-760.
- Soldatov, A.A, Tanchuk, R.S. (2013). Strategic management and innovative development of the enterprises and firms. *Management of Economic Systems*. vol. 3, pp. 2-3.

Trifilova, A.A. (2003). *Management of innovative development of the enterprise*. Moscow: Finance and statistics.

88. THE INFLUENCE OF TRUST AND PREVIOUS EXPERIENCE ON COOPERATION OF ENTERPRISES – AN EMPIRICAL STUDY IN POLAND AND THE REPUBLIC OF BELARUS

Abstract: The increased importance of cooperation between independent actors is considered one of the most significant development trends in modern value creation mechanisms. Skillful cooperation between organizations is seen as a source of advantage for one organization over others. Cooperation between Polish and Belarusian companies can bring mutual benefits. Belarusian companies through the Polish market have access to the European Union market, while Poles through Belarusian companies have access to the Eurasian Economic Union market as well as other countries in the Commonwealth of Independent States. In the subject literature attention is drawn to the fact that the practice of inter-organizational cooperation is very difficult to implement. Legal requirements or contracts are not sufficient conditions to ensure effective cooperation. There are many factors that influence its course, both external and internal determinants. Trust and previous experience seem to be particularly important. The aim of this paper was to determine the existence or absence of a correlation between trust and previous experience and the level of cooperation between the surveyed enterprises with competing entities and foreign companies (Polish and Belarusian respectively). The analysis was carried out on 381 Polish and 121 Belarusian enterprises. Spearman's correlation coefficient was used to verify the hypotheses, and then the t-Student test was used to examine its significance. The obtained results indicate that cooperation in the studied companies was much higher influenced by the history of their previous contacts than by the trust to partners.

Keywords: companies, cooperation, trans-border cooperation, trust.

JEL Classification: L22, L26

1. Introduction

Inter-organizational relationships are currently of interest to many areas in management science (Huczek, 2015; Koźmiński, Latusek-Jurczak, 2014). The increased importance of cooperation between independent actors is considered one of the most significant development trends in modern value creation mechanisms (Daniluk, Tomaszuk, 2016; Daniluk, 2016). Skillful cooperation between organizations is seen as a source of advantage for one organization over others (Moczyłowska, Korombel, Bitkowska, 2017).

The progressing globalization of economic processes forces companies not only to cooperate with other domestic entities but also to internationalize their business. For companies from the border regions the use of geographic location may provide an additional opportunity for development.

Cooperation between Polish and Belarusian companies can bring mutual benefits. Belarusian companies through the Polish market have access to the European Union market, while Poles through Belarusian companies have access to the Eurasian Economic Union market as well as other countries in the Commonwealth of Independent States.

Despite the entrepreneurs' awareness of the role and importance of cooperation the relations between cooperating entities are often weak, unstable and above all quite often there is an attempt to overuse and exploit the partner (Nowak, 2015). In the subject literature attention is drawn to the fact that the practice of inter-organizational cooperation is very difficult to implement (Fedorowicz, Gogan, Williams, 2007; Kaiser, 2011). Legal requirements or contracts are not sufficient conditions to ensure effective cooperation. There are many factors that influence its course, both external and internal determinants (Tomaszuk, 2016). Trust and previous experience seem to be particularly important.

¹ Anna Wasiluk Ph.D.; O. St. Tarasiuka 2, 16-002 Kleosin/Białystok, Poland, a.wasiluk@pb.edu.pl

* Corresponding author

With the above in mind, the aim of this paper was to determine the existence or absence of a correlation between trust and previous experience and the level of cooperation between the surveyed enterprises with competing entities and foreign companies (Polish and Belarusian respectively).

2. Review of Literature

The current increase in interest in trust is both a result of social capital concept development and a need to take into account the impact of the social environment on the performance of various entities operating in a complex business environment (Wasiluk, 2015; Sankowska, 2015). Despite the growing importance of trust there is no single, universally accepted position in its interpretation (Kim, Dirks, Cooper, 2009). It should be noted, however, that many authors point out the connection between cooperation and trust (Gambetta, 2001). In many studies there are deliberations on what is the cause and what is the effect. Is the low level of cooperation a result of low trust or vice versa - low trust means that the parties do not want to cooperate (Smith, 2016; Lumineau, 2017; Babin, Bates, Sohal, 2017).

Many researchers in their works draw attention on the positive influence of trust on initiation and development of cooperation (Sulimowska-Formowicz, Stępień, 2011; Broniewska, 2013; Jakubowska, 2015). Many empirical studies suggest that cooperation is possible only through trust (Tsai, 2000) and that mutual trust in business relations promotes cooperation and vice versa (Gilbert, Behnam, 2013). Das and Teng (2002) have found that the probability of success in relationships based on cooperation and their effectiveness increases with the existence of trust. It should be noted, however, that some authors also point out that mutual trust may lead to development of cooperation between actors, but trust is not necessary for cooperation development (Laske, Neunteufel, 2005). Cooperation may result not only from trust but also from other causes such as obligation or anticipation of sanctions resulting from non-cooperation. On the other hand, not all trust-based relationships will result in undertaking cooperation (Kale, Singh, Perlmutter, 2000).

It seems that beside trust the scope and intensity of undertaking cooperation with other entities are influenced by previous experience of the enterprises. It is emphasized in the literature that previous cooperation in particular:

- limits the uncertainty in regard to both cooperation (Gulati, Gargiulo, 1999) and partners, especially their intentions, credibility, resources or abilities (Vlaar, 2008, p. 211);
- helps the partners to get and deepen their knowledge of each other in terms of interests, needs and opportunities (Mayer, Argyres, 2004);
- helps the partners to understand better their intentions and wishes, so that they begin to think, feel and react as their partners and therefore better anticipate any possible reactions (Lewicki, Tomlinson, Gillespie, 2006);
- strengthens the perception of relationships as stable and long-term (Poppo, Zhou, Ryu, 2007);
- allows to develop methods of cooperation, organizational procedures and habits, which further stabilize relations between the partners (Reuer, Ariño, 2007);
- helps to develop ways of preventing and resolving conflicts, making them less likely, and the uncertainty and risk are reduced (Latusek-Jurczak, 2011, pp. 59-61).

3. Methodology of the Research

The main aim of the text was to determine the existence or absence of a correlation between trust and previous experience and the level of cooperation between the surveyed enterprises and competitors and foreign entities (respectively Polish and Belarusian).

Two research hypotheses were made:

H1: There is a correlation between the rating of cooperation level and previous experience.

H2: There is a correlation between the rating of cooperation level and the level of trust.

The analysis presented in this text are based on the results of wide research (in which the author was part of the research team), carried out as a part of an international research project within the agreement between the Polish Academy of Science and the National Academy of Science of Belarus (in the years 2014-2016) „*Readiness of enterprises to create cross-border networking*”. The analysis was carried out on 381 Polish enterprises in the construction and industrial sector (headquartered in the Podlaskie Voivodeship) and 121 Belarussian businesses (Table 1). The entities chosen for

participation in this study were sourced from various databases. Some respondents were obtained thanks to the “snowball” method including recommendations of given entities by other participants of the study.

The study respondents included exclusively representatives of the management staff or the owners of companies qualified for the research with knowledge of inter-organizational cooperation, so called key informants (Kumar, Stern, Anderson 1993).

Table 1. Characteristics of the studied companies

		Companies			
		Polish % (N)		Belarusian % (N)	
Companies total		100 (381)		100 (121)	
Including	Industry of the studied companies	construction	19.95 (76)	construction	55.37 (67)
		wood and furniture	21.52 (82)	wood and furniture	23.97 (29)
		food	21.78 (83)	food	8.26 (10)
		metal and machinery	19.95 (76)	metal and machinery	10.74 (13)
	Size of the studied companies (number of employees)	Up to 9 people	22.31 (85)	Up to 15 people	14.05 (17)
		10 – 49 people	38.32 (146)	16 – 100 people	29.75 (36)
		50 – 249 people	28.87 (110)	101 – 250 people	14.88 (18)
		250 people and more	10.50 (40)	More than 250 people	41.32 (50)
	Age of the studied entities (number of years on the market)	Up to 1 year	0.79 (3)	Up to 1 year	0.83 (1)
		1 – 3 years	7.34 (28)	1 – 3 years	4.96 (6)
		4 – 10 years	17.58 (67)	4 – 10 years	28.93 (35)
		More than 10years	74.38 (283)	More than 10years	65.29 (79)

Source: Author’s own study

In regard to the industry the respondents operating in only four sectors were analysed, the ones which have been included in the priority sectors in the Podlaskie Voivodship Development Strategy. Spearman's correlation coefficient was used to verify the hypotheses, and then the t-Student test was used to examine its significance. Statistical calculations were carried out using STATISTICA version 13.1.

4. Analysis of the Results

The study analysis (Table 2) allows confirming the first hypothesis (H1) in the case of Polish respondents. All of the statistically significant correlations are positive, which means that the higher the respondents rated their previous cooperation with domestic and Belarusian companies, the higher was the impact of their previous cooperation experience. In case of dependence related to domestic companies the correlation strength was moderate, with the exception of medium-sized companies, employing between 50 and 249 persons. It can be said that the correlation was high for these enterprises. In regard to cooperation with Belarusian companies, this dependence is definitely higher. Apart from the newest companies (on the market from 1 to 3 years) the correlation strength is very high. Therefore, it should be noted that in the case of Polish companies their experience in contacts with other enterprises influences the respondents’ openness to cooperation.

A different situation is evident in the analysis of the results obtained from the Belarusian respondents. It allows only partial confirmation of the first hypothesis (H1). In the case of correlations of statistically significant values they are also positive, so in these cases it should also be said that the increase in the ratings of the level of cooperation with domestic enterprises is also accompanied by the increase in the average value of the ratings of the impact of the previous experience. The strength of these correlations is moderate, with the exception of the studied companies in food industry. In the case of cooperation with Polish companies the correlations can be discussed only in the largest companies and responders with the longest history in the market, but the strength of these correlations is low.

Table 2. Correlation between cooperation and previous experience

	Correlations of Spearman’s ranks			
	Polish enterprises		Belarussian enterprises	
	domestic	Belarussian	domestic	Polish
Companies total	0.553	0.855	0.427	0.266
Including				

Industry	Construction	0.559	0.828	0.414	0.156
	wood and furniture	0.496	0.876	0.554	0.221
	Food	0.617	0.935	0.722	0.234
	metal and machinery	0.618	0.838	-0.214	0.533
Employment	Up to 9 people/ Up to 15 people	0.523	0.878	0.215	0.174
	10 – 49 people/16 – 100 people	0.459	0.858	0.522	0.230
	50 – 249 people/101 – 250 people	0.726	0.829	0.363	0.347
	250 people and more/ More than 250 people	0.495	0.805	0.503	0.377
Age	Up to 1 year	-	-	-	-
	1 – 3 years	0.520	0.452	0.667	-0.302
	4 – 10 years	0.579	0.869	0.382	0.298
	More than 10 years	0.552	0.861	0.466	0.326

Statistically significant correlations are in bold.

Source: Author's own study

Interestingly, the analysis (Table 3) allow only for a partial confirmation of the hypothesis (H2), in both cases of Polish and Belarusian respondents. The strength of correlations in the vast majority of cases is low with an exception of the surveyed companies in the metal and machine industries which cooperate with foreign companies - Belarusian or Polish respectively. In these cases we can talk about high dependency.

Table 3. Correlation between cooperation and trust

		Correlations of Spearman's ranks			
		Polish enterprises		Belarussian enterprises	
		domestic	Belarussian	domestic	Polish
Companies total		0.194	0.354	0.229	0.294
Including					
Industry	construction	0.744	0.267	0.188	0.210
	wood and furniture	0.291	0.299	0.356	0.276
	food	0.131	0.322	-0.021	0.341
	metal and machinery	0.154	0.669	0.241	0.802
Employment	Up to 9 people/ Up to 15 people	0.150	0.143	0.149	-0.114
	10 – 49 people/16 – 100 people	0.270	0.166	0.278	0.316
	50 – 249 people/101 – 250 people	0.217	0.513	0.317	0.288
	250 people and more/ More than 250 people	0.043	0.448	0.239	0.378
Age	Up to 1 year	-	-	-	-
	1 – 3 years	0.031	0.382	-0.739	-0.302
	4 – 10 years	0.127	0.244	0.343	0.437
	More than 10 years	0.218	0.363	0.259	0.311

Statistically significant correlations are in bold.

Source: Author's own study

In the case of Polish companies the statistically significant correlation is observable especially in their cooperation with foreign companies. With regard to domestic entities, such dependence is only visible in the case of enterprises from the wood and furniture industries. This also applies to small and medium-sized enterprises (employing from 10 to 249 people) and operating on the market for over 10 years. In the case of Belarusian enterprises, the relationship between cooperation and trust exists in the case of entities operating on the market for over 4 years. However, in relation to foreign partners, dependence was also observed in the case of the largest respondents and those operating in the metal and machine industry.

5. Conclusion

In conclusion, the research allowed elaborating the existing scientific achievements in regard to the relationship between cooperation and trust and the previous experience. Studying these connections seems particularly relevant for the development of modern forms of organizing cooperation, which include clusters, networks, partnerships and alliances (Koźmiński, Latusek-Jurczak, 2014). It should be emphasized that networking is currently one of the key categories in both literature (e.g. in the field of management science) and business practice (Czakon, 2012; Glückler et al., 2012).

The analysis allowed the hypotheses to be verified. The obtained results indicate that cooperation in the studied companies was much higher influenced by the history of their previous contacts than by the trust to partners. The resulting picture differs from the many opinions presented at the beginning of this text, in the section devoted to the literature review. Consequently, it should be agreed that cooperation may result not only from trust, but also from other causes such as obligation or anticipation of sanctions resulting from non-cooperation.

It should be stressed, however, that while the carried out research contributes to complementing the existing research gap in regard to cooperation and trust and previous experience, it is not free of certain limitations, resulting particularly from the applied methodological approach, which effected in the impossibility of results generalization. Therefore, an additional direction of further research may be to undertake the replication studies conducted on a representative sample of enterprises in the whole country of Poland.

Acknowledgements

The research was conducted within the statutory work of the Department of Organization and Management at Bialystok University of Technology and was financed from Polish Ministry of Science and Higher Education funds.

References

- Babin, R., Bates, K., Sohal, S. (2017). The role of trust in outsourcing. *Journal of Strategic Contracting and Negotiation*, vol. 3, iss. 1, pp. 38-46.
- Broniewska, M.J. (2013). Społeczna odpowiedzialność i zaufanie podstawą strategicznej współpracy międzysektorowej. *Management and Business Administration. Central Europe*, vol. 21, iss. 1, pp.71-84.
- Czakon, W. (2012). *Sieci w zarządzaniu strategicznym*. Warszawa: Oficyna a Wolters Kluwer business.
- Daniluk, A. (2016). Conditions of cooperation between enterprises and business environment institutions using the Podlasie region as an example. *Economics and Management*, vol. 8, iss. 4, pp. 18-27.
- Daniluk, A., Tomaszuk, A. (2016). Conditions for development of companies' cooperation and entrepreneurship. *The 9th International Scientific Conference "Business and Management 2016": Conference Proceedings*. Vilnius: Vilnius Gediminas Technical University.
- Das, T.K., Teng, B.S. (2002). Alliance Constellations: A Social Exchange Perspective. *Academy of Management Review*, vol. 27, iss. 3, pp. 445-456.
- Fedorowicz, J., Gogan, J.L., Williams, C. (2007). A Collaborative Network for First Responders: Lessons from the CapWIN case. *Government Information Quarterly*, vol. 24, iss. 4, pp. 785-807.
- Gambetta, D. (2001). Können Wir dem Vertrauen Vertrauen? In M. Hartmann, C. Offe (Eds.), *Vertrauen. Die Grundlage des sozialen Zusammenhalts* (pp. 204-237). Frankfurt – New York: Campus.
- Gilbert, D.U., Behnam, M. (2013). Trust and the United Nations Global Compact: A Network Theory Perspective. *Business and Society*, vol. 52, iss. 1, pp. 135-169.
- Glückler, J., Dehning, W., Janneck, M., Armbrüster, T. (Eds.). (2012). *Unternehmensnetzwerke. Architekturen, Strukturen und Strategien*. Berlin Heidelberg: Springer.
- Gulati, R., Gargiulo, M. (1999). Where Do Interorganizational Networks Come From? *American Journal of Sociology*, vol. 104, iss. 5, pp. 1439-1493.
- Huczek, M. (2015). Tworzenie innowacji poprzez współpracę międzyorganizacyjną. *Zeszyty Naukowe Wyższej Szkoły Humanitas Zarządzanie*, vol. 2, pp.13-25.
- Jakubowska, A. (2015). Zaufanie podstawą współpracy banku i samorządu lokalnego. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, vol. 403, pp. 77-86.
- Kaiser, F.M. (2011). Interagency Collaborative Arrangements and Activities: Types, Rationales, Considerations. *Congressional Research Service 7-5700*, R41803.
- Kale, P., Singh, H., Perlmutter, H. (2000). Learning and Protection of Proprietary Assets in Strategic Alliances: Building Relational Capital. *Strategic Management Journal*, vol. 21, iss. 3, pp. 217-237.
- Kim, P.H., Dirks, K.T., Cooper, C.D. (2009). The repair of Trust: A Dynamic Bilateral and Multilevel Conceptualization. *Academy of Management Review*, vol. 34, iss. 3, pp. 401-422.
- Koźmiński, A.K., Latusek-Jurczak, D. (Eds.). (2014). *Relacje międzyorganizacyjne w naukach o zarządzaniu*, Warszawa: Oficyna a Wolters Kluwer business.

- Kumar, N., Stern, L.W., Anderson, J.C. (1993). Conducting interorganizational research using key informants. *Academy of Management Journal*, vol. 36, iss.6, pp. 1633-1651.
- Laske, M., Neunteufel, H. (2005). Vertrauen eine “*Conditio sine qua non*” für Kooperationen? *Wismarer Diskussionspapiere*, Heft 01.
- Latusek-Jurczak, D. (2011). *Zarządzanie międzyorganizacyjne*. Warszawa: Oficyna Wydawnicza a Wolters Kluwer business.
- Lewicki, R.J., Tomlinson, E.C., Gillespie, N. (2006). Models of Interpersonal Trust Development: Theoretical Approaches, Empirical Evidence, and Future Directions. *Journal of Management*, vol. 32, iss. 6, pp. 991-1022.
- Lumineau, F. (2017). How Contracts Influence Trust and Distrust. *Journal of Management*, vol. 43, iss. 5, pp. 1553-1577.
- Mayer, K.J., Argyres, N.S. (2004). Learning to Contract: Evidence from the Personal Computer Industry. *Organization Science*, vol. 15, iss. 4, pp. 394-410.
- Mayer, R.C., Davis, J.H., Schoorman, F.D. (1995). An integrative model of organizational trust. *Academy of Management Review*, vol. 20, iss. 3, pp. 709-734.
- Moczydłowska, J.M., Korombel, A., Bitkowska, A. (2017). *Relacje jako kapitał organizacji*. Warszawa: Difin.
- Nowak, D. (2015). Bariery rozwoju relacji kooperacyjnych. *Problemy zarządzania*, vol. 13, iss.1(50), pp.47-67.
- Poppo, L., Zhou, K.Z., Ryu, S. (2007). Alternative Origins to Interorganizational Trust: An Interdependence Perspective on the Shadow of the Past and the Shadow of the Future. *Organization Science*, vol. 19, iss. 1, pp. 39-55.
- Reuer, J.J., Ariño, A. (2007). Strategic alliance contracts: Dimensions and determinants of contractual complexity. *Strategic Management Journal*, vol. 28, iss. 3, pp. 313-330.
- Sankowska, A. (2015). Relations Between Trust and Networks. In W. Sroka, S. Hittmár (Eds.), *Management of Network Organizations. Theoretical Problems and the Dilemmas in Practice* (pp. 39-49). Cham: Springer.
- Smith, K. (2016). Circle of trust. *Best's Review*, vol. 117, iss. 1, pp. 72-73.
- Sulimowska-Formowicz, M., Stępień, B. (2011). Warunki skuteczności i efekty kooperacji gospodarczej. In B. Stępień (Ed.), *Międzynarodowa kooperacja gospodarcza z polskiej perspektywy* (pp. 83-84). Warszawa: PWE.
- Tomaszuk, A. (2016). Stereotypes in the perception of cross-border business partners (on the example of Podlasie entrepreneurs). *Economics and Management*, vol. 8, iss. 2, pp. 56-63.
- Tsai, W. (2000). Social Capital, Strategic Relatedness and the Formation of Intraorganizational Linkages. *Strategic Management Journal*, vol. 21, iss. 9, pp. 925-939.
- Vlaar, P.W.L. (2008). *Contracts and Trust in Alliances. Discovering, Creating and Appropriating Value*. Cheltenham-Northampton: Edward Elgar Publishing.
- Wasiluk, A. (2015). Zaufanie we współczesnym zarządzaniu. In A. Kowalczyńska (Ed.), *Wybrane zagadnienia miękkiego zarządzania organizacjami* (pp. 57-77). Warszawa: EMENTON.

89. DEVELOPMENT BARRIERS AND SOURCES OF FINANCING FOR ECO-INNOVATION BY MMSE AGAINST THE BACKGROUND OF ECO-INNOVATION INDICATORS OF THE EUROPEAN UNION COUNTRIES

Abstract: The sector of enterprises belonging to MSMEs is a stimulator of economic development while generating 50.2% of GDP of the whole sector of enterprises and employing 69.8% of people employed in enterprises (according to GUS - Central Statistical Office 2015). Growing expectations of the environment, taking into account environmental management in social and environmental terms affect the decision of enterprises concerning the implementation of the concept of corporate social responsibility (CSR). The need for the implementation of the concept of sustainable development (SDE), by means of an increase in eco-innovation, is an essential development goal, which is reflected among others in the Europe 2020 strategy, adopted by the European Commission. The position of the sector of Polish enterprises in terms of total innovation as well as eco-innovation is low against the background of EU countries. The introduction of eco-innovation by companies in Poland is mainly the result of adjustments to legal regulations imposed by the State. Relatively most of eco-innovation concerns the solutions aimed at reducing environmental pollution by the industrial sector. The basic goal of the research is to recognize the situation and the level of eco-innovation in Poland, including the MSME sector and to compare the obtained results with the ones from EU countries. Despite increasing expenditures on innovations including eco-innovation, Poland's position is at a very low level among EU countries. The main objective of the research is to identify barriers to the development of eco-innovation in the sector of micro, small and medium enterprises. Surveys were conducted among randomly selected 300 enterprises MSME sector included in the group in 2017. As a result of the data analysis, the main barriers were identified. In addition, the position of Poland against the background of EU countries with the use of the Eco-IS indicator as the main indicator of the eco-innovation assessment of the economy was presented.

Keywords: eco-innovation, development barriers eco-innovation, MSME, sources of financing eco-innovation.

JEL Classification: O31

1. Introduction

The sector of micro-, small and medium enterprises (MSME) plays an important role in all economies around the world. In Poland, there are 1.84 million non-financial companies, defined as active enterprises, including 99.8% of companies of the MSME sector (according to the data for 2014, following the publication *The activity of non-financial enterprises in 2014*, GUS 2015). When assessing the number of companies operating in Poland in absolute terms, it must be concluded that it is high, however, when using the indicator of the number of enterprises in relation to the size of the population, Poland occupies only the 22nd position among EU countries (according to Eurostat 2014). The number of large enterprises in Poland was only 3.4 thousand in 2014. However, a long-term improvement in the field of eco-innovation requires an increase in financial outlays on this type of investments and greater awareness of enterprises from the group of MSMEs. Sustainable development determines the use of eco-friendly technologies, which requires investments in eco-innovation, enabling more effective use of resources and reduction in pollution. The introduction of modern technologies compliant with the concept of sustainable development is becoming an important challenge for modern economies. Unfortunately, in Poland, a large share in economy belongs to traditional energy intensive industrial sectors. Therefore, it becomes necessary to take actions aimed at rational use of resources, raising awareness and investments of MSMEs in the field of eco-innovation. The basic goal of the research is to recognize the situation and the level of eco-innovation in Poland,

¹ Dariusz Wielgórka Ph.D.; Al. Armii Krajowej 19B, 42-200 Częstochowa, Poland, dariusz.wielgorka@wz.pcz.pl

* Corresponding author

including the MSME sector and to compare the obtained results with the ones from EU countries. The main objective of the research is to identify barriers to the development of eco-innovation in the sector of micro, small and medium enterprises. Surveys were conducted among randomly selected 300 enterprises MSME sector included in the group in 2017. In addition, the position of Poland against the background of EU countries with the use of the Eco-IS indicator as the main indicator of the eco-innovation assessment of the economy was presented.

2. Literature Review – Definition and Classification of Eco-innovation

The concept of eco-innovation occurred at the end of the 20th century as a result of the growing awareness of risks associated with the natural environment and responsibility for the environment (Amores-Salvadó, Martín-de Castro, Navas-López, 2014). The concept of eco-innovation in literature is defined multidimensionally although in general terms it applies to innovation bringing the effects for the environment (Wielgorka, 2016). The classic definition of eco-innovation says that eco-innovation means a new product which provides value to the customer and business and at the same time significantly reduces the negative impact on the environment (James, 2015). Eco-innovation is production, technological and service processes which reduce the negative impact on the natural environment (Flis, 2010). The essence of eco-innovation (Horbach, Rammer, Rennings, 2012) is an integrated approach to the use of the created concepts in the field of environmental protection at each stage and in each sector of the economy (Ziółkowski, Woźniak, 2010). These are production, technological and service processes that reduce the negative impact on the natural environment (Kordos, Karbach, 2014). Eco-innovation is an opportunity for the implementation of sustainable solutions that will allow for more effective use of natural resources and reduction in the harmful impact on the environment while simultaneously maintaining a high level of innovation (Foltynowicz 2008). The concept of eco-innovation is also understood as creating new and competitively assessed goods, processes, systems, services and procedures which may satisfy human needs and provide the quality of life to all people along with the minimum use of natural resources per production unit and minimum emission of toxic substances (Schmidt-Bleek, 2013). The main result of eco-innovation is an increase in environmental performance meaning directly e.g. reduction in energy intensity of production, and indirectly – an increase in cost competitiveness of the company (Strojny, 2010). Eco-innovation can be perceived as any innovation reducing the negative impact of economic processes on the natural environment and reducing environmental damage (Kanerva, Arundel, Kemp, 2009). Therefore, eco-innovation is a type of combination of innovation (novelty, creativity, change) with environmental sensitivity or environmental awareness (Krizanova, 2016). Some authors indicate the specific feature of eco-innovation distinguishing it from other innovation, namely, apart from the benefits achieved by the company implementing it, its effect is also the so-called external benefits. External benefits arise since the inventor usually cannot usurp all or most of social benefits of R+D activities (Rave, Goetzke, Larch, 2011).

Carley and Spapens give a lot of arguments for the use of eco-innovation:

- less waste and pollution and, in the interpretation of these authors – really logical, all pollution is useful resources, frequently lost, which, as a result of economic errors, were in the wrong place and time,
- better quality of life, eco-innovation leads to reduction in the use of resources but at the same time, it improves the quality of the results achieved. In many cases, it also positively influences the level of life,
- jobs and social justice, most of eco-innovation, e.g. the solutions of organic farming, increases a share of human capital in the economy, stimulates the emergence of new jobs, thus decreasing unemployment, simultaneously, it reduces the use of resources,
- competitiveness, since eco-innovation always means an increase in quality, better technologies, processes and products, which have increasingly greater market opportunities (Carley, Spapens, 2010).

According to OECD, eco-innovation improves the efficiency of use of natural resources in the economy, reduces the negative impact of human activity on the environment or strengthens the economy resistance to environmental pressures.

In literature, there are a lot of ways to classify eco-innovation, adopting, as a criterion, e.g. benefits for the enterprise or the results of the environmental impact. Among these classifications, there are also two groups: eco-innovative products and eco-innovative services. The product can be described as eco-innovative if its innovation or the innovation of the technology of its manufacture exerts less pressure on the environment. In turn, services are innovative in nature when eco-innovative products are used for their production or when the entity providing them uses eco-innovative organizational or process solutions. Within this concept it is possible to talk about eco-innovation of services or eco-innovative services nowadays. The service company may provide services which are not eco-innovative but at the same time it can be eco-innovative in the way of management and organization (Flis, 2010). Both types of eco-innovation carry a range of positive effects: reduction in consumption of energy and materials, an increase in competitiveness, profitability of enterprises, an opportunity to invest in human capital. At present eco-innovation is one of the main priorities of the policy of the Member States of the European Union.

In literature, most frequently there are distinguished five types of eco-innovation:

- technological eco-innovation within products and production processes,
- social eco-innovation, e.g. behavior, consumption habits,
- organizational eco-innovation, e.g. eco-audits,
- institutional eco-innovation, e.g. platforms of cooperation, informal groups, networks appointed to deal with environmental issues,
- marketing eco-innovation, eco-labels, eco-packaging (Węgrzyn, 2013).

The examples of eco-innovation applied in MSMEs in the field of energy eco-innovation, among others, are:

- product eco-innovation: photovoltaic cells, solar panels, biogassing (anaerobic digestion), new generations of wind turbines, geothermal systems, heat regenerators, heat pumps,
- process eco-innovation: distributed energy; intelligent energy management systems in buildings; trigeneration (combined management of energy, heat and cold); energy efficiency,
- organizational eco-innovation: solar farms; wind farms; implementation of energy management system - ISO 0001 (BS EN 16001); implementation of environmental management system – ISO 14001, or EMAS,
- marketing eco-innovation: modern campaigns raising awareness and advertising solutions in the power industry (Dziedzic, Woźniak, 2013).

The greatest barrier to the development of eco-innovation in enterprises is lack of capital, therefore, it becomes necessary to develop financial instruments supporting the financing of eco-innovation. An effective policy to promote eco-innovation should consider the different barriers to eco-innovation (Del Rio, Carrillo-Hermosilla, Konnola, 2010).

3. Methodology of the Research

Statistical surveys were used as the main survey method. Statistical surveys on the identification of eco-innovation barriers in small and medium-sized enterprises were carried out in 2017. The years 2010-2017 were adopted for analysis (the questions included in the survey concerned this period). The research covered the area of Poland. Address data of enterprises were obtained from the GUS. The survey was sent to randomly selected 300 SMEs located in Poland. 224 questionnaires were obtained that are suitable for further analysis, which gives a return rate of 74.7%. Micro enterprises accounted for 32% small, 38% and medium 30%. Micro-, small and medium enterprises (MSMEs) was chosen as the research subject because play a very important role in the world economy, amounting to about 99% of companies in the European Union. MSMEs in Poland amount to 99.8% of the total number of enterprises in Poland and perform a vital function in the economy affecting economic growth and employment. In EU countries, business activity is conducted by the total of 22 million enterprises, with the largest number of companies operating in Italy (about 3.7 million), France, Spain, Germany and Great Britain. Poland, when compared to other countries of the European Union, takes the sixth position in relation to the number of enterprises (more than 1.5 million by Eurostat for 2014). The statistics are worse in terms of the number of companies in relation to the population of a specific country. With the number of 41 enterprises per 1000 inhabitants Poland occupies the 22nd position in the EU. Large enterprises in Poland amount to 3.4 thousand entities in 2014. The sector of enterprises

included in MSNEs is a stimulator of the economy while generating 50.2% of GDP of the whole sector and employing 69.8% of people employed in enterprises (the data by GUS 2015). The classification criteria of the enterprises are: form of ownership, type of the conducted activity, market position, amount of capital, turnover, level of employment. In defining MSMEs two criteria are taken into account: quantitative – based on economic measures such as the number of employees, turnover, size of assets, scope of the market. The other criterion is qualitative – based on the characteristics of the company such as: unity of ownership and management, decision-making and financial independence, degree of organizational structure, innovation, management system, market share (Janiuk, 2004). A small enterprise in the light of the definition of Article 105 of the Business Activity Freedom Act (Journal of Laws of 2004, No. 173, item 1807), is an entrepreneur who, in at least one of the last two financial years:

- employed on an annual average fewer than 50 employees,
- achieved an annual net turnover from sales of products and services and financial operations not exceeding the PLN equivalent of EUR 10 million or total assets in its balance sheet not exceeding EUR 10 million.

A medium enterprise, in accordance with Article 106 of the Business Activity Freedom Act, fulfills at least 2 conditions in at least one of the last two financial years:

- employed on an annual average fewer than 250 employees,
- achieved an annual net turnover from sales of goods, products and services and financial operations not exceeding the PLN equivalent of EUR 50 million or total assets in its balance sheet at the end of one of these years did not exceed the PLN equivalent of EUR 43 million.

4. Result Research of Eco-innovation of MSMEs Operating in Poland Against the Background of Eco-IS Indices of EU Countries

As a result of the conducted research, only 14% of enterprises introduced eco-innovations, and 26% plan to implement eco-innovations. The questionnaire results indicate that the main motivation for undertaking activities for the benefit of the environment is the willingness to reduce costs of the business activity (82% of the surveyed MSMEs). The second reason indicated by the entities in question is modernization of technology (73%), followed by improvement in the image by the implementation of CSR (corporate social responsibility) (58%). 34% of those questioned consider the introduction of eco-innovation in their company e.g. in the form of photovoltaics, renewable energy etc. This indicates that Polish entrepreneurs perceive high-efficiency dimension of eco-innovation and economic benefits coming from its implementation, which reflects growing environmental awareness of entrepreneurs. Lack of financial resources for eco-innovation was indicated as the largest barrier by MSMEs in Poland (86%). Most often, eco-innovations are financed from several sources at the same time. All examined MMSE showed as the main source own capital (100%), loans and loans (72%), structural funds (31%), funds from the National Fund for Environmental Protection and Water Management (26%), leasing (16%). In the subject literature, an important position is occupied by the problem of barriers to the implementation of eco-innovation in enterprises, including MSMEs. Among them, there can be identified: legal barriers, economic barriers, demand barriers, technological barriers, research and development barriers, staff barriers, cooperation barriers (Ryszko, 2014).

From the point of view of effectiveness, the analysis of the cost of financing sources of eco-innovation plays an important role. The selection of the portfolio of instruments financing eco-innovations determines the financial effectiveness of the enterprise. Therefore, it is beneficial to use instruments financing eco-innovations from structural funds. The main motivation to undertake eco-innovation is the desire to reduce the company's operating costs (eg reduction of environmental fees). An important motive is also the improvement of the company's image. The main barrier to the implementation of eco-innovation mentioned by the respondents is primarily the lack of capital. On the other hand, a low level of utilization of structural funds in financing eco-innovation should be noted. One of the most important obstacles to the development of eco-innovation is poor access to foreign capital by enterprises. Foreign capital is the capital acquired from the outside from the environment in which the company operates (Table 1). It is to finance the activity of the company and its development, it is frequently used in the financing of eco-innovation. The main division of this capital due to the time of disposal of specific capital is into: long-term capital and short-term capital.

Table 1. The sources of foreign capital financing eco-innovation in MSMEs

Foreign capital	
Long-term capital	Short-term capital
Reserves	Short-term bank loans
Long-term bank loans	Renewable obligations
Credit guarantees	Loans from suppliers
Leasing	Loans from customers
Franchising	Factoring
Obligations	Loans from non-banking sector
Grants and subsidies	Short-term debt securities
Aid funds	Loans from family and friends
Loans from family and friends	

Source: Own work

The instruments supporting the development of the economies of EU countries, belonging to Structural Policy, are Structural Funds. The prospect for years 2014-2020 is implemented in Poland by means of 6 national operational programs managed by the Ministry of Development and 16 regional programs managed by Marshall Offices. To finance eco-innovation MSMEs will be able to use: Smart Growth Operational Program, Infrastructure and Environment Operational Program, Knowledge-Education-Development Operational Program, 16 Regional Operational Programs.

MSMEs that want to develop the eco-innovation project at the local or regional level should focus on the monitoring of the provisions of Regional Operational Programs. Regional Operational Programs (ROP) are adopted for each voivodeship individually. The objectives of Regional Operational Programs are the activities associated with the improvement in competitiveness and promotion of individual regions. Within the framework of ROP the support, among others, includes: the environment, preventing and combating environmental and technological threats, energy investments, investments in health care infrastructure and in social infrastructure. An important problem in the case of the national operational programs is a weak link of environmental issues with innovation. Most of the funds were allocated for Infrastructure and Environment Operational Program.

Infrastructure and Environment Operational program does not emphasize innovation and Smart Growth Operational Program – environmentally friendly solutions. The result is a support gap at the interface of these two areas filled in by eco-innovative projects. The subsidies for applicants are mainly in the form of non-repayable grants. Subsidizing projects with EU funds mostly consists in refunding some of the costs incurred. There are also pre-financing projects. In this case, the financial resources coming from EU funds are non-repayable after the fulfillment of all the conditions included in the project. The selection of projects is carried out in the competition procedure, each application is subjected to the procedure of formal and substantive evaluation. From time to time, there are announced the calls for applications in the framework of the activated another portion of allocated funds. The next part presents research on the position of Poland against the background of EU countries in the field of eco-innovation. For this purpose, the indicator was used Eco-IS index. Eco-IS index is calculated on the basis of 16 sub-indices concerning five thematic areas. The construction of Eco-IS index includes the total of five areas three of which directly relate to eco-innovation. These are: eco-innovation inputs (government expenditure on environmental and energy R+D, green investments of PE/VC funds, total number of researchers), eco-innovation activities (enterprises introducing eco-innovation improving material and energy efficiency and possessing ISO 14001) and eco-innovation outputs (patents, publications, information on eco-innovation in media). The other two groups of indices are the ones showing the effects of the implementation of eco-innovation such as resource efficiency (energy efficiency, water efficiency and emissivity) and socio-economic outcomes (development of “eco-industries” of economies) (Szpor, Śniegocki, 2012). It should be noted that the indicators on the side of effects are relatively poorly correlated with the indices of intensity of development and implementation of eco-innovation. On the one hand, environmental effects are measured with statistical indicators which still mainly depend on the historical paths of development of economies and not eco-innovation implemented in recent years. On the other hand, the definition of eco-industries adopted by Eurostat and Ecorys (2009), on which socio-economic indicators are based, refers to a wide range of activities (among others, recycling, treatment plants, renewable energy

sources), however competitiveness and the level of employment of some of them does not have to directly depend on innovative solutions (e.g. photovoltaics). At the same time, an essential part of economic effects of eco-innovation appears in enterprises of other industries for which they are e.g. a way to improve productivity. Therefore, the indicators of effects do not differ between the countries of UE28 as much as the ones directly referring to eco-innovation, which is evident also in the case of Poland.

Table 2. Eco-Innovation Scoreboard (Eco-IS) in EU countries in 2015

	EU countries	Eco-innovation inputs	Eco-innovation activities	Eco-innovation outputs	indicator Eco-IS
El leaders	Denmark	368	71	157	167
	Finland	182	152	190	140
	Ireland	310	135	65	134
	Germany	154	162	140	129
	Sweden	121	154	160	124
	Luxembourg	106	115	205	124
	France	111	110	108	115
Average El performers	Austria	98	126	136	108
	Spain	94	134	102	106
	Italy	75	118	117	106
	United Kingdom	126	116	74	106
	Portugal	79	167	83	102
	Czech Republic	63	181	47	99
	Netherlands	66	77	106	98
	Belgium	89	116	111	97
Countries catching up in El	Slovenia	74	92	98	96
	Romania	39	138	53	82
	Hungary	72	98	27	81
	Estonia	78	129	53	80
	Latvia	43	60	95	75
	Lithuania	43	94	59	73
	Greece	57	37	101	72
	Slovakia	38	101	52	72
	Croatia	21	100	89	67
	Malta	25	72	55	64
	Cyprus	14	54	132	60
	Poland	40	54	58	59
Bulgaria	19	71	27	49	
	Min	14	37	27	49
	Max	368	181	205	167
	Average	93	108	96	96

Source: Own work based on EIO, 2016

When analyzing the results concerning eco-innovation inputs (Table 2), they were generally above the average for all the countries of the EU. The specific cases are Denmark and Ireland where the performance in this component of the Scoreboard was significantly higher than for the other countries. In the case of Denmark, investments in eco-innovation exceed 1200 USD per capita and in the case of Ireland – more than 900 USD per capita and for Poland - 2 USD. Due to the outstanding performance of Denmark and Ireland, this component is also by far the highest range of ratings (the difference of 354 points between the highest and the lowest point) and the highest standard deviation in the result set. In the second element of the actions associated with eco-innovation (activities) – the country of the highest efficiency is Czech Republic. In terms of eco-innovative outcomes the leader is Luxembourg with the result of 205, and the lowest result of Ireland amounting to 65 is due to low results concerning the patents connected with eco-innovation (only 5 patents per one million inhabitants).

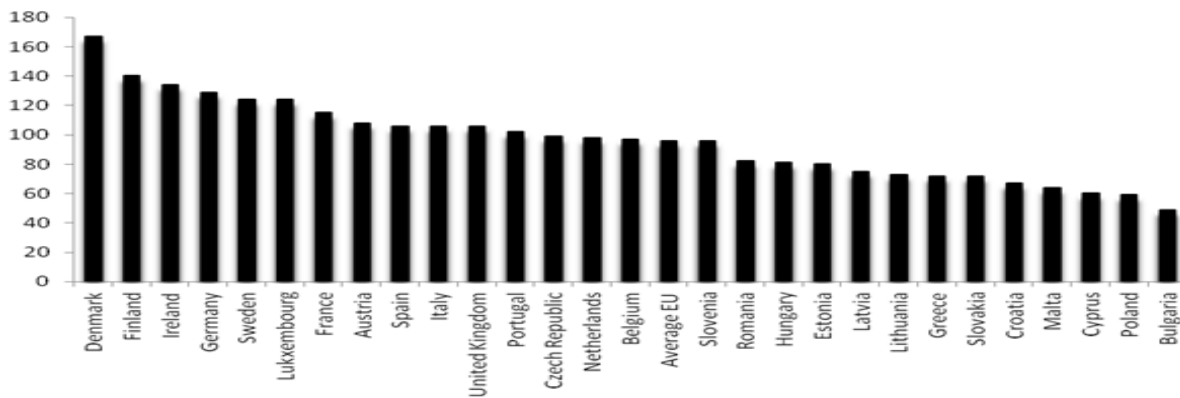


Figure 1. Poland against the background of EU countries in terms of Eco-IS index in 2015

Source: Own work based on the EIO data, 2016

Poland, in the period considered, was included in the group of “the countries catching up in eco-innovation”, unfortunately occupying the second-to-last position ahead of Bulgaria with Eco-IS index result of 59. Eco-IS index in the analyzed years placed the economy of Poland in the fourth position from the end in 2010, in 2011 in the last position and in 2012 – in the second-to-last. The position of Poland in this ranking is low. However, there can be observed a slight increase in points – from 53 to 59 in 2015. If taken into account only the first three areas referring directly to eco-innovation, Poland occupies the last position, however its distance to the EU average is growing (1/3 of the average in relation to 1/2 for the general index). However, this is mainly due to general weakness of Poland in the area of innovation. Low public and private expenditure on green R+D result from the low level of expenditure on the total of R+D activity in Poland. Taking into account the low position of Poland in the rankings of eco-innovation, there was conducted the statistical survey aimed at the identification of the scope of the barriers to and opportunities for the development of eco-innovation in terms of sustainable development of micro-, small and medium enterprises.

5. Conclusion

The results of the conducted research confirm that the biggest barrier to the development of eco-innovation of MSMEs is the lack of financial resources. Poland is in a very low position in the field of eco-innovation among EU countries despite the increase in the value of structural funds. Raising funds to support eco-innovative projects in Poland is not impossible, however, in many cases, very difficult. Eco-innovation very rarely constitutes an activity of MSMEs isolated by the funders. Innovative projects developed in the area of ecology are assessed according to the same criteria as other investments, including innovative ones. Taking into account the fact that they are often less focused directly on economic effects, when using the same evaluation criteria, they may get worse overall ratings. The problem is significant funds for environmental protection provided for the local government units, which carry out projects typical of a specific area, i.e. they focus on construction of sewerage, sewage treatment and dissemination of more eco-friendly sources of energy. This results in limiting the possibilities to obtain funds for investments by MSMEs. There has been too little emphasis placed on the connection in the cases of a single investment in innovativeness and environmental protection in the current programming period. It has been probably due to the fact that one of the serious problems is generally low competitiveness and innovativeness of Polish enterprises. It seems that low public and private expenditure on eco-innovation is the consequence of generally very low level of expenditure on research and development activity in Poland. However, on the other hand, in years 2010-2016, there was an increase in public expenditure on R+D but the effects of those actions are only to a limited extent noticeable in the presented data of Eco-Innovation Scoreboard. It can be expected that the position of Poland in terms of Eco-IS in subsequent editions of the research will improve, of course, provided there is an increase in expenditure on eco-innovation. Polish economy lags far behind not only the leaders of eco-innovation but also the countries which like Poland are included in the group of the countries catching up in the field of eco-innovation. An improvement in the indicators in the field of eco-innovation in Poland requires a substantial increase in expenditure on innovation, construction of appropriate support instruments and greater awareness of

MSMEs in the field of benefits from eco-innovation. It should be emphasized that enterprises that successfully financed eco-innovation most of all used own capital, loans and structural funds, which contributed to an increase in their competitiveness and innovativeness.

References

- Amores-Salvadó, J., Martín-de Castro, G., Navas-López, J.E. (2014). Green corporate image: moderating the connection between environmental product innovation and firm performance. *Journal of Cleaner Production*, vol. 83, pp. 356-365.
- Carley M., Spapens, P. (2010). *Dzielenie się światem*. Białystok-Warszawa: Instytut na Rzecz Ekorozwoju.
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Innovation for a sustainable future – eco-innovation Action Plan (Eco-AP), the EUROPEAN COMMISSION, Brussels, on 15.12.2011 KOM 2011.
- Del Rio, P., Carrillo-Hermosilla, J., Konnola, T. (2010). Policy Strategies to Promote Eco-innovation. *Industrial Ecology*, vol. 14, pp. 541-557.
- Dziedzic, S., Woźniak, L. (2013). *Eco-innovation in environmental protection – Water management and power industry. The solutions for the Podkarpackie Voivodeship*. Rzeszów: Technical University of Rzeszow.
- Flis, R. (2010). Eco-innovation of products and services. In L. Woźniak, J. Strojny, E. Wojnicka (Eds.), *Eco-innovation in the practice of the functioning of SMEs*, (pp. 44-62). Warszawa: PARP.
- Foltynowicz, Z. (2008). *Eco-innovation as an opportunity for development*, Poznań: Wydawnictwo UE.
- Horbach, J., Rammer, Ch., Rennings, K. (2012). Determinants of eco-innovations by type of environmental impact – The role of regulatory push/pull, technology push and market pull. *Ecological Economics*, vol. 78, pp. 112-122.
- James, P. (2015). Towards sustainable business? In M. Charter, U. Tischner (Eds.), *Sustainable Solutions*, (pp. 83-102). Sheffield: Greenleaf Publishing.
- Janiuk I. (2004). *Strategic adjustment of Polish small and medium enterprises to the European competition*. Warszawa: Difin.
- Kanerva, M., Arundel, A., Kemp, R. (2009). *Environmental innovation: Using qualitative models to identify indicator for policy*. Maastricht: United Nations University Working Papers Series.
- Krizanova, Z. (2016). Environmental innovation in thermal power plants of the Slovak Republic and their impact on the quality of the environment. In M. Okręglička, I. Gorzeń-Mitka, A. Lemańska-Majdzik, M. Sipa, A. Skibiński (Eds.). *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management, CITPM 2016*, pp. 230-236. Częstochowa: Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej.
- Kordos, M., Karbach, R. (2014). The issue of innovation in international economics. In *SGEM conference on political sciences law, finance economics & tourism: Conference proceedings volume III Economics & Tourism*. Sofia: STEF92 Technology, pp. 653-660.
- Rave T., Goetzke F., Larch, M. (2011). The Determinants of Environmental Innovations and Patenting: Germany Reconsidered. *Ifo Working Paper* 2011, no. 97, pp. 18-26.
- Ryszko A. (2014). Motivation and barriers to eco-innovation activities of enterprises in Poland. *MODERN MANAGEMENT REVIEW 2014 MMR*, vol. XIX, 21, pp. 127-138.
- Schmidt-Bleek, F. (2013). Preface. In A. Reid, M. Miedzinski, *Eco-innovation, final report for sectoral innovation watch*, (pp. 45-75) Technopolis Group, Brighton. Rennings.
- Strojny, J. (2010). The implementation of eco-innovation potential management system in the enterprise, In L. Woźniak, J. Skrajny, E. Wojnicka (Eds.), *Eco-innovation in the practice of the functioning of SMEs*, (pp. 22-34). Warszawa: PARP.
- Szpor, A., Śniegocki, A. (2012). *Eco-innovation in Poland. Current state, barriers to development, support possibilities*. Warszawa: IBS.
- The Business Activity Freedom Act, (Journal of Laws of 2004, No. 173, item 1807) as amended, Article 105.
- Węgrzyn, G. (2013). Eco-innovation in Poland against the background of EU countries. *Ekonomia i Środowisko*, vol. 46, pp. 141.
- Wielgórka, D. (2016). Environmental Management in the Aspect of Sustainable Development in Micro-, Small-, and Medium-Sized Enterprises. *Desalination and Water Treatment*, vol. 57, pp. 982-992.
- Ziółkowski, B., Woźniak, L. (2010). The foundations and the environmental prospect as the determinants of the innovative behavior model of the company. In L. Woźniak, J. Skrajny, E. Wojnicka (Eds.) *Eco-innovation in the practice of the functioning of SMEs*, (pp. 63-69). Warszawa: PARP.

Vladimir Vasiliyevich Zhuravlyov^{1*}

South Ural State University

Russia

Natalia Yurevna Varkova²

South Ural State University

Russia

90. STRATEGIC ASPECTS OF SUSTAINABLE DEVELOPMENT OF GOLD MINING ENTERPRISES IN RUSSIA IN CONDITIONS OF OVERCOMING THE CRISIS

Abstract: Problems of sustainability of gold mining enterprises of the Russian Federation during the crisis are considered in the article. The factors and tendencies of global economic development that influence business in the sphere of gold mining are analyzed. The problems of strategic, investment activity of Russian gold mining companies are singled out. Main objective of the paper: Development of a mechanism for managing investment activities of gold mining enterprises, tools for improving the company's strategy. An imitation model of managing business processes of a gold mining enterprise is proposed, which is considered by the authors as a stochastic nonlinear dynamical system. The model allows determining the ranges of stability, identifying the key aspects of the activity, inattention to which provokes the unstable state of the mining enterprise. Particular attention is paid to the mechanisms of investment, suggesting the formation of an insurance stock, the sources of which are both borrowed and the company's own funds. Directions for using own funds are investments, as well as dividends of the company's shareholders. The proposed model and recommendations for improving the investment strategy have been tested at a number of gold mining enterprises in Sakha-Yakutia, resulting in a reduction in unplanned costs and increased business resilience. Main results: The model of management of business processes of the gold mining enterprise is developed and the instruments of its functioning are determined

Keywords: crisis, gold mining, investment, strategy, sustainable development mechanism.

JEL Classification: Q01

1. Introduction

Today, we are witnessing another global economic crisis. There is a drop in the main financial and economic indicators of most of the leading countries. The economic growth in the USA, China, Germany, France, England, and Canada is slowing down; external and domestic borrowings in many countries are increasing. The economy of Russia is hardly staying afloat because of great tension in the conditions of the crisis phenomena and international sanctions, which repeatedly makes foreign and domestic management theorists and experts focus on the problem of keeping the economic sustainability of economic entities.

In this article, the author pays special attention to the issues of developing gold mining enterprises, increasing the efficiency of gold mining, keeping and reinforcing competitiveness of domestic companies. "This work was supported by Act 211 issued by the Government of the Russian Federation, Contract № 02.A03.21.0011".

The main goal of our research, the results of which are presented in the article, is to develop an optimal mechanism for managing the investment activity of gold mining enterprises, to improve the investment strategy for gold mining projects that affect the sustainable development of the enterprise

To ensure the independent economic development of Russia, to overcome the negative phenomena related to the atmosphere in the world political arena, it is required to develop the strategic spheres of the national economy, including precious metal mining (Kasiyanenko, 2014; Lysenko, 2013). In recent years, there has been a sharp increase of gold mining by the Russian enterprises, so that the country

¹ Assoc. Prof. Vladimir Vasiliyevich Zhuravlyov Ph.D. in Pedagogics; Omskay st. 61-9 Chelyabinsk, Russia, Zhur.65@mail.ru

² Natalia Yurevna Varkova Senior Lecturer; Barbusa ul., 15-29, Chelyabinsk, Russia, varkovan80@mail.ru

* Corresponding author

took the fourth or fifth place in the world last year concerning the volume of gold mining and is confidently included in the top eight leading countries having the largest reserves of gold in their vaults.

In general, prices for gold increased at the end of the last and at the beginning of this century, consequently, the geography of gold mining expanded. New technologies allowed entrepreneurs to restore abandoned mines, to start non-commercial precious metal resources mining in place. The recycling of low-grade ore became rather profitable in some countries. The competition on the gold mining market got more severe and resulted in crucial changes in the geography and technological peculiarities of the performance of ore-mining companies. Growing economies providing low-cost labour and cheap supply of electricity turned into the most attractive territories to be used (Pishchulina, Ugarova, 2017).

In Russia, the most important incentive to increase gold mining has always been the policy of the government that created the appropriate conditions for enterprises of the mining industry to have the opportunity for steady growth and expansion of their activities. Unfortunately, the economic crisis overwhelming all the economic activities in the Russian Federation greatly deteriorated the performance of gold and ore mining industry of the country. It also intensified the social and economic contradictions in the main gold mining regions. Let's take a closer look at the key problems, hot buttons of the gold mining industry of the country.

Considering the structural distribution of gold mining entities it is believed that gold mining in Russia has a clearly expressed fragmentary character. About 90% of all gold production is concentrated in 14 regions of the country, mainly in Krasnoyarsk Krai, Chukotka, Outer Manchuria, and Yakutia. It is in the last three regions that the migration activity of the population has increased. The most qualified specialists are leaving these areas. The living standard is constantly declining. Incomes are decreasing. Financing of these territories as well as investments are being reduced which makes many enterprises either reduce or suspend gold and ore mining activities.

Traditionally, in recent years, gold mining in Russia has been based on the application of rather expensive technologies, which is associated with a certain distortion in the structure of gold mining resources. Historically, over 80% of gold was produced in Russia from placer deposits. Although the share of gold mining from placers is decreasing, nevertheless, it is still very high, which affects the overall efficiency of the gold mining industry due to the expense of mining and processing of alluvial metal, since the main developed deposits of alluvial gold are located in hard-to-reach places.

There are a lot of gold ore reserves in the Russian Federation and the most powerful companies in the country are actively trying to expand their activities in this direction, but gold mining in the mines is a capital-intensive activity and it requires long-term financing and long-term investments, which becomes rather problematic as the economic crisis bites.

A significant part of the developed reserves of Russian gold is located in troublesome deposits, i.e. where other minerals also coexist, which again requires the application of new technologies, foreign practice and foreign investment, which is rather complicated because of the trade war and economic sanctions.

So, the main problems of gold mining in Russia are related to the imbalance in the structure of gold mining resources, the inaccessibility of major deposits, the increased development costs, the insufficient development of modern gold mining and processing technologies, the shortage of long-term investments, the decline in living standards and the corresponding migration of the most skilled specialists. This requires the revision of certain aspects of strategic management of gold mining enterprises in the context of improving the mechanism of sustainable development of the enterprise based on more appropriate forms and methods of investing gold mining projects.

2. The Mechanism of Managing the Investment Activity of Gold Mining Enterprises

The main part of the article provides a brief overview of the sources on the research topic, and describes the main methods, presents an imitation model for managing gold mining enterprises. The mechanism of managing the investment activity of gold mining enterprises in the conditions of the crisis, instability of the Russian economy is considered.

Then, let's move on to the theoretical and practical studies devoted to the fundamental aspects of the activity of gold mining enterprises.

2.1. Theoretical Framework and Literature Review

The theoretical and methodological base of the study included the works of foreign and domestic specialists in the field of economics, management, and business administration of the mining industry in Russia.

During the research, we used the work of Eschenbach and Siller (2004), in which an interesting approach to assessing the sustainability of an enterprise is presented.

The problems of managing the economic stability of an industrial enterprise have been thoroughly examined in the works of Khudyakova and Schmidt (2015). They proposed a model and a mechanism for managing the company's economic sustainability in the context of crisis and international sanctions that allow tracking the directions of enterprise development, analyzing environmental factors, and making optimal management decisions.

In our research we relied on the works of Rodionova (2012) on the theory and practice of crisis management. The author expresses the idea of the need to develop an optimal mechanism for creating insurance reserves by Russian mining enterprises.

Technological aspects of the activities of gold mining enterprises are considered in the works of Zagibalov (2010) and Lysenko (2013). The authors proposed to determine the volumes of gold ore in loose deposits using the method of vertical cross sections. We agree that this technique allows us to more accurately determine the gold reserves and, accordingly, the necessary investments. The analysis of the relevant scientific works makes it possible to pay closer attention to the need to counteract, to reduce the influence of objective and subjective negative factors that impede the development of more efficient production in the gold mining industry. It is necessary to conduct deep scientific research in order to find and introduce innovations in the gold mining industry of Russia. It is necessary to develop troublesome deposits, carry out geological exploration and develop programs aimed at exploring new deposits in the south of the country and in the Arctic.

Bearing in mind the requests of medium-size gold mining enterprises regarding gold mining volume, it is necessary to pay a proper attention to the economic aspects of the activity resulting in the highest efficiency with a relatively short payback period.

In addition, using the methods of imitation modeling, it is necessary to build a system of measures that allow reducing errors in determining the real costs of development activities and gold mining, which enable us to identify and create additional sources of investment.

2.2. Materials and Methods

This article focuses on improving the mechanism for managing investment activities of gold mining enterprises that are in dire need of additional financing sources to implement ore-mining projects and placer deposits of precious metal projects.

The issues of managing investment activity, ensuring stable and sustainable development of the enterprise are thoroughly examined in the works of domestic and foreign researchers, like Baev and Shiryaev (2001), and Golov (2012). We took the work of these scientists as a basis in the process of our study.

According to the theory of systems, any enterprise is a dynamic, open, variable, goal-oriented system (Shmidt, Khudyakova, 2015). This statement implies an appropriate systematic change in the components of the system, which provides the creation of conditions for updating the state of the gold mining enterprise and its system components. It also allows the management to create new high-quality parameters of the upgraded system that are vital for the company's competitiveness (Rumyantseva, 2010; Koryakov, 2012). Sustainable development of the enterprise depends on the correct actions of its management, on the optimally built mechanism for making managerial decisions (Kaplan, Norton, 2004; Khudyakova, Shmidt, 2015).

The analysis of the theory and practice of gold mining enterprises has shown that one of the most important components of the management system is investment, which the effectiveness of business, the quality of deposit development, the reproduction of the resources of the organization depends on. Competent management of investment activity allows to strengthen competitiveness of the enterprise, to design a business strategy more precisely, to ensure sustainable development of the company.

It is necessary to properly understand and distinguish such elements of efficiency as sustainable development and business stability. Generally, sustainability means the ability of the system to maintain

the status quo, the current state that characterizes the static position of the company. Stability is the steady development of an enterprise in a certain period of time (Horvath, Gleich, Seiter, 2015). Any stability means the stage and interval of the process of socio-economic development of the organization. Each stage is characterized by clear management decisions (Kovalchuk, Senetskaya, 2010). The factors of stability of the gold mining enterprise include the volumes of output (production) and sales of products, the load of production facilities, the qualification of the company's personnel, the proper mapping and determination of precious metal reserves. At the same time, even an optimal consideration of these factors cannot ensure dynamic development and economic growth.

Stable and progressive economic development based on current sustainability is possible, first of all, with the appropriate investment and implementation of advanced technologies (Gorevsky, 2011; Rodionova, 2012). However, it is precisely here that there is a danger of slowing down the sustainable economic growth if the enterprise management fails to properly organize investment activities. If the determination the sources of investment resources hasn't been properly verified, it leads to the dispersion of financial and other resources and the disruption of the stability of the enterprise (Khudyakova, Shmidt, 2016). Analysis of the gold mining practices in the Sakha-Yakutia over the past eight years, where more than 800 companies of different levels operated in 2017, showed low efficiency and irrational management of investments in the mining industry, which led to over-budget expenses and the closure of a number of enterprises.

As you know, the capital of the organization is divided into resources invested in the company's fixed assets, resources directed to the company's working capital, and assets involved in the implementation of investment activities (Mikhalev, 2010; Nikolayevskaya, 2013). When there is a shortage of financial resources, first of all, the working capital of gold mining enterprises suffers, the amount of which begins to decline. Then inevitable financial problems occur that are typically solved by additional loans that are not always profitable regarding the final result of entrepreneurial activity of the business entity. Additional loans and credits put a heavy burden on the shoulders of the owners and managers of the company. All these factors affect the current stability and sustainable development of the enterprise.

The practice of gold mining enterprises in Eastern Siberia, Chukotka, the Far North shows that the calculations of the required investment are often underestimated, due to climatic and geographical conditions of activity, human factors, incorrect estimates of ore reserves. As a rule, enterprises are forced to seek additional financial resources or, reducing costs, to cut production, depriving themselves of certain revenues. On average, the amount of additional investment reaches 10-15% of the original investment plan.

In order to improve the efficiency of investment decisions, on the basis of studying the experience of practical activities of gold mining enterprises, the abstract theorems by Khudyakova and Shmidt (2016). An imitation model was proposed. In our opinion, it allows to model the processes of economic activity in a crisis, and to optimize the costs of the enterprise.

2.3. Graphic Model

According to the researches, the model considers the mechanism of sustainable development of the enterprise as a complex of systemic managerial influences of the subject of management on the components of microeconomic relations to create conditions for sustainable and stable development and implementation of the declared organizational strategy (Izotov, Rostova, 2016; Zhuravlev, Varkova, 2017).

The imitation model for managing the sustainable development of a gold mining enterprise is based on a certain algorithm of actions, a clear implementation of the fundamental management functions, a correct assessment of the company's sustainability based on the relevant financial, economic, and social indicators (Figure 1).

This study was conducted for three years at gold mining enterprises located in Eastern Siberia, on the territory of Sakha-Yakutia, which allowed to identify and eliminate the weaknesses of the proposed model and also to optimize the corresponding algorithm of actions.

The algorithm of actions includes the following stages.

1. Prognostic Stage – taking into account factors of world economic development, social and economic development of the country, the investment needs of the enterprise.
2. Analytical Stage – analysis of the macro and microenvironment of the gold mining enterprise, identifying opportunities for a balanced development of the company, identifying sources of investment.

3. Organizational Stage – the formation of the optimal mechanism for the stable development of the enterprise, the implementation of the imitation model.
4. Process-activity Stage – implementation of decisions, investment management, achievement of desired goals.
5. Estimation and Correction Stage – assessment of the effectiveness of the activities, control of achievement of the enterprise’s goals, adjustment of the investment policy.

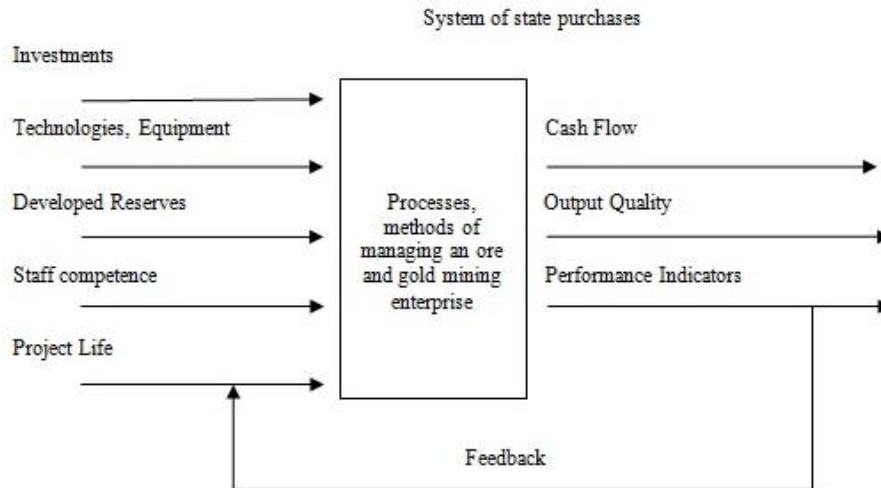


Figure 1. Imitation Model of Managing a Gold-mining Enterprise

Source: Zhuravlev, Varkova, 2017

As stated before, one of the most acute problems peculiar for many enterprises of the gold mining industry is the irrational management of investment activity, the constant lack of money, which leads to the emergence of crisis phenomena and the uncertainty of further actions. In order to avoid the unpleasant development of the financial situation, it is necessary to create a certain stock of funds – a financial cushion – for risky situations that are likely to occur. Both loan capital and equity capital of the company can be used as sources to form a similar stock of funds. The enterprise can use its equity capital as investments, as well as dividends for the company's shareholders.

2.4. Economic and Mathematical Model of Formation of an Insurance Investment Stock

In order to improve the investment management strategy, we can propose using a range of reducing dividends for business owners that is acceptable to the company and shareholders, which will make up a certain amount of the company's financial cushion, its reserve – R_{equity} (see formula 1).

$$R_{equity} = K_{equity} - D_{min} \tag{1}$$

where:

R_{equity} – financial cushion which is formed from the company’s equity capital;

K_{equity} – amount of the company’s equity capital;

D_{min} – amount of dividends paid to the company’s shareholders.

The investment policy provides the use of the company's loan capital. At the same time, the management of the enterprise tries to draw as much borrowing as possible, protecting itself against possible shortage of funds, and the bank, on the contrary, tries to grant loans actually secured by the company's equity capital (formula 2).

$$K_{loan} \rightarrow A_{max} \tag{2}$$

where:

K_{loan} – limited amount of the loan capital;

A_{max} – the company’s assets used as collateral for a bank.

As business practice shows, the formation of a loan reserve of funds is more expensive for the company, therefore, the company should try to reduce the use of lending resources (formula 3).

$$R_{loan} \rightarrow K_{lim}(min) \quad (3)$$

where:

R_{loan} – a reserve of financial resources of the company, which is created on the basis of loans from the bank.

So, the size of the financial cushion of the enterprise that is necessary for the implementation of the gold mining investment project is as follows (formula 4).

$$Z_{cushion} = R_{loan} + R_{equity} \quad (4)$$

In order to optimally manage investments, within the framework of the imitation model, based on the fact that very serious factors influence the efficiency of the gold mining industry in Russia, it is necessary to immediately determine the investment scope of the project while making investment decisions. The lower limit of the investment range reflects the minimum investment amount, at which the business project will be above the breakeven point (formula 5).

$$K_{investment}(min) = K_{investment}(Ef_{d.p.} \rightarrow 0) \quad (5)$$

where:

$K_{investment}$ – design value of the capital invested in the project;

$Ef_{d.p.}$ – effect on the project for the design period.

The upper limit of the investment range should be formed on the basis of the maximum allowable amount of funds raised for the project (formula 6).

$$K_{lim} \leq K_{loan} + K_{equity} - Z_{cushion} - D - K_{core} \quad (6)$$

where:

K_{lim} – maximum amount of investments rose for the business project;

K_{core} – the amount of capital required to carry out core activities.

So, the investment range, thanks to which the company's sustainable position is ensured in the process of implementing large-scale gold mining projects, is within the appropriate limits (formula 7).

$$K_{investment}(min) \leq K \leq K_{lim} \quad (7)$$

where:

K – capital of the enterprise, which is involved in financing the project.

Thus, competent management of investment activities with the optimal implementation of a complex of other elements of the imitation model will allow the company to successfully implement business processes and to maintain economic stability. However, it is necessary to take into account other factors affecting the successful operation of the gold mining enterprise, in particular, it is necessary to pay close attention to such an element of the imitation model as developed reserves. The analysis of the practice of gold mining enterprises of Yakutia has revealed serious problems in determining the reserves of precious metal on specific mine openings. Inaccurate definition of ore reserves leads to an increase in costs and losses of the enterprise.

Based on the works of Zagibalov (2010) and Lysenko (2013), he practices of gold mining enterprises in Eastern Siberia and Sakha-Yakutia, it should be recognized that gold estimates in placer deposits, which are explored by drilling a series of parallel well lines, should be performed by the vertical slice method. This method implies that the error in determining the production reserves is determined by the errors in establishing the boundaries of the accounted reserve block and determining the gold reserves on the exploration lines. In order to determine the errors in gold reserves, the following formula is suggested.

$$\Delta P\% = f(C, D, L, Me) \quad (8)$$

where:

$\Delta P\%$ – gold content error;

C – gold content (g/m^3);

D – well diameter;

L – interval between tests of mine openings;

Me – median of the gold granulometric spectrum.

Studies show that output is often underestimated. The accuracy of determining the reserves depends on the size of the testing intervals while drilling wells. The error depends on the transverse dimension of the output. Applying the appropriate methodology of this equation shall reduce the amount of error, and help achieve much more accurate exploration and determination of gold reserves, which, in turn, will ensure more accurate determination of the required amount of investment.

3. Conclusion

In order to increase the financial stability of gold mining enterprises, it is proposed to use a imitation model of business process management, which includes the basic elements of mining companies' activity. Particular attention should be paid to investment management, exploration of gold ore reserves, implementation of modern technologies, and upgrading of staff competences.

The scientific significance of the research presented in the article is that within the framework of optimizing the investment policy of the enterprise, a mechanism was proposed to form an insurance investment stock taking into account the specifics and realities of the activities of Russian gold mining companies. For this purpose, it is proposed to use the range of dividend reduction for business owners that is acceptable for the company and shareholders, which will constitute a certain amount of the insurance stock of the firm, its reserve in case of unforeseen, risky situations. The use of a more sophisticated insurance stock formation mechanism within the framework of our proposed model of strategic management of gold mining enterprises allowed us to reduce the range of investment and reduce the upper limit of the range, which resulted in a reduction in costs and increased business efficiency.

It is also necessary to give the utmost attention to the exploration of gold reserves, the determination of the corresponding errors based on the use of the vertical slice method.

The use of this method in the estimation of the expected reserves of precious ore made it possible to systematically and comprehensively approach the issue of taking into account the mutual influence of the technical and economic aspects of the investment strategy, as a result - to reduce the magnitude of the exploration uncertainty by 12-14% and, accordingly, to more accurately determine the amount of necessary investment.

The practice of the gold mining companies of Sakha-Yakutia following the above recommendations in many respects confirmed our studies and assumptions that allowed us to optimize the strategic aspects of investment activity, to reduce the volume of additional unplanned investments, that exceeded the initial estimates, from 10-15% to 4-8%.

The fairly successful practical implementation of theoretical developments-the management model and the investment mechanism at a number of gold mining enterprises in the Sakha-Yakutia region- allows us to count on drawing the attention of the scientific community to the topic of this study in optimizing the management of the sustainable development of mining companies in a crisis economy.

Our research aimed at increasing the sustainability of gold mining enterprises stumbled upon a number of limitations related to imperfect tax policy, credit policy of the state and financial institutions, and a decrease in the level of qualification of mid-level specialists in gold mining companies. Work to level these restrictions allows us to count on further improving the theory and practice of sustainable strategic development of gold mining enterprises.

Obviously, these results cannot be completely satisfying, but they let us hope for the gradual improvement of the current situation in the sphere of investment strategic planning, providing the continuation of relevant research and reliance on the investment design experience of the leading domestic and foreign mining enterprises.

In general, the sustainability of the development of gold mining enterprises should be based on modern management models, taking into account the realities of the external environment, and having a systemic and integrated character.

Acknowledgements

The work was supported by Act 211 issued by the Government of the Russian Federation, Contract No. 02.A03.21.0011.

References

- Baev, I.A., Shiryayev, V.I. (2001). *Dynamic theory of the firm*. Chelyabinsk: SUSU Publishers.
- Eschenbach, R., Siller, H. (2004). *Controlling*. Praha: ASPI, pp. 93-95.
- Golov, R.S. (2012). *Innovation and Synergetic Development of Industrial Enterprises (Theory and Methodology)*. Moscow: Dashkov and Co.
- Gorevsky, A.S. (2011). *Crisis Management*. Moscow: INFRA-M.
- Horvath, P., Gleich, R., Seiter, M. (2015). *Controlling*. Munchen: Franz Vahlen Verlag.
- Izotov, A., Rostova, O. (2016). Development of a system of sectoral investment priorities. *International-Business-Information-Management-Association Conference Sustainable Economic Growth, Education Excellence, And Innovation Management Through Vision 2020*, vol. I-VII. pp. 1812-1821.
- Kaplan, R.S., Norton, D.P. (2004). Measuring the strategic readiness of intangible assets. *Harvard Business Review*, vol. 82, iss. 2, pp. 1-52.
- Kasiyanenko, T.G. (2014). *Business Valuation*. Moscow: The Publishing House URIGHT.
- Khudyakova, T.A., Shmidt, A.V. (2016). Approaches to the construction of the controlling system with consideration of possible fluctuation effects. *Proceedings of 3rd International Multidisciplinary scientific conference on Social Science & Arts. SGEM 2016*, Book 2. pp. 115-121.
- Khudyakova, T.A., Shmidt, A.V. (2016). The predictions for the development of controlling system of sustainability on Russian enterprises in conditions of variable economy. *Proceedings of 3rd International Multidisciplinary scientific conference on Social Science & Arts. SGEM, 2016*, pp. 789-795.
- Khudyakova, T.A., Shmidt, A.V. (2015). Methodological Approach to Forecasting Financial and Economic Enterprise Stability. *Proceedings of The 26th International Business Information Management Association Conference 2015*, pp. 1612-1616.
- Kovalchuk, V.V., Senetskaya, L.B. (2010). Applying Information Technologies Means for Assessment of the Economic Status for Commercial Fishing Enterprises. *Bulletin of Moscow State Technical University*, vol. 13, iss. 1, pp. 136-140.
- Koryakov, A.G. (2012). Methodological Issues of Sustainable Development of Enterprises. *Questions of Economy and Law*, vol. 4, pp. 42-49.
- Lysenko, M.V. (2013). Methodology of Assessing the State of Technical Potential and Effectiveness of its Usage. *Fundamental Research*, vol. 4, iss. 1, pp. 56-61.
- Mikhalev, O.V. (2010). *Economic Stability of Household Systems: Methodology and Practice of Research and Application Analysis*. St. Petersburg: Publishing House of St. Petersburg Academy of Management and Economy.
- Nikolayevskaya, O.A. (2013). *Management of development of the industrial enterprises on the basis of cost approach*. Moscow: Creative Economy.
- Pishchulina, E.S., Ugarova G.L. (2017). Problems of labor evaluation and factors increase of real wage in the Russian Federation and the Chelyabinsk region. Moscow: *Economics and entrepreneurship*, pp. 273-276.
- Rodionova, N.V. (2012). *Crisis Management*. Moscow: Publishing House UNITY.
- Rumyantseva, Z.P. (2010). *Organisation Management: study guide*. Moscow: INFRA-M.
- Shmidt, A.V., Khudyakova, T.A. (2015). Theoretical Approaches to the Essence and Economic Sustainability Evaluation of Industrial Enterprises. *Innovation Management and Sustainable Economic Competitive Advantage: From Regional Development to Global Growth: Proceedings of The 26th International Business Information Management Association Conference 2015*, pp. 1626-1634.
- Zagibalov, A.V. (2010). Application of methods of simulation modeling of prospecting of alluvial gold deposits for the study of delineation errors and estimation of reserves. *Mining Information And Analytical Bulletin (Scientific and Technical Journal)*, vol. 3. pp. 166-171.
- Zhuravlev, V.V., Varkova, N.Yu. (2017). Diversification of enterprises as an instrument for ensuring sustainable development and improving the competitiveness of an organization in crisis conditions. *Innovative Development of the Economy*, vol. 1, iss. 37, pp. 32-37.

AUTHORS INDEX

A

Alaskarova Yelena, 15
 Al-Zaidi Waleed, 23
 Al-Zuhairi Ahmed, 23
 Amirkhanova Liliya R., 31
 Artemenko Lina, 39
 Azmoon Iman, 675

B

Balica Raluca, 63
 Barcik Agnieszka, 47
 Barska Anetta, 55, 181
 Baryń Magdalena, 629
 Bikmetov Evgeniy Yu., 31
 Blaskova Martina, 538
 Bokovnya Angelica, 282
 Borowczyk Oliver, 47
 Bozsik Norbert, 369
 Bratu Sofia, 63
 Bronnikov Maxim A., 31
 Brožová Silvie, 236

C

Caputa Wiesława, 321
 Cojocariu Gheorghe, 63
 Czwajda Liliana, 70

D

Daróczy Miklós, 15
 De Jongh Jacques, 78, 86
 Delgadová Elena, 94
 Duginets Ganna, 102
 Dunay Anna, 23, 499
 Dziuba Szymon T., 149, 189

F

Fekete Farkas Maria, 675
 Fernandes Marcelo Eloy, 483, 491

G

Grobler Wynand CJ, 110
 Gružauskas Valentas, 117
 Grzeszczyk Tadeusz A., 125
 Gullerová Monika, 94

H

Hampel Katarzyna, 621
 Havierníková Katarína, 244
 Herciu Mihaela, 475
 Howaniec Honorata, 133
 Hurta Hilda, 141

I

Illés Bálint Csaba, 15, 560
 Ingaldi Manuela, 149, 189
 Ivanová Eva, 157

J

Jakubiec Marcin, 165
 Janasová Denisa, 173
 Jašková Dana, 606
 Jędrzejczak-Gas Janina, 55, 181

K

Kabus Judyta, 197
 Kadłubek Marta, 149, 189
 Kaňa Radomír, 197
 Kašík Josef, 205
 Kazantseva Svetlana, 213
 Klierová Martina, 220
 Klimecka-Tatar Dorota, 228, 236
 Klučka Jozef, 244
 Kobylińska Urszula, 251
 Kogut Justyna, 259
 Koišová Eva, 267
 Kolencik Juraj, 275
 Kolomytseva Olena, 282
 Kordoš Marcel, 157, 667
 Korombel Anna, 290
 Kostić Martina Dragija, 297
 Kostrzewski Mariusz, 70, 305, 392
 Kot Sebastian, 313, 591
 Kowalik Kamila, 236
 Krajnakova Emilia, 451
 Krawczyk-Sokołowska Izabela, 321
 Kuka Adrián, 459
 Kuraś Małgorzata, 329
 Kuraś Piotr, 329

L

Laffin Trevor, 554
 Lavrov Igor, 567
 Lavrova Maria, 567
 Lăzăroiu George, 275
 Lemańska-Majdzik Anna, 337, 576
 Letková Natália, 345
 Lukoszová Xenie, 353
 Ławińska Olga, 361, 376
 Łukomska-Szarek Justyna, 321

M

Magda Róbert, 369
 Manaïenko Iryna, 376
 Mansur Hasan, 384
 Marczevska Magdalena, 392
 Martošová Adriana, 345
 Masárová Jana, 267
 Masárová Tatiana, 400
 Meyer Daniel Francois, 407, 415
 Meyer Natanya, 86, 313
 Mihaescu Diana, 423, 430
 Mihaescu Liviu, 430
 Moczydłowska Joanna M., 437
 Mohîrță Ionel, 63
 Mynarzová Monika, 443, 644

N

Navickas Valentinas, 117, 451
 Nedeliaková Eva, 459, 638
 Neguriță Octav, 275
 Nica Elvira, 63
 Noga Agnieszka, 467

O

Ogrean Claudia, 475
 Okano Marcelo T., 483, 491, 506
 Okręglicka Małgorzata, 443, 499
 Otolá Iwona, 506, 514

P

Palamarchuk Dmytro, 522
 Palamarchuk Nataliia, 522
 Panikarova Svetlana, 682
 Pełszyński Jacek, 125
 Pera Aurel, 275
 Petkova Lesia, 522
 Pichugina Maryna, 530
 Popescu Gheorghe H., 275
 Ptak Aleksandra, 467

Q

Quinn Bernie, 554

R

Rosak-Szyrocka Joanna, 538

S

Salih Shawkat, 23
 Scherer Magdalena, 546
 Seaman Claire, 554
 Serrem Kevin, 560
 Shevchenko Natalia, 282
 Shirshikova Liudmila, 567
 Shulgina Liudmila, 337, 576
 Simões Eliane, 483, 491, 506

Sitek Marcin, 583
 Skrobich Luiza, 591
 Soušek Radovan, 637
 de Souza Edgar, 491
 Strelcová Stanislava, 598
 Strunz Herbert, 606, 667
 Surujlal Jhalukpreya, 614
 Svazas Mantas, 451
 Szajt Marek, 621
 Ślusarczyk Beata, 629
 Šimák Ladislav, 598
 Škrovánková Katarína, 345
 Štefancová Vladimíra, 637
 Štverková Hana, 644

T

Tabor Joanna, 652
 Tangl Anita, 384
 Tomaszuk Anna, 659
 Tupá Magdaléna, 667
 Tylec Agnieszka, 514

V

Vafaei Seyyed Amir, 675
 Varkova Natalia Yurevna, 703
 Vlasov Maxim, 682
 Vojtovič Sergej, 117

W

Wasiluk Anna, 689
 Wielgórka Dariusz, 695

Z

Zhuravlyov Vladimir Vasiliyevich, 703
 Zinnurov Ulfat G., 31

Authors	Collective of Authors
Editors	Małgorzata Okręglicka Anna Korombel Anna Lemańska-Majdzik
Faculty	Faculty of Management
University	Czestochowa University of Technology
Title	PROCEEDINGS OF THE 2nd INTERNATIONAL CONFERENCE CONTEMPORARY ISSUES IN THEORY AND PRACTICE OF MANAGEMENT CITPM 2018
Place. Year. Edition	Czestochowa. 2018. 1 st edition
Number of pages	713
Series	CITPM No.2
Publisher	Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej
Press	Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej
Number of copies	150

ISBN 978-83-65951-12-0
ISSN 2544-8579