

## Summary

Transport is one of the basic areas of operation of a production enterprise, which should be understood as a set of activities conditioning the movement of products from the point of dispatch to the point of receipt while maintaining the appropriate time, acceptable cost and maintaining a good condition of the products transported using appropriate technical measures for this purpose<sup>1 2</sup>. The proper delivery of finished products to the customer is the responsibility of the people managing the entire transport process (planners, forwarders, drivers, importers, exporters), whose primary task is to ensure compatibility of the requirements of operators and transported loads with the available transport infrastructure and the capabilities of the transport fleet used.

Transport is particularly important if one considers the significant share (which can reach up to 45%) of transport costs in a production enterprise. In addition, transport may contribute to the competitive advantage of a production enterprise. Many organizations are currently faced with the need to make strategic decisions on how to perform functions related to the movement of manufactured products. The different activities emerging aim to intensify the movement of raw materials to the manufacturing process and final products, as well as to minimize the time that appears between the given phases of the manufacturing process and the end customer. This is associated with an increase in the number of tasks that must be performed in the transport system. The development of technological processes and more frequent use of various data flow opportunities affect the fact that enterprises change the distribution of warehouses and plants. This also affects transport, before which new problems and challenges arise, and as a result, it begins to cooperate with the area of supply, sales and production. The transport system constitutes a link between the production and consumption system, i.e. it integrates the elements of the production and service system and makes the flow of products between these elements possible. When referring to the movement of materials,

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<sup>1</sup> Czubala A., *Product Distribution*, Published by PWN, Warsaw 2001, p. 117.

<sup>2</sup> Bendkowski J, Pietrucha-Pacut M., *Basics of logistics and distribution*, Published by the Silesian University of Technology, Gliwice 2002.

semi-finished products and final products, there is a task before the transport process, enabling the flow of products through the supply and sales link in the supply chain. It is also important to improve management activities within the transport process. The functioning of enterprises operating in contemporary global markets without transport is basically impossible. The vast majority of companies are located at some distance from their sources of supply, which makes them dependent on transport linking the source of supply to the place of consumption<sup>3</sup>. The work specialisation, mass consumption and economies of scale of production mean that the places of product manufacture do not coincide with the place where demand is reported. Therefore, transport is necessary to fill the gap between the buyer and the seller. Effective transport management at an enterprise is determined by the strategic and tactical skills of managers. Strategy planning of a transport should be preceded by a detailed analysis of the enterprise's own transport needs and rolling stock, as well as an analysis of the offers of external companies that provide comprehensive services in this area. The proper functioning of transport requires the development of an effective and efficient transport management system.

The above considerations became the basis for determining the research objectives and hypotheses. The author achieved the following objectives of her PhD thesis:

- Assessing the effectiveness of the transport process in a selected production enterprise.
- Identifying tools and methods of transport management taking into account process orientation.

Research hypotheses were formulated on the basis of the objectives defined this way. The main hypothesis is: Transport management from the point of view of process orientation determines the achievement of a production enterprise's objectives. The main hypothesis was supplemented with the following detailed hypotheses:

- The organizational dimension of a production enterprise depends on the transport process.
- Identification and analysis of the mechanisms of process implementation in a transport management system leads to an increase in the efficiency of the transport process in an enterprise.
- The process orientation approach to transport management increases the effectiveness of a production enterprise.

The objectives of the thesis and research hypotheses determine the layout of the PhD thesis. The first two chapters of the thesis constitute a theoretical part. The first chapter presents

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<sup>3</sup> European Commission: *European transport policy for 2010: time to vote* Bruksela, KOM(2001) 370.

the issues of the functional and process orientation approach in management. The initial stage of the considerations focuses on the types of organizational processes in enterprises, where it was observed that ineffective work in any subsystem of the functioning of the enterprise has a negative impact on the operation of the entire enterprise. Subsequently, attention was focused on the concepts and instruments of the process orientation in management and it was confirmed that the implementation of concepts and management methods is an important element of strengthening the competitive position and searching for cost reduction opportunities in all areas of the enterprise, as well as eliminating defects in processes. In the further part, special attention was paid to issues in the area of the process orientation in transport and measures of transport processes in the enterprise. The elements and characteristics of transport Systems and processes were also discussed.

The third chapter is devoted to the structure of transport processes in a production enterprise. Organization of transport processes in a production enterprise was noted, where transport undoubtedly plays an important role in view of its usefulness in achieving the key objective of the organization. Another discussed issue was transport process mapping. Thanks to mapping, a real image of the relations that prevail in the organization is created. Through mapping, measures of efficiency and effectiveness of processes can be determined, thanks to which costly errors can be avoided before implementing transport process management. The last subchapter of the third chapter ends with considerations regarding transport costs in production enterprises. It was noted that the extent to which an enterprise can benefit from cost management depends to a large extent on the strategy adopted and the use of appropriate tools and methods of cost management.

The fourth chapter starts with considerations on the integration and coordination of transport processes in a production enterprise, indicating that integration and coordination are not based only on synchronizing the output of one process with the input of the subsequent process, but on the integrity of all participating component activities. The following subchapters start with results of the author's own research on the process orientation in transport management in production enterprises. Due to the specificity of the analysed problem, the implementation of the empirical goals was based on the use of an expert study. The purpose of the study was to identify the activities undertaken by production enterprises in relation to process management. The analysis showed what processes and activities are undertaken in enterprises as part of process management, what methods are used to identify processes as well as what problems companies encounter during its implementation. On the basis of the study, methods and tools

were also identified to increase the effectiveness of the transport process. The study also allowed to determine what problems occur in production enterprises most often, when implementing the transport process and thus to find a solution that will contribute to its improvement. At the end of the fourth chapter, the transport process in the production enterprise in 2011-2020 was analysed using meters.

The fifth chapter of the PhD thesis presents an assessment of the effectiveness of transport processes in the studied production enterprise using indicators. The evaluation of effectiveness aimed at improving the process in order to provide customers with the highest quality of services while maintaining a balance with the costs incurred. Subsequently, the author presented the share of the most important external transport costs in the enterprise in the annual scale. The dynamics of costs using chain indices was analysed. In the last subchapter of the fifth chapter, in order to assess the effectiveness of the transport process in the studied enterprise, the linear ordering method from the area of multidimensional data analysis was used. Indicators from 2011-2020 were analysed, allowing to measure the efficiency of the transport process throughout the period of 10 years. Chapters four and five are empirical.

The purpose of the study was to assess the effectiveness of the transport process in a selected production enterprise and to identify tools and methods of transport management in terms of process orientation. An analysis of literature and the author's own research carried out, made it possible to verify the research hypotheses and to achieve the objectives. The thesis included considerations on the essence of process management in enterprises. Process management can be understood as systematic use of methods and tools of impacting processes in order to identify, model, implement, control and improve processes implemented at an enterprise. Supporting process management with management methods and tools makes the enterprise function better. By introducing process management, the enterprise creates the basis for shaping the competitiveness of the organisation by strengthening the relationship with the customer, optimising costs in processes, improving the timeliness of implemented tasks and eliminating ineffective activities. The thesis is a confirmation that the implementation of concepts and management methods is an important element of strengthening the competitive position and searching for the possibility of reducing costs in all areas of the enterprise as well as eliminating defects in processes. Special attention was paid to issues in the area of process orientation in transport and measures of transport processes in the enterprise. On the basis of the conducted considerations, it can be concluded that the process orientation can be understood as a systemic approach to management that can contribute to the success of the enterprise on the market, while the indicators form the basis for assessing the effectiveness of transport processes

in the enterprise. It is very important to monitor the effects of activities and make measurements, as well as to assess the effectiveness of the performed activities. The author confirmed that, in order to increase the effectiveness of transport processes in each enterprise, it is necessary to consider what affects the result of activities and the reason for not achieving the planned goals and standards. Due to the specificity of the analysed problem, achieving the empirical goals required to conduct an expert study. On the basis of the study, methods and tools were identified enabling to increase the effectiveness of the transport process. The study also showed what problems most often occur in production enterprises during the implementation of the transport process, which allowed for the development of Solutions that may improve this process. The author confirmed that transport in a production enterprise undoubtedly plays an important role in view of its usefulness in achieving the key goal of the organization. In addition, a properly formulated transport task is a precondition for the smooth functioning of the enterprise and is the basis for the correct determination of the necessary number of means of transport carrying out the tasks of transporting goods. It has been proven that the basis for integration and coordination of activities is primarily a detailed analysis of actions and activities of process components, their share in time relations, material flow route, as well as workflow in transport processes. Integration of processes is focused on creating values for the customer and the enterprise and includes the overall process strategy, process design, process controlling, process implementation and process change management.

The conducted indicator analysis made it possible to determine the level of performance of the transport process activities in the production enterprise and to determine the indicators having a significant impact on the level of costs incurred. The study also confirmed that in order to achieve an acceptable level of performance indicators, managers should gradually improve the results to meet acceptable standards. Thanks to the use of the linear ordering method from the area of multidimensional data analysis in order to assess the effectiveness of the transport process, indicators that require improvement in the analysed enterprise were identified. The study used an analysis of the dynamics, which allowed to determine the degree of growth or decrease of individual types of transport costs. In addition, it was indicated which costs have the largest share in the cost structure of the transport process in the studied enterprise. On the other hand, thanks to chain indices, the pace and intensity of cost changes in the analysed period were determined.

The work includes the development of a method of testing the effectiveness of transport processes in a production enterprise, which made it possible to find weaknesses in the transport process. It is an approach combining the issue of effectiveness and process management. Studies

of the effectiveness of the external transport process and a recommendation for the Enterprise in terms of improving the level of effectiveness indicators through the implementation of methods and tools for process management in the studied area were presented.