Summary

RISK MANAGEMENT MODEL FOR LOGISTICS PROCESSES IN MANUFACTURING COMPANIES OF FOOD INDUSTRY

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Contemporary, turbulent markets force companies, particularly from the sector of SMEs, to adapt quickly and flexibly to changing demand conditions and reduce manufacturing costs[1].

In addition, the sector of SMEs is highly flexible in adapting to market needs. It plays a significant role in introducing competition, counteracting monopolies, filling market niches, introducing new technologies. It is therefore essential to shape the right conditions for functioning and development of the sector of SMEs[2].

The analysis of the Polish manufacturing enterprises in the sector of SMEs points to a rather high position of food companies in creating the country's economic growth. Thanks to the constant technical, technological and organizational development of this industry, Poland has joined the ranks of the modern and innovative European food manufacturers. Contemporary consumers place specific demands concerning the quality and the content of products, especially their uniformity (repeatability). In addition, the industry is characterized by numerous and independent intermediaries throughout the supply chain, resulting in significant disruptions in the flow of information and the supply of raw materials and products for the next links of the food chain. Hence, the proper organization of logistics processes in this industry can significantly improve the competitiveness of the Polish companies, both by optimizing costs and by offering a higher level of services to customers.

The proper functioning of the logistics system in the food industry is more and more dependent on the technology used. Transport and storage processes are of great importance[3]. It is due to the specific character of raw materials and finished products transported that are characterized by low transportability and storage ability[4].

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[1] Saniuk S., Saniuk A.: *Aspekty funkcjonowania małych i średnich przedsiębiorstw w sieciach produkcyjnych*, Zeszyty Naukowe Politechniki Śląskiej, seria: Organizacja i Zarządzanie, z.99, Wydawnictwo Politechniki Śląskiej, Gliwice 2016, s. 412.

[2] Soininen J., Martikainen M., Puumalainen K., Kylaheiko K.: *Entrepreneurial orientation: Growth and profitability of Finnish small- and medium-sized enterprises*, „Int. J. Production Economics" 2012, No. 140, p. 614-615.

[3] Świerczek A.: *Elektroniczne łańcuchy dostaw*, Gospodarka Materiałowa i Logistyka nr 4,2005, s. 6-7.

[4] Baran J.: *Skala działania a rozwiązania w zakresie magazynowania i transportu w przedsiębiorstwach przetwórstwa mleka*, Logistyka 2/2012, s. 343.

The proper organization of logistics processes taking into account the specific character of the food industry, including especially the part responsible for processing of products produced in the agriculture can increase the competitiveness of the Polish companies in this sector both by means of the identification of disruptions in logistics processes and the reaction to them, which consequently will allow offering a higher level of service to customers[5].

The implementation of logistics processes in manufacturing companies relates to the support of the main production process, so their reliability is very important because transport, storage, packaging and other logistics processes are the most sensitive to disruptions[6].

Therefore, food processing companies must strive for identifying and using conceptions and solutions that allow reducing costs and improving customer service as well as must be prepared to identify disruptions that affect logistics management. A risk management system can become one of the conceptions in this area.

Taking into account the above, the author conducted her own research from June to September 2015 concerning the implementation of risk management application in SMEs in the Silesia Province[7], which has pointed out that there is a lack of a risk management system that is implemented in food manufacturing companies that could significantly improve their logistics processes.

So it can be said that the proper functioning of logistics processes is important in food manufacturing companies which is conditioned by taking into account risk management resulting from disruptions - risk factors that emerge. Hence, it may be considered reasonable to undertake a research project, such as an in-depth analysis of risk management in logistics processes in small and medium food manufacturing enterprises.

The main aim of the work is **to develop a risk management model for implementation of logistics processes in food manufacturing enterprises in the sector of SMEs**.

The use of the developed risk management model in small and medium food manufacturing enterprises allows identifying, measuring and assessing the risk of logistics processes as well as reaching a decision to eliminate or reduce its effects.

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[5] Klepacki B., Wicki L. (red.).: *Systemy logistyczne w funkcjonowaniu przedsiębiorstw przetwórstwa rolno-spożywczego*, Wydawnictwo SGGW Warszawa 2014, s. 12.

[6] Gaschi-Uciecha A.: *Zakłócenia w procesach logistycznych przedsiębiorstw produkcyjnych – badania literaturowe*, Zeszyty Naukowe Politechniki Śląskiej, seria: Organizacja i Zarządzanie z. 78, Wydawnictwo Politechniki Śląskiej, Gliwice 2015,s. 139-140; Kulińska E.: *Aksjologiczny wymiar zarządzania ryzykiem procesów logistycznych. Modele i eksperymenty ekonomiczne*. Politechnika Opolska, Opole 2011, s. 95.

[7] Gaschi A.: *Badanie stopnia wdrożenia zarządzania ryzykiem w małych i średnich przedsiębiorstwach – wyniki badań*, [w:] Zeszyty Naukowe Politechniki Śląskiej, Organizacja i Zarządzanie z. 89, Wydawnictwo Politechniki Śląskiej, Gliwice 2016.

The following detailed objectives of cognitive and utilitarian nature have been defined to achieve the main objective:

1. Identify the logistics processes implemented in the manufacturing companies.
2. Define the risk of logistics processes in food manufacturing SMEs.
3. Determine the level of use of risk management in implementation of logistics processes in SMEs of the food industry in the Silesia Province.
4. Identify disruptions in logistics processes in SMEs of the food industry.
5. Verify a risk management model for implementation of logistics processes in selected food manufacturing enterprises in the sector of SMEs.
6. Develop recommendations to use the developed risk management model for implementation of logistics processes in SMEs of the food industry.

The dissertation consists of seven chapters, of which the first two are of theoretical nature, while the others present the methodology and the results of the empirical research. The theoretical studies were based on a review of national literature as well as the use of foreign papers concerning logistics processes and risk management. The practical part of the work presents the results of the empirical research – the quantitative one. The first study concerned the implementation of the risk management in the sector of SMEs in the Silesia Province. In turn, the second study focused on identifying the disruptions affecting logistics processes in small and medium-sized food manufacturing enterprises. The study was conducted in five hundred food manufacturing enterprises belonging to the sector of SMEs and operating in the Silesia Province.

Chapter 1 deals with the definitional aspects and conceptual approaches connected with understanding logistics processes and disruptions. The evolution of these concepts was presented and the multidimensional structure of the manufacturing enterprise was highlighted.

The second chapter covers the issues related to risk understanding and risk management. First, different risk definitions and its classification have been presented in the chronological order and then risk management also in the chronological order has been defined. In addition, the structure of risk management and risk management structure according to PN - ISO 31000: 2012 standard have been presented.

The third chapter discusses the formulation of the research problem, the primary objective and the partial objectives and the developed model of the research process.

Chapter Four covers the results of the research concerning the use of risk management in SMEs of the food industry operating in the Silesia Province. It includes the description of the research methodology used and next the research sample is characterized. First of all, the

empirical research – quantitative is presented, which confirms the necessity of introducing a risk management approach to the implementation of logistics processes in SMEs of the food industry. The following chapters show the results of the research carried out according to the specific stages of the research process.

The fifth chapter deals with the results of empirical research – quantitative in respect of identification of disruptions affecting the execution of logistics processes in the sector of SMEs of the food industry and the results of the research conducted concerning the use of risk management in logistics processes.

For the proper assessment of the risk level in logistics processes in SMEs of the food industry the criteria for this assessment using the Group Expert Evaluation method have been set. The concept of the Preliminary Hazard Analysis (PHA) has been used to assess the risk resulting from disruptions in logistics processes in food processing SMEs.

The next part of the chapter describes the accepted methodology of the questionnaire survey and the research sample. The results of the empirical research - quantitative in the sector of SMEs of the food industry have been presented. The discussion is concluded with the list of the most important disruptions in logistics processes typical of the sector of SMEs of the food industry.

Chapter six presents a risk management model for implementation of logistics processes in food manufacturing enterprises in the sector of SMEs. This model represents the way of identifying, measuring and assessing the risks arising from the disruptions in logistics processes in food SMEs as well as working out the decision-making options for mitigating its effects. The model shows the stages of the procedure as well as the research methods and techniques used.

The seventh chapter presents the results of applying the model in the industrial practice. The model has been verified in three manufacturing enterprises belonging to the sector of SMEs, including one micro, one small and one medium-sized enterprise. All the companies surveyed operate in the Silesia Province. Thus, the process of model verification is presented in a multiple case study. The purpose of the study, the characteristics of the selected model entity and the persons who participated in the model verification have been described in each case.

The following section of the chapter provides recommendations for practical use of the model in SMEs of the food industry.

The dissertations finishes with the conclusions summarizing the results of the research conducted.