

Streszczenie pracy doktorskiej napisanej pod kierunkiem naukowym

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Innowacyjność procesowa rozwiązań intralogistycznych w przedsiębiorstwie produkcyjnym

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The global marketplace is contributing to increased stakeholder demands for quality products, delivered at the right place, at the right time, and at the lowest possible price. Constantly changing consumer purchasing behavior demands individualized production, flexibility and shorter delivery times. The above factors influence the search by companies for proven solutions, allowing to meet the expectations set by the market. Industry 4.0 logistics focuses on how to use new technologies in a way that will make an organization more efficient. The use of intralogistics solutions can help companies move materials and information efficiently and effectively within the organization, making logistics more responsive to customer needs and better utilizing resources.

Process innovation is a topic covered by few authors, even though innovation in other fields is strongly developed. The study of process innovation in logistics requires an examination of the complex and dynamic processes within companies. Commercially available intralogistics solutions need to be defined and examined, indicating answers to how the use of intralogistics solutions affects company processes and whether there is a relationship between intralogistics solutions and innovation.

There is a research gap in the literature in the area of intralogistics and process innovations occurring in logistics. There is also a lack of work describing the impact of the use of intralogistics solutions on manufacturing companies. Domestic researchers take up topics related to selected elements of intralogistics, but publish them in international journals. In Polish publications, issues related to intralogistics can most often be found in trade journals. There are also articles describing selected solutions as advertising materials of manufacturers of intralogistics solutions.

The presented research results in the empirical part of the paper and the resulting conclusions can be considered important for filling the identified gap. There is also a lack of

publications that address the issue of combining intralogistics solutions with process innovation.

Given the challenges organizations face with automation, Industry 4.0, and intralogistics improvements, this research can have a significant impact in supporting the implementation of available solutions in other organizations, regardless of size or industry.

The main objective of the dissertation is to identify the relationship between intralogistics solutions in the area of transportation in a manufacturing company and process innovation.

A tugger train and AGVs (Automated Guided Vehicle) were adopted as intralogistics solutions in the transport area.

The thesis comes to the statement that the use of intralogistic solutions affects the improvement of logistics processes inside a manufacturing company.

In connection with the thesis, the dissertation attempts to confirm its validity both on the theoretical ground and in the empirical part of the work.

For the purpose of the dissertation, research problems were formulated:

1. What are the rationales for choosing intralogistics solutions?
2. Do the implemented intralogistics solutions affect the operations of the manufacturing company, and to what extent?
3. Can intralogistics solutions in the area of transportation be considered an example of process innovation?

The formulated research problems, the main objective and the thesis make the impact of the application of intralogistic solutions on the production company.

The first chapter systematizes knowledge in the area of selected issues in innovation. An overview of the definitions of innovation, innovatives, process innovation, and innovation management is presented. The criteria for evaluating when something can be considered an innovation have been characterized. Devices, technologies, and inventions that are categorized as innovations occurring in logistics are identified.

Chapter two provides a description of the concept of intralogistics and its importance in today's companies. Due to the topic, two intralogistics solutions in the area of transport are described in detail: a tugger train and AGVs. Previous work outlining their application and importance in the companies also described.

The third chapter describes the research methodology in detail. The organization and course of the conducted qualitative and quantitative research is presented. Based on the

collected information, the structure of the surveyed companies was presented in terms of their location, size, industry and the intralogistics solutions used.

The fourth chapter presents the results of research focused on the application of intralogistics solutions and their impact on manufacturing companies. Five case studies are described based on the in-depth interviews conducted. It was verified whether the conclusions of the qualitative research conducted in the automotive industry are the same also in other industries. Data from quantitative research in the form of survey questionnaires were also analyzed. The rationale for the choice and benefits of the applied solutions in the area of transport were characterized. The recapitulation of the last chapter is an evaluation of the application of intralogistic solutions and their impact on the manufacturing company and a forecast of further development.

Conducted qualitative research (in-depth interviews) and quantitative research in the form of a survey questionnaire, allowed to achieve the main objective, verify the thesis and obtain answers to three research questions. The realized research and the results of the literature analysis showed the usefulness of intralogistics solutions for the functioning of manufacturing companies and to count them as process innovations. The added value of this study is the opportunity to share experiences among other actors, to transfer good practices and to describe the topic of intralogistics in the discipline of management science and quality.

The application of the studied intralogistic solutions in the area of transport is related to the introduction of beneficial changes in the production company. Improvements can be seen in the overall functioning of the organization, the quality of the logistics processes performed, the efficiency of internal transport, reducing the cost of manufactured products. The use of a tugger train and/or AGVs allows transparency of processes, faster information exchange, increasing flexibility and responsiveness. The work safety of employees is also improved. The use of a tugger train and/or Automated Guided Vehicles influences the improvement of logistic processes inside the company (improving its flexibility, quality, speed of reaction, eliminating delays and errors). The use of intralogistics solutions has an impact on increasing the competitiveness of the company and enables the organization to use knowledge for further development.

Increasing awareness and presenting the essence of intralogistics solutions can improve the performance of other organizations. This is especially important in an era of increasing market demands, automation of processes in which intralogistics is a central point. Identifying aspects affected by the intralogistics solutions studied, may be of interest to others, especially in the small and medium-sized company sector. An additional incentive may be EU funds,

subsidies for innovative solutions, which can include intralogistics solutions. The direction of further research should be to verify whether all intralogistics solutions can be considered process innovations. Given the benefits presented for the two selected intralogistics solutions, it is worthwhile to expand the scope of the study in the future and characterize the other elements of intralogistics.

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