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## **Improvement of basic materials flow process in packaging printing houses**

### **Abstract**

In the doctoral thesis „Improvement of basic materials flow process in packaging printing houses”, the research problem regarding the lack of a reference model of improvement the basic materials flow in packaging printing houses was considered. Answers were sought to the research question - How to improve work in existing packaging printing houses?

The premises for pursuing the PhD thesis were: preliminary research on process improvement carried out in 2017 in a medium-sized enterprise from the packaging industry, observation of the packaging industry from the employee's perspective, analysis of industry publications. Studies of the literature on the subject and the conducted bibliometric analysis of publications from the period 2018-2024 in the Web of Science and Scopus databases indicated the existence of a research gap regarding: the lack of a reference model regarding to the improvement of basic materials flow process in packaging printing houses.

The main goal of work on the doctoral dissertation is to develop a reference model of improved basic materials flow in packaging printing houses. The effects of implementing the reference model are to be: improvement of the speed and timeliness of order execution and improvement of the efficiency of the human resources. The doctoral thesis was completed in five phases: conceptual, cognitive, design and research, verification and summary.

The doctoral research carried out in the period from 1. May 2020 to 28. May 2021 was of a qualitative nature. The object of the research were the processes of the basic materials flow in packaging printing houses. The basis was a case study of three deliberately selected printing houses, considered to be representatives of printing houses operating in Greater Poland. Triangulation of methods has been used. These were: survey method (N=56), participant observation with examination of company documents, expert analysis of the reasons for long-term order fulfilment and their presentation in the form of an Ishikawa diagram, assessment of the significance and interdependence of material flow barriers in printing houses using the DEMATEL method (N=12), process analysis with the use of interview techniques and mapping, comparative analysis and process simulation using BPMN notation.

The result of the work was to describe the structure and processes of basic materials flow in a packaging printing house, identify operations that do not bring added value and show the potential effects of improving selected component processes using: norms and standards, among others: GS1, industrial automation, ERP system.

A process analysis of the existing AS IS state and the desired TO BE state of purposefully selected (DEMATEL assessment) order handling processes was also performed, as well as a comparative analysis of the flow in the three surveyed printing houses. As a result, a base model of the flow of basic materials in a packaging printing house was developed and a reference model regarding to improvement of basic materials flow process in packaging printing houses was proposed, which constitutes the achievement of the aim of the work. In the context of the topic of the work, the author's concept of improvement of basic materials flow process in packaging printing houses was presented.

The work was carried out in the discipline of management and quality science, subdiscipline: process and project management.