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**A method for examining the internal supply process  
using simulation modeling in a hospital**

**Abstract**

Hospitals are currently facing serious challenges related to the rising costs of healthcare. In hospitals, a significant part of all costs necessary to provide patient care are costs related to handling logistics processes. Therefore, it seems important to develop solutions that provide the possibility of reducing these costs and make it easier for decision-makers to make decisions on choosing the right development path.

In response to the identified problem, a method for comprehensively examining the internal hospital delivery process was developed, which supports decision-making (the main objective of the dissertation). By using the developed method, the hospital unit that will conduct the study using it will have the opportunity not only to examine the current effectiveness of the internal hospital supply process, but also to test different scenarios of changes in this process.

The first, theoretical part of the work addresses the issue of supply chains, currently used methods of studying the process of internal deliveries in the hospital and analyzes the issue related to modeling simulation processes. The second, practical part of the dissertation begins with a description of the developed concept of studying the process of internal deliveries using simulation modeling in the hospital. Then, the place of implementation work is characterized and the process of verification and validation of the developed method in a selected hospital unit in Poland is presented. The last part of the work is a summary of the completed research and implementation work, presenting the most important final conclusions, describing the utilitarianism of the developed method and presenting directions for further research and limitations of the prepared solution.

The comprehensiveness and utilitarianism of the developed method can be the basis for its further development and wide application in practice. The developed solution can therefore become an important tool for hospitals in terms of increasing their efficiency of internal delivery processes.

*Keywords: process analysis, internal delivery process, simulation modeling, healthcare*