

Decision-making model in the field of spare parts inventory management

Summary

The dissertation in its scope covers the issues of inventory management, in particular the selection of an appropriate solution for the management of spare parts inventories characterized by lumpy demand. The main objective of the research undertaken in this dissertation was to improve the quality of decisions and to streamline the decision-making process by designing a decision model, reinforcing the process of managing spare parts inventories in an automotive sector company, enabling the systemic shaping of the inventory structure and ensuring the implementation of assumptions related to the level of parts availability. The dissertation presents the issues related to the automotive industry, which is the subject of the research, presents the existing solutions implemented in the management of spare parts inventories, and assesses them. The obtained results were a premise to indicate the need to develop a decision-making model in the field of spare parts inventory management. With expert knowledge of the types of demand for spare parts in the automotive industry and factors influencing the availability of the assortment, a decision-making model was developed based on the principles of the grey systems theory. The presented model has been empirically verified. The results of the conducted research allowed to draw a conclusion indicating the effectiveness of the proposed solution as filling the information gap in the scope of decision-making for data characterized by a high level of uncertainty with a limited information base. In the presented method, an innovative solution is the integration of principles and basic management operations, classic methods of inventory management and the grey systems theory into a comprehensive solution enabling the design, shaping and implementation of corporate policy in this research field. The developed methodological solution was designed with the use of expert knowledge related to the studied area and verified with the use of real data. In the last part of the thesis, the directions of further research on the issues of managing spare parts inventories for automotive industry enterprises in a comprehensive approach were defined.