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Environmental Issues in Logistics and Manufacturing

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# SMART Supply Network

 Springer

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# Preface

Dynamic and changing market conditions make it necessary for companies to act in networks to maintain their competitive position. For this reason, they have to adapt their own actions to those of other market players. It requires a SMART attitude, which means that today's supply networks should be: Sustainable, Modern, Adaptive, Robust and Technology-oriented. For example, it concerns making decisions about the extent to which a business model should be green or lean. These decisions are related to logistics, IT, environmental issues and networks (vertical and horizontal) relationships management, especially cooperation between suppliers, customers, competitors, and complementors.

The aim of the book is to describe the approaches, opinions, and ideas focused on new and emerging solutions and technologies that might be successfully applied in the configuration, improvement, and management of supply networks in a highly volatile environment of today's global economy. The use of such solutions and technologies should enable the creation of sustainable supply networks (the one in which balance with regard to social, economic, and pro-environmental issues is maintained) which are modern (i.e., the networks implementing the latest solutions in the management and operational spheres), adaptive (i.e., agile and flexible networks), robust (networks in which the degree of sensitivity for unforeseeable changes is relatively low), and which absorb the latest technological solutions.

Both theoretical and practical approaches in this are presented, especially innovative tools, technologies, methods, instruments in supply network management, and case studies from different sectors and different countries. The book covers both economic, organizational, and technical issues connected to the implementation of new solutions in supply networks. Moreover, it includes main problems and challenges which appear by technologies introduction.

The book provides guidance for supply network management researchers and practitioners with regard to the development of SMART supply network in four key research topics:

1. New Technologies Supply Networks—e-supply network management; blockchain applications and technological solutions in logistics on the example of 3PL.

2. Measurement and Improvement of Supply Networks—drivers, opportunities, and challenges of SMART supply networks; measuring performance of adaptive supply chains and importance and methods of handling of losses in transportation.
3. Green Supply Networks—conceptual framework of intra-firm relationships in green supply chain management; green and lean activities of vertically integrated links as a way of creating smart supply networks and the importance of information flow and knowledge exchange for the creation of green supply chains.
4. E-commerce and Digitalization—mutual influence of traditional trading chains and e-commerce; digital consumer needs in digital supply network creation; value for the customer in the logistics service of e-commerce; and the influence of prosumers on the creation and the process of intelligent products flow.

The aim of the first article included in the first part is to present the concept and the potential of the benefits resulting from possessing the information concerning the after-sales usage of the product by the customer. In order to gain this information, the customer's Internet of Things (IoT) data should be introduced into the supply network management. In the next study, the concept of the blockchain and its current applications in logistics and supply networks are presented. In turn, the purpose of the third chapter is to show the similarities and differences in the logistics services offered by DHL to Polish and Ukrainian customers.

The first article of the second part underlines in what ways technological advancement facilitates business relationships and improves the competitive advantage of supply networks. The authors draw attention to the fact that current knowledge employs Activity-Resource-Actor Model (ARAM) in order to recapitulate the drivers, opportunities, and challenges of smart technologies in a supply network. In the next chapter, the problem of supply chain performance measurement, with reference to the concept of adaptive supply chains, is highlighted. The last study of this part presents the benefits of the application of the Decision Support System (DSS). The authors prove that the system, based on relevant mathematical models and algorithms, makes it possible to reduce the number of multiple deliveries.

The third part contains aspects related to the management of green supply chains. The main goals of the articles included in that part are to show the role of information flow and knowledge exchange in the creation of green supply chains, to determine to what extent supply chains are influenced by green and lean ideas within operational and strategic spheres as well as to analyze the relational factors affecting the performance of green supply chains.

The purpose of the articles included in the fourth part is to study the tendencies of the transition of traditional trade networks into e-commerce, to present reflections on the mutual relationships of tools and technologies that shape the consumer's

digital needs, to identify which of them contribute to the changes in the consumers' behavior, as well as to present the role that prosumers play in the process of creation and implementation of intelligent products.

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