



## An Introduction to the Special Issue "Recent advances on supply chain network design"

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**Abstract.** Discussions of the resiliency, sustainability, and agility of supply chains are important in the research and management of supply chains in these difficult times, considering the ongoing pandemic of COVID-19. A viable supply chain is often characterized by resiliency, sustainability, and agility in its network design. Resiliency is essential because disruption and demand fluctuations are forced upon SCs, and the effects of these for many managerial supply chains are unknown. In addition, applying novel technology in the supply chain, such as blockchain, Internet-of-Things (IoT), and artificial intelligence (AI) as agility tools can assist and enable the transition to lean production. This special issue of the Foundations of Computing and Decision Sciences is dedicated to advancements in this fields. Besides, the special issue covers instructional information about OR techniques which are useful for addressing real-world applications on such challenges.

### 1. Introduction

There is great fluctuation of demand, and given that customers are preferentially shifting to e-commerce, many supply chains that lack e-commerce are destined to fail. In addition to resiliency and agility, we should pay more attention to the sustainability and greenness of a supply chain in terms of its network design or production planning. In the strategic, tactical, and operational decisions, we should consider the environmental impact, energy consumption, and social impact. Carbon emissions, carbon trading, and waste management are effective solutions to decrease the environmental impact. Using renewable and clean energy is one strategy to apply viable management. In this complex situation, given the pressure on people, we have to retain and maintain human resources that represent the best solution to ensure the welfare and suitability of the supply chain. In addition, applying new technologies such as

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blockchain technology and running smart contracts require modeling to demonstrate the advantages of the new technology. This Special Issue (SI) aims to investigate management of resiliency and sustainability in supply chains. We collected contributions presenting novel mathematical models toward ensuring resiliency, sustainability, and agility in supply chains. In this special issue, eight papers display miscellaneous kinds of numerical applications on the real-world problems including emerging topics of Operational Research. This collection of scientific works provides us a special opportunity to better understand the interdisciplinary OR approach, and to get a more plastic conception of the bridges between different fields of science, engineering and management.

As the Guest Editors we cordially thank the reviewers who provided us with essential comments during the processes of improving the manuscripts and their evaluation as well. Last but not least, we would like to express our deepest gratitude to the respected persons, who made it possible for bringing our ideas to become reality, and provided an excellent and very pleasant environment for this special issue. In particular, these are Prof. Jerzy Stefanowski, the Editor-in-Chief of FCDS, Prof. Marcin Radom, the Managing Editor of FCDS, as well as all the editorial board members and collaborators of FCDS.

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