

**Special Issue in *International Journal of Production Economics* on
“Exploring supply chain structural dynamics: new disruptive technologies and disruption risks”**

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Supply chains are complex, dynamic network systems that evolve over time and change their structures (Gross et al. 2018). Supply chain structural dynamics theory studies changes in network design and topology and develops methods to manage and optimize the supply chain processes when experiencing structural changes (Ivanov et al. 2010, Ivanov 2018). Supply chain structural dynamics can be considered in light of both positive and negative changes, such as new disruptive technologies (e.g., blockchain) or disruption risks (e.g., natural disasters and the ripple effect (Dolgui et al. 2018)), respectively. For example, Industry 4.0 and additive manufacturing are driving changes in supply chain structural designs, i.e., the structures of supply chains are being adapted to new technology. Severe natural disasters may result in the temporary unavailability of some suppliers, or even of large supplier clusters. In such a case, the structural design of the supply chain is forced to change. In addition, sharing and circular economies are changing value chain structures. Thus both strategic structural transformations and operative, event-driven structural reconfigurations are being encountered more frequently. The management and optimization of structural dynamics plays a crucial role in determining a firm's competitiveness in the markets.

This Special Issue seeks to attract new research in supply chain structural dynamics, considering disruptions in supply chains from both positive and negative perspectives. Examples of positive disruptive technologies and paradigms include:

- Blockchain and supply chain structural dynamics
- Industry 4.0 and supply chain structural dynamics
- Sharing and circular economy and supply chain structural dynamics
- Firm's organizational transformation (e.g., mergers&acquisitions, industrial symbioses) and supply chain structural dynamics
- Digital technology innovation (e.g., cloud manufacturing platforms or supply chain visibility) and supply chain structural dynamics
- Sustainability and supply chain structural dynamics.

On the other hand, disruption risks cause negative changes in supply chain structural dynamics:

- Capacity disruptions and supply chain structural dynamics
- Disruption propagation (i.e., the ripple effect) and supply chain structural dynamics
- Resilience and supply chain structural dynamics
- Recovery and supply chain structural dynamics
- Proactive control and supply chain structural dynamics.

The development of a firm's competitive advantages strongly depends on adoption of new disruptive technologies, such as Industry 4.0, Blockchain, Internet of Things, development of supply chain sustainability, and increasing resilience in light of more and more frequent and severe disruption risks. As such, new research is needed to advance our understanding of the place, role, and impacts of new technologies in the further development of digital and resilient supply chains with efficient and sustainable resource utilization (Ivanov et al. 2018, Ivanov and Dolgui 2018).

This Special Issue intends to serve as an introduction to a focus topic on supply chain structural dynamics from a multi-methodological perspective. It seeks to collate and present recent research in the field. Papers representing a variety of methodologies and research paradigms, including, but not limited to, mainstream supply chain and operations management research, network theory, graph theory, control, dynamical systems theory, game theory, complex adaptive systems, optimization and

simulation, surveys, and case-studies are of interest and equally welcome, including empirical, experimental, methodological, and theoretical analysis. Irrespective of the methodology utilized, the major criterion for acceptability is a paper's ability to convey new insights of methodological and managerial relevance or to provide innovative decision-making tools with (potential) practical applicability within the scope of supply chain structural dynamics.

Original and high-quality research fitting the SI's theme that is neither published nor currently under review by any other journal is welcome.

Manuscript preparation and submission

Before submission, authors should carefully read the journal's "Instructions for Authors". The review process will follow the journal's practice. Prospective authors should submit an electronic copy of their complete manuscript via the manuscript electronic submission system (EES) by selecting the article type "Exploring supply chain structural dynamics: new disruptive technologies and disruption risks" in the EES, according to the following time table:

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