

11<sup>th</sup> IFAC Manufacturing Modelling, Management and Control (MIM 2025)

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Session: **Building resilient and viable supply chains and transport systems in the post-COVID era**

**Code: 8grw9**

**Session Co-Organizers:**

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**Motivations:**

In recent years, as the international geopolitical situation has become increasingly complex, the supply chain (SC) and transport systems, an important carrier of economic globalization, have been greatly impacted by severe disruptions (Ivanov and Dolgui, 2020; Ivanov and Dolgui, 2021). SC managers and scholars have gradually shifted from a profit-oriented SC construction concept to a risk-oriented one (Ivanov and Das, 2020; Ivanov and Keskin, 2023). The complex SC structure also creates space for disruption risk evolution and propagation, forming phenomena such as ripple effects (Ivanov, 2018). Therefore, how to build SC resilience and viability in the post-COVID era has become an important research topic (Ivanov et al., 2023). Similarly, as the main artery of resilient and viable SCs, building resilient transport systems in the post-COVID era also is an important research topic. Generally, SC risk management mainly includes two parts: SC risk evaluation and risk mitigation. Among them, SC risk evaluation mainly constructs different evaluation models, e.g., Bayesian network-based methods, which evaluate the overall SC risk under ripple effects (Hosseini et al., 2016; Hosseini et al., 2020). Risk mitigation aims to reduce the overall SC risk under ripple effects, of which strategies can be divided into reactive and proactive strategies. Specifically, reactive strategies refer to strengthening the SC before disruptions occur to mitigate SC risks, such as supplier portfolio, inventory redundancy, and safety stock; However, proactive strategies refer to reducing the overall risk level of the SC through real-time response after disruption occur, e.g., dynamic multi-sourcing strategy, SC structural adaptation, etc (Chervenkova and Ivanov, 2023). Existing studies have studied strategies for risk mitigation, effective integrated reactive and proactive strategies have not been established in combination with the characteristics of SC risks in the post-COVID era. In addition, different types of SC structures have not been fully considered to build resilient and viable SCs, such as intertwined SC, green SC, closed-loop SC, and cluster SC. The (re)-design and configuration of resilient and viable SCs with different types of structural characteristics is an important research topic (Ivanov and Dolgui, 2020). Similarly, fostering resilience in transportation systems is to develop and optimize different reactive and proactive strategies integrated the integrity of the SC, e.g., decentralized hubs, and multi-modal transport (Zhou et al., 2019).

This Session is supposed to give a state-of-the-art of building resilient and viable SCs and transport systems in the post-COVID era. Quantitative, theoretical, empirical studies, and applied research papers are welcome. The authors are invited to contribute theoretical and applied research papers in the areas including but not limited to the following topics: 1. Risk-neutral or risk-averse SC risk assessment in long-term crisis; 2. The structural (re)-design for building resilient and viable SC and transport systems; 3. Reconfiguration and adaptation for both SC and transport systems

in the post-COVID era; 4. Integrated SC risk evaluation and mitigation strategies optimization approach; 5. Dynamic SC structural adaptation for SC risk mitigation in the post-COVID era; 6. The development of recovery strategies for improving SC resilience; 7. Adaptive strategy development for building SC viable; 8. Integrated dynamic inventory control and prediction for building SC resilience and viability; 9. Machine learning-based model in resilient and viable SCs; 10. The development of the digitalization on resilient and viable SCs; 11. The development of AI technologies on resilient and viable SCs; 12. Integrated SC and transport systems optimization approach in the post-COVID era; Etc.

### **Submission:**

For author guidelines, please refer to <https://ifac.papercept.net/conferences/scripts/start.pl>. All papers must be submitted electronically using the Symposium Manuscript Management System (CMMS). All papers must be prepared in a two-column format in accordance with the IFAC manuscript style. Please use the official IFAC instructions and template to prepare your contribution as a full-length draft paper and submit it online by November 30, 2024. Submission details are available on the symposium website. All submissions must be written in English. All papers that conform to submission guidelines will be peer-reviewed by IPC members. The corresponding author submits the paper online (pdf format) **as an invited session paper**. Submission as an invited paper requires **the invited session code XXXX**. Several international journals are associated with the MIM 2025 for the publication of special issues.

### **Important dates:**

**November 30, 2024:** Full regular papers, papers for invited tracks/sessions, extended abstracts deadline

**January 30, 2025:** Notifications to authors, Registrations open

**February 28, 2025:** Camera-ready paper submission deadline

### **References:**

- [1] Chervenкова Tanya, and Dmitry Ivanov. Adaptation strategies for building supply chain viability: A case study analysis of the global automotive industry re-purposing during the COVID-19 pandemic. *Transportation Research Part E*, 177: 103249, 2023.
- [2] Dmitry Ivanov and Ajay Das. Coronavirus (COVID-19/SARS-COV-2) and supply chain resilience: A research note. *International Journal of Integrated Supply Management*, 13(1):90–102, 2020.
- [3] Dmitry Ivanov and Alexandre Dolgui. Viability of intertwined supply networks: extending the supply chain resilience angles towards survivability. a position paper motivated by covid-19 outbreak. *International Journal of Production Research*, 58(10):2904–2915, 2020.
- [4] Dmitry Ivanov and Alexandre Dolgui. Or-methods for coping with the ripple effect in supply chains during covid-19 pandemic: Managerial insights and research implications. *International Journal of Production Economics*, 232:107921, 2021.
- [5] Ivanov and Burcu B Keskin. Post-pandemic adaptation and development of supply chain viability theory. *Omega*, 116:102806, 2023.
- [6] Dmitry Ivanov, Alexandre Dolgui, Jennifer V Blackhurst, and Tsan-Ming Choi. Toward supply chain viability theory: from lessons learned through covid-19 pandemic to viable ecosystems. *International Journal of Production Research*, 61(8):2402–2415, 2023.
- [7] Seyedmohsen Hosseini, Dmitry Ivanov, and Alexandre Dolgui. Ripple effect modelling of supplier disruption: integrated markov chain and dynamic bayesian network approach. *International Journal of Production Research*, 58(11):3284–3303, 2020.