Guest editorial: NOFOMA 2023 – Logistics during global crises

The backdrop

It may seem in recent times that we are living through multiple crises, each with their own cycles. While recovering from a global pandemic, we are facing new economic and geopolitical situations, realignments and outright crises. Each new situation comes with its own implications for production, logistics and supply chain management overall.

Other aspects also factor in, each with its unique impact on the supply chain: *Climate change* alters the usability of especially inland waterways (Christodoulou *et al.*, 2020), but even railways struggle with melting tracks in the heat. It is not only the patterns and the impact of hydro-meteorological disasters that are changing but when and how we need to respond to them (Sohn, 2022). An ever-increasing *scarcity of critical raw materials* may hamper production across many industries (Mouloudi and Evrard Samuel, 2022), paired with difficulties not only to access raw materials but also labour conditions for mining them; alongside the conflicts and geopolitical tit for tats they generate (Hofmann *et al.*, 2018). *Pandemics* may lead to lockdowns in production and blockages of transportation routes (Ahlqvist *et al.*, 2023; Falagara Sigala *et al.*, 2022; Rogerson *et al.*, 2024). Not that we need a pandemic to block routes, as the Ever Given so aptly illustrated when blocking the Suez Canal in 2021. *Geopolitical realignments* play out economically (e.g. when Brexit altered preferred trade partners and routes way beyond customs and economic unions; Charpin, 2022) or through outright conflicts (Gruchmann *et al.*, 2024). *Conflicts and wars* are on the rise, currently with, e.g. Ukraine, Gaza and Sudan in the spotlight. They have already resulted beyond their immediate impacts on their populations. Wider economic repercussions include sanctions and embargoes on some vs support to other parties, a rise of the defence and security sectors overall and geopolitical realignments, such as the NATO accession of both Finland and Sweden. Sanctions and embargoes play out through supply chains (Charpin, 2022), with changes in sourcing and delivery patterns and even in transportation routes through no-fly zones. Even without big events, *consumption patterns* change, altering anything from package sizes to delivery patterns (Bjerkan and Babri, 2024), and *demographic changes* require a rethinking of many public sector supply chains, starting with health care and elderly care. It is against this backdrop that the NOFOMA 2023 conference selected the theme of "Logistics During Global Crises".

Logistics to the rescue

Logistics and supply chain management are not only impacted by many of these factors but can in fact both alleviate and mitigate some or cause others. Supply chain risk management has for a long time been focusing on mitigation strategies for various types of risks: from due diligence efforts to dual or multiple sourcing, capacity reservation systems, safety stock, prepositioning in global supply chains and the core of supply chain design and configuration, facility location and outsourcing. Offshoring vs reshoring come in cycles across globalisation and deglobalisation, depending on whether the focus is on cost efficiencies in predictable peace times or quick access to materials and components during pandemics or as an answer to sanctions and embargoes. Newer concepts include backshoring, nearshoring or nowadays

International Journal of Physical Distribution & Logistics Management
Vol. 54 No. 6, 2024
pp. 525-531

0960-0035
DOI 10.1108/IJPDLM-07-2024-557

friendshoring, with the latter also being deployed in light of geopolitical and economic realignments (Charpin, 2022) with regards to, for example, critical raw materials and energy (cf. Vivoda, 2023; Zhang *et al.*, 2024).

As the pandemic goes on, however, we tend to underestimate how global supply chains really are. Bringing back final assembly to a country does not necessarily overcome dependencies on components on raw materials from others. The many types of risk management and mitigation strategies in supply chains are an art form (Ahlqvist *et al.*, 2023; Gruchmann *et al.*, 2024) and have given rise to many important concepts: supply chain resilience, robustness, responsiveness, flexibility and agility, to name but a few. A few other things learnt from the pandemic include that dual sourcing needs to factor in geographical spread or that production changeover is something one can also deploy in transportation, with, e.g. passenger planes being converted to cargo planes for pharmaceuticals and personal protective equipment (Falagara Sigala *et al.*, 2022). Even drones have been suggested as a way to deliver test swabs to medicine while reducing contagion (Kunovjanek and Wankmüller, 2021).

From a wider perspective, the choices we make in this area bear vast implications for the planet and its inhabitants. Considering the planet may seem remote from a supply chain perspective (Wieland, 2021), yet products, services, all use and consumption and, thereby, all choices in the supply chain have their own ecological footprints and handprints. As of late, the attention has turned more to, e.g. water and energy footprints in the supply chain, to circular supply chains and to how the supply chain impacts biodiversity. Greening the supply chain has been around for a while, albeit changing what it all encompasses (Seuring *et al.*, 2022) and how urgent these measures are. Greening is also in focus for reasons in production: more and more innovative products, production systems and even transportation being digitalised and electrified requires that we have better energy solutions. They come with their own implications for energy supply chains and also with a renewed focus on the energy footprint of supply chains (Halldórsson and Svanberg, 2013), not only from a cost but also a robustness and energy security perspective.

The human element of sustainable supply chain management has become more wind under its wings as well. Already years ago, "modern slavery" was in the limelight, especially in the UK and later in Germany with the Lieferkettengesetz. Now the EU has brought due diligence into focus with the corporate sustainability due diligence directive (CSDDD), which is also referred to as the EU supply chain act. Due diligence is not new in SCM research (cf. Hofmann *et al.*, 2018) but is expected to gain more attention in light of these EU directives. Together with many other directives that require reusability, a focus on critical raw materials and directives safeguarding the resilience of critical entities, there will be a lot more for supply chain researchers to contribute to in the future. In light of these, we expect a boom in research on reusability, design for disassembly and the circular economy, on the one hand, and on preparedness, security of supply and supply chain resilience across various industries and from various non-corporate perspectives, on the other hand.

In conclusion, at its worst, logistics and supply chain management cause or exacerbate crises, but at its best, mitigation strategies in logistics and SCM can be used to prevent or alleviate crises. As a special issue, Logistics During Global Crises focuses on the emerging topics of our times and on the crossroads between the climate emergency, conflicts, pandemics and geopolitical changes, all impacting at once on logistics and supply chain management. The special issue brings together the latest insights of logistics and supply chain management from the Nordic countries. It focuses on the emerging topics of our times, on the crossroads between the climate emergency, conflicts, pandemics and geopolitical changes, all impacting at once on logistics and supply chain management.

Reflections on the NOFOMA 2023 conference

Originating within the Nordic countries, the NOFOMA conference has developed into a unique meeting place for logistics and supply chain management researchers from all over the world. In 2023, it was co-organised by the Aalto University School of Business and the Hanken School of Economics during June 14–16 in Espoo, Finland, with the theme of "Logistics during global crises". The keynotes of the conference tackled this theme from various perspectives, with Carmela di Mauro elaborating on the many waves of offshoring and backshoring, the nuances of these over time and their relation to various types of crises. From an industrial perspective, Fredrik Wildtgrube showed how Finnair went about various types of crises, including economic ups and downs, production changeover at the airline during the pandemic and no-fly zones, especially due to Russia's war on Ukraine impacting on their business.

Even the conference dinner embraced the theme of logistics during crises. The dinner took participants to the Heureka Science Centre and to the exhibition *Facing Disaster* (for some insights, see Heureka Overseas Productions, 2023). This is an exhibition, that among others, the HUMLOG Institute at the Hanken School of Economics has contributed to both with conceptualisations of resilience and with examples of how humanitarian logistics works in various crises and disasters. Student projects at the Hanken School of Economics had even contributed to exhibits where visitors need to collaborate in vehicle routing to get to various places while routes had been impacted by a disaster and a helicopter rescue game where again people needed to collaborate to effectively rescue a group at sea. The exhibition lets visitors practice their crisis tolerance – resilience – in gamified exhibits and experience the forces of nature as audio-visual art installations. Currently, the exhibition is travelling the world.

NOFOMA 2023 was attended by 118 people from 17 countries on 4 continents and presented 73 papers in addition to plenary presentations. Of the presentations, 26 dealt with work-in-process papers, and the remaining 47 presented full conference papers. The papers approached the conference theme from many different perspectives, and the presentations can be viewed as four lines of presentation. In order of magnitude, these were (number of papers in brackets) co-operation and local logistics (14), digitalisation and automation (12), sustainable supply chains (11) and supply chain risks and preparedness (10).

Observations on the articles in this special issue

The conference has resulted in quite a few extraordinary papers that have been further revised and submitted to this special issue. Some of those are also included here, while some others are still in the revision process and may be published in the *International Journal of Physical Distribution and Logistics Management* at a later date. The very fact that so many good papers have been submitted to this special issue speaks to the quality of the NOFOMA conference.

Björklund *et al.*'s (2024) "The paradoxical nature of greening transportation: an analysis of tensions in buyer–supplier dyads" addresses both co-operation and sustainable supply chains. While trade-offs in sustainability have been discussed for a long time, taking the paradox theory lens on tensions instead opens new insights. The paper is one of the first to provide empirical examples as a foundation for identifying tensions in green transportation and that analyses both where tensions arise as well as why they arise. Overall, it contributes to broadening the view on tensions around KPIs beyond system boundaries and to supply chains.

Vakulenko *et al.*'s (2024) "The impact of order fulfillment on consumer experience: text mining consumer reviews from Amazon US" takes a different view on co-operation. Here, the bridge is made between (physical) deliveries, reviews and ratings. Through the text-mining

of reviews, the study discovers 12 touchpoints in the order fulfilment process that (positively or negatively) influence ratings. The touchpoints are grouped across delivery, packaging and returns-related ones. Touchpoints such as packaging experience have not traditionally been part of logistics service quality measures, yet they have a quantifiable impact on the customer experience. The article thus expands previous frameworks with new considerations. This paper also won the Göran Persson award in 2023 for the best conference paper with practical relevance in logistics and supply chain management.

Campos Garcia *et al.*'s (2024) "An analysis of automakers navigating an evolving semiconductor landscape" contributes to the supply chain risks and preparedness section while also looking at co-operation. The focus here is on the implications of a hub-centric supply network structure for procurement, and the article presents a longitudinal study in the automotive industry. Interestingly, the study goes to show that creating more links, and thereby higher complexity in the network can contribute to both transparency and innovation in the supply chain. While the data supporting this stem from a response to a crisis, the authors argue that the establishments of such links could also be sought more strategically to foster innovation in the supply chain.

Mubder's (2024) article on "The implementation of berth allocation policies that enable Just-in-Time arrival in port calls" was the best doctoral paper at NOFOMA 2023. It also contributes to the theme of co-operation since it focuses on how information sharing supports overcoming resource dependence barriers while deploying just-in-time measures in maritime transportation. Overall, it shows how implementing a pre-booking berth allocation policy integrates seaside with hinterland transportation.

Raoofi *et al.*'s (2024) "System-level impacts of electrification on the road freight transport system: a dynamic approach" touches on the stream of digitisation and automation as well as on sustainable supply chains. It develops a causal loop diagram that illustrates the relationships between different layers in the transportation system and how electrification impacts those. As a causal loop diagram, it further shows how decisions in the system may have cascading effects across it. The article focuses on two main findings: the factors that influence the attractiveness of electric trucks and the trade-offs between battery size and fast charging infrastructure.

Final thoughts

Turning around the way the articles in this special issue are presented, one can again see how they contribute to the theme of logistics during global crises. Campos Garcia *et al.*'s (2024) longitudinal study shows not only the development of supply networks in the automotive industry overall but also how these networks have reacted to a crisis. Learning from this crisis, their results can be implemented more strategically to seek and foster innovation in the supply chain. E-commerce, the focus of Vakulenko *et al.*'s (2024) article, has been much on the rise in the pandemic. Thus, one can argue that the findings of the article regarding what matters to consumers in a delivery have gained in importance during this crisis. The findings are here to stay, and the touchpoints that positively or negatively influence consumer ratings are some that any company with consumer deliveries may want to look at.

Björklund *et al.* (2024), Mubder (2024) and Raoofi *et al.* (2024) look at the way transportation works with the climate crisis. Mubder's (2024) port allocation processes not only contribute to just-in-time allocations but also to enhanced collaboration for energy-efficient port operations.

Raoofi *et al.*'s (2024) causal loop diagram does not only look at trade-offs between battery size and charging infrastructure for electric freight but also at the cascading effects of various decisions when changing the transportation system. Related to that, Björklund *et al.*'s (2024) way of looking at sustainability tensions also explains why the green transition

in transportation is slow. Acknowledging that is only a step in the process, given the magnitude of this crisis, the next question should be: How do we speed up the green transition? More research is needed to understand such paradoxical tensions overall. Also, more research on the green transition of transportation is needed from the holistic perspective of infrastructure development, energy footprints and the use of green energy alongside a problematisation of battery supply chains.

This is but a snapshot of recent research through the lens of logistics during global crises. There is a lot more to come, not the least from the NOFOMA 2023 and further conferences. In the spirit of the co-operation theme from NOFOMA 2023, together we can do so much more. A big thank you to all the contributors of the conference and the special issue, and especially to all the reviewers both for the conference and for the special issue.

Overall, one can say that the theme of logistics during global crises is here to stay. We are looking forward to more contributions to this theme, both for how to respond to crises, learn from them and also alleviate and mitigate them. Logistics and supply chain management research has much to offer in all of these aspects.

Markku Kuula
Department of Information and Service Management, Aalto University School of Business, Helsinki, Finland, and

Gyöngyi Kovács
Supply Chain Management and Social Responsibility, Hanken School of Economics, Helsinki, Finland

References

Ahlqvist, V., Dube, N., Jahre, M., Lee, J.S., Melaku, T., Moe, A.F., Olivier, M., Selviaridis, K., Viana, J. and Aardal, C. (2023), "Supply chain risk management strategies in normal and abnormal times: policymakers' role in reducing generic medicine shortages", *International Journal of Physical Distribution and Logistics Management*, Vol. 53 No. 2, pp. 206-230, doi: 10.1108/ijpdlm-12-2021-0511.

Bjerkan, K. and Babri, S. (2024), "Transitioning e-commerce: perceived pathways for the Norwegian urban freight sector", *Research in Transportation Economics*, Vol. 103, 101391, doi: 10.1016/j.retrec.2023.101391.

Björklund, M., Forslund, H. and Ülgen, V.S. (2024), "The paradoxical nature of greening transportation: an analysis of tensions in buyer–supplier dyads", *International Journal of Physical Distribution and Logistics Management*, Vol. 54 No. 6, pp. 532-557, doi: 10.1108/IJPDLM-11-2023-0406.

Campos Garcia, J.A., Arvidsson, A. and Jonsson, P. (2024), "An analysis of automakers navigating an evolving semiconductor landscape", *International Journal of Physical Distribution and Logistics Management*, Vol. 54 No. 6, pp. 586-609, doi: 10.1108/ijpdlm-11-2023-0412.

Charpin, R. (2022), "The resurgence of nationalism and its implications for supply chain risk management", *International Journal of Physical Distribution and Logistics Management*, Vol. 52 No. 1, pp. 428-28, doi: 10.1108/ijpdlm-01-2021-0019.

Christodoulou, A., Christidis, P. and Bisselink, B. (2020), "Forecasting the impacts of climate change on inland waterways", *Transportation Research Part D: Transport and Environment*, Vol. 82, 102159, doi: 10.1016/j.trd.2019.10.012.

Falagara Sigala, I., Sirenko, M., Comes, T. and Kovács, G. (2022), "Mitigating personal protective equipment (PPE) supply chain disruptions in pandemics–a system dynamics approach", *International Journal of Operations and Production Management*, Vol. 42 No. 13, pp. 128-154, doi: 10.1108/ijopm-09-2021-0608.

Gruchmann, T., Stadtfeld, G.M., Thürer, M. and Ivanov, D. (2024), "Supply chain resilience as a system quality: survey-based evidence from multiple industries", *International Journal of Physical Distribution and Logistics Management*, Vol. 54 No. 1, pp. 92-117, doi: 10.1108/ijpdlm-06-2023-0203.

Halldorsson, A. and Svanberg, M. (2013), "Energy resources: trajectories for supply chain management", *Supply Chain Management: An International Journal*, Vol. 18 No. 1, pp. 66-73, doi: 10.1108/13598541311293186.

Heureka Overseas Productions (2023), "Facing disaster", available at: https://www.youtube.com/watch?v=_0GeM3Qp0ls

Hofmann, H., Schleper, M.C. and Blome, C. (2018), "Conflict minerals and supply chain due diligence: an exploratory study of multi-tier supply chains", *Journal of Business Ethics*, Vol. 147 No. 1, 115141, doi: 10.1007/s10551-015-2963-z.

Kunovjanek, M. and Wankmüller, C. (2021), "Containing the COVID-19 pandemic with drones feasibility of a drone enabled back-up transport system", *Transport Policy*, Vol. 106, pp. 141-152, doi: 10.1016/j.tranpol.2021.03.015.

Mouloudi, L. and Evrard Samuel, K. (2022), "Critical materials assessment: a key factor for supply chain risk management", *Supply Chain Forum: International Journal*, Vol. 23 No. 1, pp. 53-67, doi: 10.1080/16258312.2021.2008771.

Mubder, A.A.A.M (2024), "The implementation of berth allocation policies that enable just-in-time arrival in port calls", *International Journal of Physical Distribution and Logistics Management*, Vol. 54 No. 6, pp. 610-630, doi: 10.1108/ijpdlm-11-2023-0442.

Raoofi, Z., Huge-Brodin, M. and Pernestål, A. (2024), "System-level impacts of electrification on the road freight transport system: a dynamic approach", *International Journal of Physical Distribution and Logistics Management*, Vol. 54 No. 6, pp. 631-651, doi: 10.1108/ijpdlm-11-2023-0436.

Rogerson, S., Svanberg, M., Altuntas Vural, C., von Wieding, S. and Woxenius, J. (2024), "Comparing flexibility-based measures during different disruptions: evidence from maritime supply chains", *International Journal of Physical Distribution and Logistics Management*, Vol. 54 No. 2, pp. 163-191, doi: 10.1108/ijpdlm-02-2023-0075.

Seuring, S., Aman, S., Hettiarachchi, B.D., de Lima, F.A., Schilling, L. and Sudusinghe, J.I. (2022), "Reflecting on theory development in sustainable supply chain management", *Cleaner Logistics and Supply Chain*, Vol. 3, 100016, doi: 10.1016/j.clscn.2021.100016.

Sohn, M. (2022), "Exploring mechanisms of using seasonal climate information to drive humanitarian logistics preparedness", in *Handbook of Climate Change across the Food Supply Chain*, Springer International Publishing, Cham, pp. 437-450.

Vakulenko, Y., Figueirinhas, D., Hellström, D. and Pålsson, H. (2024), "The impact of order fulfillment on consumer experience: text mining consumer reviews from Amazon US", *International Journal of Physical Distribution and Logistics Management*, Vol. 54 No. 6, pp. 558-585, doi: 10.1108/ijpdlm-11-2023-0434.

Vivoda, V. (2023), "Friend-shoring and critical minerals: exploring the role of the minerals security partnership", *Energy Research and Social Science*, Vol. 100, 103085, doi: 10.1016/j.erss.2023.103085.

Wieland, A. (2021), "Dancing the supply chain: toward transformative supply chain management", *Journal of Supply Chain Management*, Vol. 57 No. 1, pp. 58-73, doi: 10.1111/jscm.12248.

Zhang, X., Fan, X. and He, M. (2024), "Analysis on the effects of global supply chain reconfiguration on China's high-end equipment manufacturing industry", *International Journal of Physical Distribution and Logistics Management*, Vol. 54 No. 1, pp. 1-39, doi: 10.1108/ijpdlm-11-2022-0346.

Further reading

EU regulation (2020/1056), available at: https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=celex%3A32020R1056

About the authors

Markku Kuula is Professor in logistics at Aalto University School of Business since 2009. He is the Head of the Information and Service Management Department at the Aalto University School of Business, Chair of the Aalto University's Professors Council 2022–2023, past President of European Division at Decision Sciences Institute (www.decisionsciences.org), from July 1st, 2021 to June 31st, 2022, Board Member of the European Decision Sciences Institute since 2013, Associate Editor of the Decision Sciences Journal since 2014 and Chair of the Board of the Heureka Science Centre in Vantaa since 2022. His research interests are on the following topics: logistics/supply chain management, operations management, quality management, decision making, public sector management and ICT-management

Gyöngyi Kovács is the Erkko Professor in Humanitarian Logistics and the Dean of Research at the Hanken School of Economics. She is a founding Editor-in-Chief of the *Journal of Humanitarian Logistics and Supply Chain Management (JHLSCM)* and is on the editorial board of several other journals. She was the first Director of the Humanitarian Logistics and Supply Chain Research Institute (HUMLOG Institute) and has published extensively in the areas of humanitarian logistics and sustainable supply chain management. She was awarded humanitarian logistics researcher of the year 2020 by the American Logistics Aid Network ALAN. Recently, she has led the Horizon 2020 (EU) COVID-19 project Health Emergency Response in Interconnected Systems (HERoS), and since 2024, she is leading the Horizon Europe project Waste in Humanitarian Operations: Reduction and Minimisation (WORM).