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Introduction to the special issue on “Supply chain decision making in times of unrest, instability and change”



The current socio-economic environment can be best characterised as complex, uncertain and vulnerable. For example, natural disasters, terrorist attacks, job losses and distress, labour disputes and strikes, and digital crime have become more frequent, and perhaps more intense, causing significant disruptions in the supply chain as well as losses for households, firms and governments. This raises challenges for supply chain (SC) and operations managers, business owners, policy makers and other stakeholders (e.g. [3–5,10,13,16,19,20]). To this end, supply chain and operations managers are required to respond with more realistic and efficient models in the decision making process and employ strategies for establishing a robust and well-designed supply chain that would enable businesses to deploy associated contingency plans efficiently and effectively when facing a disruption [1,2,6,11,15,18]. Additionally, governments and the wide public and private sectors need to adapt to logistic challenges and re-assess their strategic plans to ensure supply chain resiliency and sustainability to withstand external shocks, uncertainty and emerging threats and challenges.

It can be argued, for example, that efficient decisions related to the flow of material, information, and other resources need to be made in times of instability and oscillation. Farahani and Hekmatfar [9] suggest that five major decisions related to SC strategy, SC planning, and SC operations have to be made. These decisions are related to production, inventory, location, transportation and information variables, and are made through optimisation and other OR models. Supply chain decision models or supply chain risk models attempt to integrate different functionalities of the supply chain and consider various factors/risks such as delays, disruptions, systems breakdowns, forecast inaccuracies, intellectual property breaches, procurement failures, capacity issues, and inventory problems affecting the chain [5]. Ambulkar et al. [1] provide evidence that recovery policies belong to drivers of SC resilience. In other words, models addressing multi-functional problems, e.g. location-routing, challenges with production-distribution, location-inventory, inventory control-transportation, supplier selection-inventory control, are key means for maintaining SC resilience and sustainability [12,14,17,21,22].

The special issue aimed to attract papers that could contribute to both the supply chain risk literature and the operations literature. The focus of the special issue was set relatively open by inviting original papers that use real or random data, provide new methodological approaches, and recent advances of OR and forecasting linear and nonlinear techniques in supply-chain modeling

and decision making. These techniques can be used to tackle instability and change through minimising lifecycle supply chain costs, reducing food waste, improving delivery efficiency, meeting mission needs, promoting better risk allocation and quality outcomes, enhancing customer satisfaction, expanding in new markets, and responding to population growth. In response to the call, several articles were submitted to the special issue but only two of them were selected after a rigorous screening and reviewing process. The major contribution and findings of these articles are summarised below.

The article by Caiazza et al. contributes to providing answers on how small and medium sized enterprises (SMEs), and in particular agro-food SMEs in Italy, can compete globally, exploiting potential gaps in the market. A principal factor identified in this study is the production of high quality of goods and exportation of these in potential high level markets. In particular, the paper addresses the question: how can SMEs achieve exportation globally in the supply chain? The role of consolidators, between sellers and buyers and the services they provide have been identified as being important for supporting SME's internationalisation strategies, increasing SMEs global competitiveness and further supporting robust supply chains. This study also suggests actions for policy makers for implementing a medium term plan to support the consolidators' role in the internationalisation of SMEs.

The article by Mohanty et al. highlights the importance of the use of ergonomics as a tool that applies theory, data and methods to optimise human wellbeing (social goal) and system performance (economic goal), which becomes even more important in times of crisis and uncertainty (see [7,8]). Although the paper does not focus on supply chain design it focuses on product attributes and decision making. The paper deals with the challenge of selecting the best office chair considering design, cognitive and user behavioural information by using three multi-attribute decision making techniques (TOPSIS, VIKOR, PROMETHE). The decision making process helps in considering the ergonomic aspects of the product with a focus on enhancing product satisfaction and performance. The selection of a product must be based on a number of important ergonomic features that can address the usability of this product and improve satisfaction level of the user. Although ergonomic features are taken under consideration for a large number of products available in the market it is the case that some product features turn out to be redundant and hardly enhance interaction between the user and the product leading to overall user dissatisfaction.

In summary, this special issue provides two technical papers that are of interest to operational researchers and managers in exploring strategies and approaches to improve organizational performance and meet the challenges within a volatile, hostile and dynamic external environment.

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