
Guest editorial: Deepening the theoretical understanding of agility and resilience in global supply chains

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1. Introduction

Agility and resilience are key attributes of modern-day supply chains ([Abdallah et al., 2021](#); [Wieland and Durach, 2021](#)). As global supply chains are increasingly experiencing disruptions unlike anything else experienced before, such as those due to the COVID-19 pandemic, firms are becoming acutely concerned with how to survive and prosper in today's global business landscape ([Birkinshaw, 2020](#)). The COVID-19 pandemic has prompted scholars and practitioners alike to fervently investigate the various ways that supply chain agility and supply chain resilience can help the global economy survive, function and prosper ([Do et al., 2021](#); [Modgil et al., 2022](#); [Remko, 2020](#)).

Extant literature has offered empirical evidence that supply chain agility and resilience can help supply chains deal with various challenges while also offering noteworthy performance-related benefits ([Feizabadi et al., 2021a, b](#); [Gligor et al., 2015](#)). However, given the novel forms of disruptions that these two concepts are supposed to be deployed against as effective measures, it is important to investigate whether the extant conceptual and theoretical underpinnings of these two concepts allow them to be successful means of dealing with these new types of disruptions and challenges. In this vein, it is plausible that scholars should consider theoretical underpinnings and conceptualizations reflective of these new, unprecedented challenges.

In light of the novelty of the new challenges, various debates emerged. For example, Forbes magazine asked whether we should “shift our focus from agility to resilience” ([Birkinshaw, 2020](#)). As we noted in our 2020 call for papers for this special issue, to address such questions and also help understand how agility and resilience can help solve challenges in today's global supply chains, it is important to investigate the theoretical underpinnings of these two concepts carefully. To date, the field of supply chain management (SCM) continues to lack diversity in theoretical perspectives explaining supply chain agility and resilience. It is problematic that the majority of articles exploring either one of these two concepts are atheoretical, while those that do employ form theory tend to rely repeatedly on a handful of overused grand theories, such as the resource-based view theory or the contingency theory ([Ali and Gölgeci, 2019](#); [Gölgeci et al., 2019](#)). Similarly, in keeping with the atheoretical approach that characterizes the literature on supply chain agility and resilience, many conceptualizations and definitions of these two constructs vary considerably across studies ([Gligor et al., 2019](#)). Our call for papers was further prompted by recent studies highlighting the need for theory-driven SCM research ([Stank et al., 2017](#); [Gligor et al., 2019](#)). As such, in our call for papers, we challenged supply chain scholars to consider incorporating theories from various domains, such as sociology, psychology, military science, medicine and sports science ([Gligor et al., 2013](#)). We argued that by doing so, supply chain scholars could help generate the needed new theory-based conceptualizations of supply chain agility and resilience, along with new theoretical perspectives on these two concepts.

In keeping up with the above arguments, we suggested several research questions (but not limited to) that scholars could address for this special issue. For example, are agility and resilience synergetic or corrosive concepts? When should firms deploy supply chain agility or



International Journal of Physical
Distribution & Logistics
Management
Vol. 52 No. 8, 2022
pp. 605-613
© Emerald Publishing Limited
0950-0035
DOI 10.1108/IJPDLM-09-2022-536

resilience or both? What are the microfoundations of agility and resilience in global supply chains? What is the interplay between emergent technologies, organizational structures and social processes in developing and applying supply chain agility and resilience? Do supply chain agility and/or supply chain resilience impact end customer/consumer-related phenomena (e.g. loyalty, satisfaction, value and engagement)?

We have five papers that were finally selected for inclusion in this special issue. While three of these studies focused primarily on supply chain resilience, one addressed supply chain agility and one addressed both supply chain agility and resilience. The methodological approaches were diverse. All five papers were empirical. Two utilize survey data (cross-sectional and experimental design), one utilizes a mix of interviews, archival records, individual retrospective interviews and surveys, one employs a combination of literature review, multiple interviews and workshops, and one relies on field interviews. The data sources were also geographically diverse. Two studies collected data in the USA, one in Türkiye and one in Italy, while one utilized a sample of global experts. Combined, the five studies offer unique supply chain agility and resilience insights across different areas of interest to this special issue. Specifically, they address the following broad topics: the role of organizational intangible resources in facilitating supply chain resilience, the application of resilience to service recovery, the long-term view of supply chain resilience, the multifaceted effect of supply base complexity on supply chain agility and resilience, and the application of agility to improve customer performance. Next, we offer an overview of each study's context and contributions.

2. Organizational intangible resources and supply chain resilience

It has been proposed that firms need to possess various organizational intangible resources to successfully compete in the marketplace. Such resources include organizational learning, organizational agility and organizational innovativeness (Berthoin Antal and Friedman, 2004; Gligor *et al.*, 2019; Rogers, 2010). Each of these organizational intangible resources also has the potential to enhance supply chain resilience.

Organizations can increase their survival capability, and thus improve their operational resilience, by continually engaging in learning (Norman, 2004). Organizational learning entails the integration of acquisition, interpretation and use of knowledge to be prepared to detect, respond and adapt to changes within the firm's environment (Berthoin Antal and Friedman, 2004). Similarly, Purushothaman (2015) proposes that information sharing by employees can enhance resilience. Such information sharing helps organizations anticipate disruptions and maintain resilience as the information can help the employees develop a strategic response (Ponomarev, 2012). Similarly, Ali *et al.* (2017) revealed the key role of information in facilitating supply chain resilience.

Agility allows organizations to adjust their operations quickly (Swafford *et al.*, 2006), allowing firms to effectively and rapidly respond to uncertainties and market fluctuations, thus gaining a competitive advantage (Gligor *et al.*, 2019). Agility has also been found to be a critical element for organizational success and survival when disruptions occur (Hamada and Yozgat, 2017). Similarly, Ponis and Koronis (2012) found that agility is an antecedent to supply chain resilience.

Finally, it is been argued that innovativeness allows firms to be innovative in highly competitive markets (Chen, 2019). This intangible resource allows firms to detect opportunities and threats in the firms' environment (e.g. disruptions) and helps facilitate organizational sustainability (Barreto, 2010; Maury, 2017). In the same vein, innovativeness has been found to be critical for the survival of organizations operating in volatile environments (Rogers, 2010).

To contribute to these streams of literature, Eryarsoy *et al.* (2022) seek to shed light on the impact of organizational learning, organizational agility and organizational innovativeness on

supply chain resilience. Using a cross-sectional questionnaire, the authors collected data from 180 medium-to senior-level managers and found that organizational learning has a positive impact on supply chain resilience, while organizational innovativeness and organizational agility mediate this relationship. That is, organizational learning mediated by organizational agility and organizational innovativeness increases supply chain resilience.

3. Service recovery resilience

Consumer returns pose a significant challenge for retailers, partly because of their scale (Russo *et al.*, 2019, 2021). To illustrate, the value of returns in the USA amounted to \$400 bn in 2020 (National Retail Federation, 2021). Moreover, a recent customer survey by United Parcel Service showed that about 58% of consumers are not satisfied with the service they encounter when returning products to retailers (Warren, 2020). To compound the issue, the service recovery process can be disrupted by various factors, further exacerbating consumers' grievances. Service recovery can be described as the activities through which a retailer handles a customer complaint relative to a service failure (Shang *et al.*, 2019). Examples of service recovery include product replacement or product refund.

The authors of the second article in our special issue, Russo *et al.* (2022), pose that because supply chain resilience can help mitigate various disruptions (Hohenstein *et al.*, 2015), it could also help improve service to consumers in the process of service recovery. As such, Russo *et al.* (2022) introduce the concept of service recovery resilience and link it to customer satisfaction and customer loyalty. Furthermore, in keeping with the focus of the special issue on the theoretical underpinnings of supply chain resilience, the authors draw on procedural justice theory to also explore the mediating roles of procedural justice (i.e. the policies and procedures used to offer the desired customer outcome) and interactional justice (i.e. the customer's interpersonal treatment during service recovery) in the relationship between service recovery resilience on the one hand and customer satisfaction and customer loyalty on the other.

Drawing on the procedural justice theory, service recovery resilience is defined as the service recovery's process strategic capability to withstand adverse situations and disturbances while maintaining continuity in the service recovery process at the level consumers expect. This proposed conceptualization is also consistent with Ponomarov and Holcomb's (2009, p. 131) definition of supply chain resilience as a capability that allows firms to successfully handle "unexpected events, respond to disruptions, and recover from them while maintaining continuity of operations at the desired level". As a result of approaching service recovery from a supply chain resilience perspective, Russo *et al.* (2022) offer a comprehensive perspective on service recovery that accounts for firms' need to deal with "unexpected events" (e.g. COVID-19) and thus going beyond the issues traditionally examined in the service recovery research.

To meet their research objectives, Russo *et al.* (2022) employed experimental design via two distinct studies to collect data from 132 (Study 1) and 251 (Study 2), respectively, US-based respondents recruited via Qualtrics. These authors contribute to the service recovery and supply chain resilience literature streams by introducing the concept of service recovery resilience and showing that customers are more loyal and satisfied when retailers can overcome supply chain recovery challenges using supply chain resilience. Furthermore, customers evaluate the recovery process and their interactions with the retail as manifested through procedural and interactional justice.

4. The long-term view of supply chain resilience

The need for supply chain resilience rests on the assumption that not all potential disruptions can be avoided. As such, a key feature of supply chain resilience is the ability to prepare for,

respond to and recover from disruptions (Hohenstein *et al.*, 2015). In their quest to understand how firms can organize their supply chains to achieve this desirable ability, scholars have explored the role of various capabilities and resources (Christopher and Peck, 2004; Spieske and Birkel, 2021; Wieland and Wallenburg, 2012). The explorations of these drivers offer unique insights into how firms can create and maintain resilient supply chains.

Välíkangas (2010) found that, to increase supply chain resilience, firms must possess both proactive and reactive inter- and intra-firm capabilities and resources. In the same vein, possessing certain capabilities and resources is not sufficient. Instead, firms must find the optimal selection and combination of such capabilities and resources (Brandon-Jones *et al.*, 2014). While various studies have suggested different levers of supply chain resilience, some key ones include (re-) engineering, agility, collaboration and a risk-supportive organizational culture (Christopher and Peck, 2004; Spieske and Birkel, 2021).

Supply chain resilience literature offers additional insights. Cavalcante *et al.* (2019) emphasized that supply chain resilience is contingent upon sourcing from reliable suppliers, primarily in the context of complex networks. Besides suppliers' reliability, managers should also be cognizant of the importance of collaboration with those suppliers as an important driver of supply chain resilience (Jüttner and Maklan, 2011). Agility has been found to play a key role as it allows firms to possess good visibility and the speed needed to quickly access relevant information and respond to environmental changes (Gligor *et al.*, 2019; Rajesh and Ravi, 2015). Moreover, a risk-supportive organizational culture is needed as it provides the firm with a risk-awareness mindset and support for resilience-oriented initiatives from senior management (Singh and Singh, 2019).

The current supply chain resilience literature offers valuable insights into the drivers of supply chain resilience. However, it primarily focuses on extant supply chains, challenges and conditions. In their article in this special issue, Küffner *et al.* (2022) seek to address this limitation and contribute to this discourse in the literature by taking a forward-looking approach to supply chain resilience. To accomplish this, the authors employed the Delphi method to analyze 13 future projections on how companies should organize their supply chain activities. The authors investigate the probability of occurrence of their projections by the year 2035. Using data from a long-term judgment panel of 83 international experts from academia, industry and politics/associations, Küffner *et al.* (2022) uncover novel approaches for how firms should organize themselves in international settings to enhance their supply chain resilience. Specifically, their findings show that collaboration between supply chain members will be critical for supply chain resilience. In addition, digital technologies and humans are expected to play a major role. Moreover, a key finding is that supply chain resilience can be better achieved through the interplay of multiple levers as opposed to unilateral optimization.

5. The multifaceted effect of supply base complexity on supply chain agility and resilience

Supply chain management scholars have offered ample evidence that both supply chain agility and resilience are important capabilities that firms must possess to survive and prosper in today's complex environment (Abdallah *et al.*, 2021; Gligor *et al.*, 2019). Gölgeci *et al.* (2020) also considered that neither one of these capabilities could be considered superior to the other.

Interestingly, despite the importance of establishing the interplay between these two capabilities, few studies have simultaneously examined supply chain agility and resilience. In this special issue, Delbufalo (2022) contributes to this scarce dialogue by investigating the impact of supply base complexity on these two capabilities.

Firms rely on their supply base to achieve the desired levels of supply chain agility and resilience (Akin Ateş *et al.*, 2021). Most supply chain agility studies recognize and emphasize

the key role of suppliers in promoting agility at the supply chain level (Gligor and Holcomb, 2012; Narayanan *et al.*, 2015). Similarly, supply chain resilience literature highlights the importance of the supply base (Humdan *et al.*, 2020; Wieland and Durach, 2021). Despite the importance of the supply base in enabling both capabilities, studies to date have not addressed the impact of the complexity of the supply base on supply chain agility and resilience. In her article, Delbufalo (2022) seeks to also address this limitation.

To achieve the proposed research objectives, Delbufalo (2022) used a combination of qualitative (interviews with CEOs and managers) and quantitative data (archival, retrospective interviews and surveys). The data analysis revealed some unique findings regarding the complex relationship between supply base numerousness, diversity and geographical dispersion, on the one hand, and supply chain agility and resilience on the other hand. For example, the findings show that increased supply base geographical dispersion is detrimental to both supply chain agility and resilience. In addition, supply base numerousness positively impacts supply chain agility at lower levels, but its marginal impact diminishes as it increases; a similar effect is observed for supply chain resilience. That is, an unbalanced combination of single and multi-sourcing strategies can harm alternatively supply chain agility and resilience. Moreover, supplier diversity positively impacts supply chain agility up to a point, but then it decreases (inverted U relationship). Interestingly, supplier diversity does not impact supply chain resilience.

6. Applying agility to improve customer performance

Defined by Gligor *et al.* (2013) as “a firm’s ability to quickly adjust tactics and operations within its supply chain to respond or adapt to changes, opportunities, or threats” (p. 95), supply chain agility has been argued to be a key contributor to firm success, primarily for firms operating in dynamic and uncertain environments. The COVID-19 crisis has further exacerbated the uncertainty and dynamism within the business environment, thus accentuating the potential of supply chain agility as a source of competitive advantage. Therefore, it has become increasingly important to understand how various elements of supply chain agility help drive supply chain performance.

Past studies have revealed multiple elements of supply chain agility, including cognitive and physical ones (Gligor *et al.*, 2013, 2019). This division into cognitive and physical dimensions, originally introduced by Gligor *et al.* (2013), provides a more in-depth understanding of the construct and allows firms to focus on how specific elements of agility help drive firm performance. On the one hand, the physical elements of the concept allow firms to modify supply chain configurations and alter lead times, modes of transport or the supplier base. On the other hand, the cognitive elements of agility pertain to how firms gain, analyze and utilize information. Specifically, improving these cognitive elements allows firms to improve their decision-making processes (Gligor and Holcomb, 2012).

In their manuscript in this special issue, Stank *et al.* (2022) seek to build on this stream of literature by uncovering the interrelationships among chief elements of cognitive agility that can impact performance improvements when conditions of supply and demand differ from the core assumptions used to design supply chain networks. In order to reach their research objectives, these authors employ the principles of Middle Range Theorizing (Merton, 1968). Specifically, they utilize data from field interviews and data acquired from managers, executives and analysts from a sample of six global manufacturing firms to propose four novel research propositions about cognitive agility elements. Among their key findings, Stank *et al.* (2022) established that alertness, accessibility and decisiveness are formative elements of cognitive agility. Moreover, they found that alertness, accessibility and decisiveness (cognitive elements of agility) are antecedents to swiftness and flexibility (physical elements of agility).

7. Further research on the theoretical aspects of supply chain agility and resilience

The importance of supply chain agility and resilience has been well established (Gölgeci *et al.*, 2020; Modgil *et al.*, 2022). Similarly, supply chain scholars have recognized the need for theory-driven SCM research (Stank *et al.*, 2017; Gligor *et al.*, 2019). While the five articles in this special issue provide novel, theoretically-driven insights, much work remains. In this vein, in our call for papers, we suggested several research questions that SCM could address and have not been captured in this special issue. Future research could help address some of these questions. While these questions are by no means exhaustive, they can guide scholars seeking to contribute to this area.

Examples of such questions include: what are the trade-offs involved in achieving agility and/or resilience in global supply chains? Is resilient agility an empirically viable concept? If yes, what are the underlying forces of resilient agility in global supply chains? How are different capabilities created by how firms and supply chains are structured and processes used as uncertainties or disruptions arise at different phases? How can different ways of organizing (i.e. structure, process and capability) inform the emergence of agility and resilience in global supply chains? What paradoxes are involved in achieving and maintaining supply chain agility and resilience? How do contagion and convergence in global business networks influence supply chain agility and resilience? What is the role of structural holes in agility and resilience in times of severe global supply chain disruptions? How can resilience be maintained when firms and supply chains face unprecedented levels of disruptions and adversity? How can firms aggregate their firm-level agility and resilience into greater system-level agility and resilience in global supply chains? Do formal and informal institutions play a role in building agility and resilience in global supply chains? How do firms respond to institutional voids and extractive institutions when developing and deploying their supply chain agility and resilience in foreign markets? Do reciprocity and relational justice in global supply chain relationships play a role in agility and resilience? How do counterproductive work behaviors and constructive deviance affect supply chain agility and resilience?

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