

FROM THE EDITORS: INTRODUCTION TO MANAGING SUPPLY CHAINS BEYOND COVID-19 - PREPARING FOR THE NEXT GLOBAL MEGA-DISRUPTION

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The COVID-19 pandemic has forced supply chain management researchers and practitioners to question many of our firmly held assumptions about the discipline. Perhaps the most interesting question is, where does supply chain management go from here? This issue of the *Journal of Supply Chain Management* begins to answer that question via a combination of invited essays and a regular submission. We consider this issue as only a starting point, and we hope to see its impact on future research on mega-disruptions in supply chains.

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The COVID-19 pandemic has brought the importance of supply chain management to the forefront of the public's consciousness in a way that no amount of academic research ever could. Faced with shortages of consumer products such as toilet paper and various types of food, and critical medical supplies, such as PPE, hand sanitizer, ventilators, and certain medicines, people have incorporated "supply chain" into their everyday vocabulary, holding conversations about both how supply chain management should change and celebrating remarkable rapid supply chain reconfigurations and successes. For academic supply chain management researchers, this is an exciting time, with countless new insights, opportunities, and research questions.

Perhaps the most interesting question is where does supply chain management go from here? We have

experienced that which was previously inconceivable: a mega-disruption with an epic global impact. This sort of event is no longer a topic for idle speculation: it has happened. So, the larger question is, what has supply chain management learned from the COVID-19 crisis that can be applied in the future, both in day-to-day operations and in preparation for the next global mega-disaster?

At the *Journal of Supply Chain Management*, we debated about what our role should be in this discourse. On the one hand, there were numerous important opportunities for full-blown research papers. On the other hand, the time-sensitive nature of this topic pointed to the need to begin the academic discourse as soon as possible. A process that was unhampered by the time constraints imposed by the normal editorial process was critical. As we

debated this, we were approached by Kevin Dooley and Arash Azegadan, two of our trusted Associate Editors, with the idea of inviting essays from notable researchers from a variety of perspectives. From this marriage of ideas was born this issue's focus on invited essays on what supply chains have learned from COVID-19 to help them prepare for future and unknown global mega-disasters.

Kevin and Arash invited four essays representing different aspects of supply chain management, as well as contributing their own essay. The specific topics were left to the discretion of the essayists, leading to a multifaceted academic perspective on COVID-19 and supply chain management that we hope will stimulate thinking and lay the foundation for insightful future research. The essays were reviewed by Kevin and Arash, as well as the *Journal of Supply Chain Management's* three co-editors-in-chief, and went through multiple rounds of revision. Thus, while invited, these essays are also refereed, although not blindly. This issue also includes a timely, thought-provoking article that went through the regular submission process. It focuses on panarchy theory as a theoretical lens for thinking about supply chains and supply chain transformation in a radically different way. Given the recent upheaval in thinking about supply chains and how they are managed, it provides a perfect fit with the invited essays.

We hope that this issue's timeliness will stimulate thinking related to future research and that it will be a useful companion piece to future COVID-19-related research in supply chain management. We consider this issue as only a starting point, and we hope to see its impact on future research on related topics submitted to the *Journal of Supply Chain Management*.

NEW CRISIS, NEW RESEARCH QUESTIONS

Through the lens of COVID-19, supply chain management researchers are revisiting mainstream research questions, as well as venturing into different, previously unexplored domains. The virtually simultaneous global nature of COVID-19's impact on supply chains had unanticipated critical effects, as well as emerging unexpected consequences that will carry over well into the future. Although supply chain management researchers have described issues related to supply chain transparency for some time, supply chain transparency and structure issues were highlighted by the COVID-19 experience, throwing traditional risk management strategies into disarray. This will profoundly affect our thinking about supply chain risk management in the future. In "Supply Chain Management for Extreme Conditions: Research Opportunities," Mohan Sodhi and Chris Tang explore the ways in which the supply chain challenges associated with COVID-19

differ from the "normal" challenges associated with a supply chain disruption, even one that is quite significant. Because the impact of COVID-19 moved far beyond affecting a limited number of supply chains for a finite period of time, they describe the need for a new way of managing supply chains to deal with extreme conditions that simultaneously addresses demand certainty, supply certainty, channel stability, labor availability, supply chain visibility, geopolitical stability, supply chain permanence, and supply chain financial flows.

COVID-19 has also further opened the eyes of supply chain management researchers to issues related to the working conditions of "invisible" suppliers in remote supply chain tiers and perhaps unknown suppliers working on lower-tier subcontracts that the focal firm is unaware of. For migrant workers who often live in substandard dormitory conditions and work in close quarters, the lack of adaptation to virus transmission protocols caused them to infect each other, with implications for their communities, as well as the supply chains in which they work. Our 2021 Emerging Discourse Incubator on Decent Work (Soundarajan, et al., 2020) provides a forum for doing a deep dive into these and related issues, starting with a set of four invited papers in Volume 57, Issue 2, to be published in April 2021.

Arash Azadegan and Kevin Dooley's essay entitled "A Typology of Supply Network Resilience Strategies: Complex Collaboration in a Complex World" addresses issues related to supply chain structure and transparency in complex supply chains. Building on complex adaptive systems, they introduce the concept of meso-level resilience and describe how it contributes to new ways of thinking about supply chains in the future. They touch upon panarchy theory as a new way of envisioning supply chain evolution, which Andreas Wieland elaborates upon in the final article in this issue.

Thus, there are many critical interconnected threads that comprise the supply chain management "tapestry," which Christine Harland explores in "Discontinuous Wefts: Weaving a More Interconnected Supply Chain Management Tapestry." Like Sodhi and Tang, she argues that the threads of knowledge and understanding that are necessary for mitigation, preparedness, response, and recovery are already there, but that the supply chain management field has yet to weave them together effectively. Thus, making the connections between seemingly interconnected issues may be key to more effectively positioning supply chains to deal with future global mega-disruptions.

Perhaps there are also some positive effects of COVID-19 that will forever change the way that supply chains do their work. Lockdowns and travel bans have forced a drastic acceleration of learning how to

use communication technology, such as Zoom and Teams, and sharing technologies, such as Google Docs and Dropbox. We have talked to many supply chain managers who have described their newly improved communications abilities. In addition to saving travel time, they have described how communications and sharing technologies have simplified talking with people who are distantly located or perhaps would have been previously outside the normal chain of command. We are all learning how to do things in different ways, and, in some cases, there will be no going back, leading to a reconfiguration of supply chain processes.

For example, the emergency nature of sudden COVID-19 lockdowns caused supply chain members to develop new ways of doing things in order to meet the needs of their customers. Consider the pharmaceutical industry and its need to provide life-saving medicines, such as insulin, to its customers on a regular basis. This industry has experienced the rapid reconfiguration typical of humanitarian supply chains in order to meet these critical needs. Pharmaceutical sales reps, whose travel has been curtailed due to travel restrictions, have only had limited interactions with physicians, whose priorities are focused on treating COVID-19 patients, rather than taking the time to meet with sales reps. While large pharma companies have continued to compensate their sales reps, some have also asked for volunteers for tasks like unpacking boxes in their warehouses to help meet surging demand, with impressive results. This “all hands on deck” mentality is typical of an emergency management supply chain, where people do whatever needs to be done to address the immediate situation. The pharma industry has also faced distribution challenges, as the commercial flights by which they normally ship high-value medicines have been cut back. In response, several big pharma companies joined forces to rent an unused passenger jet in South America and reconfigure it for cargo shipments to remote areas. Others have hired helicopters to ship medicines to areas in desperate need of life-saving products. These examples illustrate the application of learning from humanitarian and emergency management supply chains. This topic is explored further by Gyöngyi Kovacs and Ioanna Falgara Sigala, in “Lessons from Humanitarian Logistics to Manage Supply Chain Disruptions,” which provides important insights for dealing with future mega-disruptions.

Small businesses and entrepreneurial activities have perhaps disproportionately suffered from the COVID-19 crisis due to their lower capitalization and limited geographical reach. Everyone has a story of their favorite restaurant being forced to close, and small businesses such as hair or nail salons, dentists, and doctors’ offices face dramatic drops in demand for

routine services, as clients and patients are locked down or fear venturing into a public establishment. However, for every story of a small business suffering, there is a corresponding story of an entrepreneurial counterpart that rapidly reconfigured to meet emerging new functional demands. For example, a small, local printer began producing and delivering residential yard signs celebrating high school seniors whose graduation ceremonies had been canceled due to COVID-19 or heroes on the healthcare front line. Small 3D printing establishments rapidly reconfigured to become manufacturers of face shields. Numerous microbreweries and small distilleries reconfigured to produce hand sanitizer for both healthcare providers and the consumer market, taking advantage of a byproduct already produced as part of the distilling process. These examples raise the question of what supply chains can learn from entrepreneurs about flexibility and rapid reconfiguration to help better position them for the next global mega-disaster. Dave Ketchen and Chris Craighead explore this topic in “Toward a Theory of Supply Chain Entrepreneurial Embeddedness in Disrupted and Normal States.”

WHERE DO WE GO FROM HERE?

Considered together, these essays raise questions about the topic of resilience itself. Resilience is typically focused on bringing supply chain operations back to their previous condition following a crisis, and many supply chains have painfully proven to not be resilient. However, some supply chains, such as Amazon’s, have responded to the COVID-19 crisis such that they emerged stronger than they were prior to the crisis, learning valuable lessons and rapidly reconfiguring to meet emergent needs, suggesting that the concept of resilience needs to be reimagined.

Andreas Wieland’s “Dancing the Supply Chain: Towards Transformative Supply Chain Management” draws together much of the thinking underlying the essays in the rest of this issue by proposing the need to take this thinking one step further and reimagine supply chains and supply chain management. He builds on panarchy theory, which proposes that it is time to move from a static view of supply chains as cost-minimizing and isolated to envisioning a supply chain as an organic system. Like dancing, he describes the need to both follow established steps and improvise when necessary. Conceptualized as a set of adaptive cycles, we can move from the engineering perspective of a material recovering its original shape after being deformed to emerging from a disruption transformed into a better supply chain at the supply chain level, the political economic level, and the planetary level. This conceptualization is well suited to both preparing for future global mega-disruptions and

thinking about the evolution of supply chains in the evolving environment.

These essays and paper all posit important research questions to guide research on what supply chains have learned from their COVID-19 experience and how to build upon it to become more resilient and prepare for the next global mega-disruption. They will lead to future research that is both insightful for researchers and important to supply chain managers.

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