Insights From Supply Chain Disruptions in the COVID–19 Era:
The Call for More Resilient Networks

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EXECUTIVE SUMMARY

The COVID-19 pandemic has created a devastating impact on supply chains. Especially, transportation disruptions, the slowdown in manufacturing, supply-demand imbalances, operational inefficiency in last-mile, and deficiencies in dealing with the crisis can be seen as main headings. This chapter aims to reveal the problems and learn lessons in these areas where significant risks are faced. During the COVID era, the need for resilient supply chains that are not affected by instantaneous changes has come to the fore. Accordingly, the second aim of the chapter is to offer solutions toward the short, medium, and long terms of the first-mile, production, and last-mile processes as enhancing the responsiveness of supply chains by the elements of supply chain resilience. This study is prepared as a review article in an exploratory approach through the supply chain literature and current practical examples. As a result of the study, digital-intensive business models, collaborative network design, and sustainability are highlighted as the main concepts to reach more resilient networks.

INTRODUCTION

Modern Supply chains consist of a highly complex ecosystem and play a vital role in regulating operations as a whole at the right time, in the right quantity, and cost-effectively. Competitive pressures in almost all industries and globalization of markets are forcing organizations to strive for comprehensive supply chains that can operate worldwide, making supply chains more vulnerable to risks. The Covid-19 pandemic, as a socio-economic reality affecting the whole world, has created a devastating impact on supply chains. According to the report by Dun and Bradstreet (2020), Wuhan city of China, where the outbreak occurred, has one or more direct suppliers of 51,000 companies worldwide and at least 5 million collaborators indirectly. Mainly, China's significant share in intermediate product supply has caused supply chain disruptions in 94% of Fortune 1000 companies with a low-cost global supply chain structure (Fortune, 2020). Rather than creating a limited risk for companies doing business with China, the epidemic has brought the whole world to face various commercial and logistical risks. In this context, significant disruptions were experienced in maintaining product, information, and money flows from raw material procurement to the delivery of finished products. Due to the Covid-19 pandemic, risk has emerged beyond previous crisis scenarios in almost all areas, especially on food and health supply chains. This process pointed to the most significant deterioration in recent years, with " simultaneous supply chain disruptions in many global chains."

There are a wide variety of risks in supply chain processes. For example, market changes, scarcity of resources, financial risk, information sharing failure, demand uncertainty, and pandemic disruption are significant dangers in the supply chain mechanism (Dohale et al., 2021). The risk management approach in the supply chain requires an ecosystem insight with the fact that different layers may pose multiple risks, and all members in the chain may be affected by this situation (Fan and Stevenson, 2018). Juttner et al. (2003) defined supply chain risk management as "implementing appropriate strategies with a coordinated approach among supply chain members to identify potential sources of risk and reduce supply chain vulnerability." Supply chain risk management links the issue of risk with the probability of disruptive events (Heckmann et al., 2015) and the business impact of disruptions (Brindley, 2004). Implementing effective risk management throughout the chain is critical to risk mitigation, preparedness, better responsiveness, greater flexibility, and reduction in the severity of risks.

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