

# Chapter 1

## Supply Chain Resilience Strategy for Healthcare Organizations: Crucial Steps in Addressing the Impact of Natural Disasters

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### **ABSTRACT**

*Recent natural disasters, including the COVID-19 pandemic, earthquakes, tsunamis, and hurricanes, have exposed the vulnerabilities inherent in global supply chains, resulting in widespread disruptions that have impacted most organizations. The healthcare industry has been particularly affected by these supply chain vulnerabilities, leading to critical shortages of medical products, and compromising the quality-of-service delivery. The vulnerabilities exposed in healthcare supply chains underscore the pressing need for improved systems, policies, and solutions to mitigate supply chain risks and disruptions. Drawing upon theoretical frameworks from diverse disciplines, the current study aims to investigate the impact of natural disasters on healthcare supply chains and develop critical steps to address vulnerabilities, thereby fostering a resilient supply chain strategy tailored to the healthcare industry.*

### **INTRODUCTION**

In recent years, spurred by events such as the COVID-19 pandemic, the Great Recession, natural disasters like 2005 Hurricane Katrina (Wright et al., 2023), the 2010 Haiti earthquake, the artificial disasters in Syria and Yemen, and the Ebola pandemic (Besiou & Van Wassenhove, 2020), and more recently the 2023 earthquakes in Turkey and Syria (Omer, 2024), blockage of the Suez canal by a huge container ship (BBC News, 2021), Baltimore Key Bridge Collapse (CNN, 2024) and continual global unrest exemplified by recent attacks on ships in the Red Sea by Houthi rebels (Berman, 2024), the field of supply

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chain risk management has seen the emergence of new paradigms aimed at addressing disruptions in the supply chain (Schmitt & Singh, 2012; Ramezankhani et al., 2018).

The COVID-19 global pandemic, a monumental event that has brought to the forefront the vulnerabilities of the global supply chain, serves as a prime example. It has starkly illuminated the risks associated with the concentration of Personal Protective Equipment (PPE) manufacturing base in China and the unprecedented global demand (Bradsher, 2020; Scala & Lindsay, 2021). Even locally manufactured healthcare supplies were dependent on raw materials from countries like China and India (Fernandes et al., 2022, p.1). The pandemic's strain on the supply of essential health commodities, including PPE, diagnostic tests, and treatments, led to significant disruptions. These disruptions not only hindered the global response to the COVID-19 crisis but also affected the delivery of crucial healthcare services, such as child immunization programs, family planning initiatives, mental healthcare, and cancer treatment (Fernandes et al., 2022). The supply chain challenges triggered by the pandemic had far-reaching consequences, threatening the continuity of critical healthcare interventions and services beyond the immediate context of the COVID-19 response (Fernandes et al., 2022).

The massive supply chain disruptions precipitated by the COVID-19 pandemic have served as a poignant instructional experience for organizations, underscoring the vulnerabilities inherent in their supply chain networks (Linton & Vakil, 2020; Nikookar & Yanadori, 2021). These disruptions were characterized by their rapid onset, unpredictable nature, and, in some instances, catalyzed irreversible transformations (Nikookar & Yanadori, 2021). The pandemic has highlighted the need for healthcare supply chains to be more resilient, with increased manufacturing output and improved response to demand (Livingston et al., 2020; Scala & Lindsay, 2021).

To address these disruptions, supply chain resilience has emerged as a focal point in supply chain management literature, denoting the ability of a supply chain to recover from disruptions and meet customer demands within a reasonable timeframe (Ramezankhani et al., 2018; Nikookar & Yanadori, 2021). This concept has gained prominence as a potential solution to challenges posed by supply chain disruptions, emphasizing the supply chain's capacity to persist, adapt, or transform in response to disruptive changes (Wieland & Durach, 2021; Nikookar & Yanadori, 2021).

The concept of supply chain resilience within the healthcare sector has emerged as a focal point of scholarly inquiry, particularly considering natural disasters and pandemics. It pertains to the capacity of a healthcare supply chain to endure and recuperate from disruptions while ensuring the continued provision of safe and efficient healthcare services to its target population (Ramezankhani et al., 2018; Um & Han, 2020). Studies in this domain underscore the significance of comprehending the interplay between global supply chain risks and resilience, underscoring the necessity of implementing mitigation strategies to navigate unforeseen circumstances (Um & Han, 2020).

Moreover, scholarly literature has examined the influence of leadership, organizational culture, and change management on bolstering supply chain resilience. Managers play a significant role in fostering organizational resilience by harnessing social capital, human capital, and cognitive capabilities to enhance supply chain resilience (Nikookar & Yanadori, 2021). Innovation leadership and big data analytics are also pivotal in establishing resilient healthcare supply chains, particularly in addressing challenges like the COVID-19 pandemic (Bag et al., 2024).

In summary, the concept of supply chain resilience in healthcare is multifaceted, encompassing dimensions of risk management, leadership, organizational culture, and innovation. By comprehending the intricacies of supply chain resilience and implementing strategies to reinforce it, healthcare stakeholders

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