


Chapter 3

Supply Chain Disruption and Resilience in Conflict Zones: A Structured Review of Risks, Vulnerabilities, and Recovery Pathways

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ABSTRACT

In this review, 58 empirical studies concerning supply chain disruption and resilience in war regions found in Eastern Europe, Africa, Middle East, and Asia were synthesized. This analysis shows that armed conflict causes widespread destruction of infrastructure, obstruction of key transport routes, and the imposition of sanction regimes, and as such, creates ripple effects of adverse effects on food, energy, and other critical supply chains of goods. Diversification of sourcing plans, alternative routing, setting up of inventory buffers and integrative activities by several stakeholders are all aimed at increasing resilience. Further, the use of digital technologies such as artificial intelligence, geographic information systems, blockchain, and cloud-based monitoring has an immense level of visibility and responsiveness to supply chains, yet the solutions are limited in their capacity to invest and the infrastructure to deploy such solutions is also limiting.

DOI: 10.4018/979-8-3373-6950-1.ch003

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1. INTRODUCTION

In the last twenty years, the global supply chains have evolved into very much connected and efficiency-focused networks which are influenced by lean operation paradigms, just-in-time, and sourcing loci that are spread across geographical locations. Although these types of structures make a system better cost competitive and responsive in fairly stable conditions, they simultaneously increase systemic vulnerability to extreme perturbations. Armed conflicts and geopolitical crises are one of the most extreme types of disruption, because they in turn destroy physical logistical structures, institutional governing frameworks, and limit the movement across borders, as well as establishes deliberate constraints on trade, and security threats. In turn, supply-chain disruption and resilience in conflict regions has become a pressing research topic and policy issue that must be considered both by companies, states, and humanitarian organizations, which works in high-risk settings (Stewart and Ivanov, 2019; Jagtap et al., 2022). Conflict triggered disruptions are highly distinct both in magnitude and form than traditional risk events (e.g., natural disasters, demand shocks). Prolonged instability, antagonistic control, irregular access routes and weaponization of trade flows in the form of sanctions and blockade are characteristic of conflict environments. The case studies recent in the past: the Russian-Ukraine war, the unrest in key maritime routes, and other civil strife examples show that local conflicts can lead to a ripple effect across the global food systems, energy markets, transportation networks, and humanitarian supply chains (Gheibdoust et al., 2023; Srari et al., 2023). In these settings, supply chains are run in the settings of the permanent uncertainty when the cost efficiency is often subject to safety, compliance, and continuity, as the main influential factors. The growing academic interest in supply chains supply-chain disruption associated with conflict has provided important information on the types of risks, risk areas in the operations, and resiliency strategies, including redundancy, supplier diversity, alternative route, and multi-stakeholder coordination. However, the literature is still disjointed in a number of important aspects. To begin with, the current body of research is skewed towards a restricted number of conflicts namely the Russia-Ukraine case and this has raised questions over the applicability of the findings within other conflict environments such as the Middle East, Africa and the maritime security regions (Sarwar and Rye, 2025; Sielker and Dannenberg, 2025). Second, numerous solutions to resilience (e.g., digital control towers, blockchain traceability, AI-enabled routing) still have conceptual potential, but are still undervalued under a variety of institutional and infrastructural conditions (Belhadi et al., 2024, Ostryanina et al., 2025). Third, the commercial supply-chain resilience learning and humanitarian logistics studies are not sufficiently integrated, although infrastructural interdependence and channeling in the emergency of conflicts have been growing

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