


Chapter 8

Agentic AI and Autonomous Operations in Conflict–Affected Supply Chains: Transforming Humanitarian Logistics in MENA Through Intelligent Automation

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ABSTRACT

This chapter examines how Agentic AI, autonomous systems transform SCM in conflict-affected MENA regions. Traditional models collapse under armed conflict, occupation, and institutional fragility. This research demonstrates that intelligent autonomous systems enable real-time decision-making, risk mitigation, and operational continuity in hostile environments. Case studies in Syria, Yemen, and Palestine show how Agentic AI performs critical functions demand forecasting, supplier selection, route optimization while maintaining humanitarian aid delivery despite severe constraints. The research contributes a theoretical framework integrating autonomous operations with conflict-sensitive SCM design, offering guidance for humanitarian organizations, technology providers, policymakers navigating digital

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transformation in crisis contexts. This framework addresses deployment challenges where infrastructure is damaged, security uncertain, and capacity limited, providing strategies for AI-driven logistics that enhance humanitarian response effectiveness and resilience.

1. INTRODUCTION

Historical humanitarian calamities have deeply impacted regions like the Middle East and North Africa (MENA) through protracted armed conflicts, the breakdown of institutions, and a series of crises that have brought about many logistical failures. Syrian civil war, Yemen humanitarian disaster, and Palestinian ordeal under occupation are some of the conflict-affected contexts where the traditional supply chain management paradigm totally fails (Grigoli et al., 2014). From rampant daily threats and continued infrastructure wreckages to perplexing regulatory issues and mediocre resource scarcity-the situation is breeding down into one where human-dependent logistics models have overtaken both inefficiency and unsustainability and hence ultimate failure.

Existing humanitarian logistics literature considers political stability and functioning institutions as prerequisites for the functioning of the supply chain. These conditions only exist in theory in conflict and crisis zones: control and borders are sporadically shifting and authorities are nonoperational. The humanitarian-aid community faces a contradiction: assuring within the limit the business of life-saving assistance to the neediest population, at the same time, the phenomenon presupposed no longer supports their actions (Altay et al., 2021).

Research Problem Statement: Humanitarian logistics is virtually silent on exploring an actual implementation of supply chain functional operations during armed conflicts, resulting in a critical deficiency in discussing both autonomous and conflict-sensitive logistics. While a lot of literature on the digital transformation points towards optimizing profit during general business transactions, it has not yet well explored the deeper ethical, operational, and governance considerations in utilizing highly sophisticated AI systems and agents operating in an environment marked by infrastructure damage, lack of human supervision, and system collapse, which could, invariably, endanger lives. It is imperative to understand the intrinsic tradeoffs in the relationship between technoids (speed, efficiency, autonomy) and humanitarian ethics (fairness, transparency, adherence to humanitarian principles) -whether AI functionalities, which are intended for local use, might perform an even-handed delivery on functional performance and decision-making quality in a war-torn supply chain that still respects all those precepts with which humanitarian principles dictate compliance and avoids all the evils of algorithmic bias, surveil-

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