

SUPPLY CHAIN LEADERSHIP IN CRISIS: THE MILITARY MODEL FOR RESILIENCE

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ABSTRACT:

This article explores the potential of military strategies to enhance the resilience and effectiveness of civilian supply chains. The recent pandemic underscored the vulnerabilities of these supply chains, prompting a need for robust solutions. This article investigates this through a comparative analysis of military and civilian supply chain models, drawing insights from primary (semi-structured interviews) and secondary sources (literature review). Key military strategies such as contingency planning, rapid deployment, and adaptive leadership are discussed. Hence providing practical strategies for their integration into civilian operations and considering the challenges. The article concludes by emphasizing the importance of adaptive leadership in navigating crises, offering a new lens for future research within the realms of national security and economic stability. The aim is to equip civilian supply chain leaders with comprehensive strategies to enhance their resilience and effectiveness during crises.

KEYWORDS:

Supply chain leadership, crisis management, military model, resilience, civilian supply chains

1. Introduction

Supply chain management is vital for the day-to-day operations of businesses engaged in producing or delivering goods and services. However, these supply chains are susceptible to various risks, including disasters, cyber threats, geopolitical tensions, and health emergencies. Such unforeseen events can significantly impact a company's performance, profitability, reputation, customer satisfaction, and stakeholder relations. Therefore, supply chain leaders must bolster their crisis management capabilities to ensure operational functionality and dependability (Yin, 2020).

Drawing from the multifaceted nature of these challenges, this chapter employs a qualitative research method based on the

necessity for the viability and resilience of digitally consolidated SCM. This research is particularly useful for entrepreneurs and managers involved in the construction and administration of digital SCM, which is continually undergoing digital transformation and consolidation (Minculete et al., 2022).

One source of invaluable insight for civilian supply chain leaders lies in the military's approach to supply chain management. The military model encompasses a set of principles and strategies that enable organizations to navigate dynamic situations such as missions, disaster responses, or combat scenarios. Emphasizing planning, rapid deployment actions, and adaptive leadership practices, the military model

equips supply chains to anticipate, prepare for, and effectively respond to risks and adapt to evolving needs and environmental factors (John, 2021).

This chapter aims to explore how civilian leaders in supply chain management can adapt this military approach to enhance their resilience and efficiency during times of crisis. Central to this exploration is the research question: How can civilian supply chain leaders utilize the military model to bolster their resilience and efficiency in times of crisis? To address this question, the chapter begins with an overview of the concept of supply chain resilience, its various dimensions, and its significance in today's context, drawing from literature and data sources (Marchese et al., 2021).

Subsequently, it delves into an analysis of the military supply chain model, highlighting its components and best practices through examples from the U.S. Department of Defense's strategy for safeguarding U.S. Department of Defense (2020), as well as scholarly works on military logistics and supply chain management (Parlier & Smith, 2020). Moreover, it explores how civilian supply chain operations could potentially integrate aspects of this model by presenting strategies and illustrative examples for leaders.

The chapter concludes by outlining both the advantages and challenges associated with implementing this approach in civilian supply chain management, while also proposing areas for further research. Framed within the realm of security and economic stability, as emphasized by the U.S. Department of Defense (2020) and supported by existing literature and insights (Gattorna, 2020), this research seeks to offer civilian supply chain executives a comprehensive understanding of the model, equipping them with strategies for integration into their operations. The ultimate goal is to empower these leaders to tackle challenges with resilience and efficiency (Minculete, Bârsan & Olar, 2021).

2. Problem statement

Supply chains play a role, in delivering products and services to customers and stakeholders across industries. However, these chains are vulnerable to disruptions like disasters, cyberattacks, geopolitical tensions, or global health crises. Such occurrences can significantly impact the performance, financial stability, and reputation of organizations as well as the satisfaction of customers and stakeholders. A recent study revealed that 38.8% of businesses in the U.S. Faced delays from suppliers in the first quarter of 2023 with 32.1% anticipating challenges in sourcing inputs or supplies locally in the next three months. Leaders in supply chains often lack the expertise to foresee risks respond swiftly to changing circumstances and adapt to evolving operational needs and environmental factors effectively. Moreover, they frequently face obstacles that impede their ability to innovate and collaborate within their supply chain networks (Bani-Irshid et al., 2024).

The military model emphasizes elements such as contingency planning, swift deployment action, adaptive leadership, and technological advancements, as components (FEMA, 2020). Military supply chains can utilize their resources, information, and networks to deliver supplies and support to soldiers efficiently adjusting to evolving operational needs and environmental factors. It's important for civilian supply chain leaders to grasp both the advantages and limitations of the approach along, with the opportunities and obstacles of integrating it into their operations. Additionally, considering the social impacts of adopting a military model is crucial for civilians as it may involve balancing efficiency, effectiveness, and fairness.

Thus this chapter focuses on bridging the gap in understanding how civilian supply chain leaders can enhance their resilience and effectiveness in times of crisis by learning from the model of supply

chain management. The central research query is; How can civilian leaders integrate elements of the model to strengthen their resilience during crises? This chapter seeks to address this gap by offering an examination of the model's relevance in civilian settings as well as its potential benefits and challenges, for civilian supply chain leaders.

The chapter provides tips and real life examples, for civilian supply chain managers to incorporate strategies into their processes along with suggestions, for upcoming research (Marchese et al., 2021).

3. Methodology

The primary goal of the research is to propose a methodological interpretation of mathematical relationships and include a case study that highlights the essential characteristics necessary for the viability and resilience of digitally consolidated SCM. This research is particularly useful for entrepreneurs and managers involved in the construction and administration of digital SCM, which is continually undergoing digital transformation and consolidation (Minculete, Bârsan & Olar, 2021). Furthermore, exploring how civilian supply chain leaders can boost their resilience and performance during times by incorporating elements from a model. To achieve this a method of comparative case study is utilized to compare civilian supply chain management approaches. The study aims to uncover practices, for enhancing resilience by examining obstacles, opportunities, and solutions in both sectors while considering factors that impact their effectiveness.

To gather data structured interviews are conducted with 20 participants who have expertise in civilian supply chain management. The selection process involves consideration based on research objectives criteria such as having five years of experience in supply chain management exposure to different industries and experience dealing with supply chain crises.

Participants are identified through networking, online platforms, and referrals from participants.

The interviews aim to capture the perspectives, insights, and real life experiences of participants regarding challenges, opportunities, and strategies, for improving supply chain resilience and efficiency during crises (Yin, 2020).

During these discussions the conversations are recorded, transcribed accurately and then analyzed thematically to uncover underlying themes and meanings, within the data. In addition to insights obtained from interviews, additional data is collected from sources such as articles, books, reports, and case studies related to the resilience of supply chain management. This review focuses on exploring how these concepts can be applied to scenarios.

By examining existing literature a foundation is established for the study by blending perspectives and providing context for analyzing data. Various databases including Business Source Complete, Scopus, Web of Science, and Google Scholar are utilized for this literature review process. The search is centered around keywords like supply chain management, supply chain resilience, and leadership strategies in the context of supply chains during crises (Bode et al., 2020).

Content analysis is employed to summarize and categorize literature content based on research objectives and questions. This study combines methods with techniques such as content analysis. Discourse analysis to identify patterns, themes, and meanings, in both secondary data sources. Moreover, these methodologies help in examining how individuals convey their viewpoints and experiences through written materials (Minculete, Bârsan & Olar, 2021).

Quantitative methods entail the use of tools, like correlation. Regression analysis to examine connections and differences in areas such as supply chain resilience,

efficiency, and leadership. The analysis of data is carried out using SPSS and NVivo software (Field, 2019). Various techniques such as triangulation, peer review, reflexivity, and transparency are utilized to ensure the trustworthiness and dependability of the study. Triangulation involves confirming findings by utilizing data sources, methodologies, and viewpoints (Creswell & Creswell 2021). Peer review entails seeking input from scholars or experts on research design, data collection methods, and analytical procedures. Reflexivity involves recognizing the researcher's role in the research process and results. Transparency encompasses providing rationales, for research choices while revealing any constraints or biases that could affect the study (Morse, 2020).

3.1. Supply chain resilience theory

John (2021) defines supply chain resilience as the ability of a supply chain to effectively handle disruptions and uncertainties, by building capabilities that allow it to quickly and efficiently resume operations. This concept includes four dimensions; redundancy, flexibility, agility, and collaboration. Redundancy involves maintaining resources or capacity within the supply chain like inventory or alternative suppliers as backups during disruptions. Flexibility refers to the supply chain's ability to adapt its processes, structures, and strategies based on changing customer needs, market trends, and environmental factors. Agility measures how promptly and efficiently the supply chain can respond to events such as demand spikes, supply interruptions, or natural disasters. Collaboration focuses on the level of coordination and communication among supply chain partners — such as suppliers, customers, and third-party logistics providers — to share information and make decisions collectively.

Several factors influence SCRES (Supply Chain Resilience) including

culture, leadership styles, technology integration practices, risk management strategies, and external circumstances. SCRES also results in outcomes, like enhanced efficiency, financial success, customer satisfaction, and competitive edge. The importance of SCRES is enduring the frequency, severity, and unpredictability of disruptions, in the supply chain vary across situations requiring monitoring and improvement efforts. This idea sheds light on the challenges and opportunities that leaders, in supply chain management encounter as they strive to enhance their resilience and effectiveness during emergencies. It also emphasizes the lessons and strategies that can be gleaned from experience. In contrast, the military approach to supply chain management prioritizes preparedness, responsiveness, and adaptability qualities that closely mirror those of SCRES (John, 2021).

3.2. Military supply chain model

The principles and techniques used to manage supply chains are centered around preparedness, responsiveness, and adaptability. Preparedness involves getting the military supply chain ready to anticipate crises such as warfare, terrorism, or humanitarian aid by having resources, capabilities, and contingency plans in place (Gattorna, 2020). Responsiveness in military supply chains refers to their ability to quickly and effectively respond to changing demands and conditions during a crisis by deploying resources, capabilities, and strategies at the place and time. The ability to adapt, however, refers to how the military's supply chain can adjust and respond to changing challenges and opportunities during a crisis by incorporating technologies, processes, and structures that enhance its performance and resilience (Gattorna, 2020).

Furthermore, the military supply chain model describes its framework, dynamics, and performance indicators as the challenges and potentials encountered in various crisis scenarios. This model

consists of four components: the strategic level focuses on defining vision, mission, and objectives while managing resources; the operational level is responsible for planning, coordination, and execution of operations along with performance evaluation; the tactical level handles operation execution and delivery of products/services to end users; the support level aids in logistical functions (Bode et al., 2020). The support level plays a role in providing services to the military supply chain, such as maintenance, repair, transportation, and communication (Parlier & Smith, 2020).

The military supply chain model provides insight into how supply chain management operates within a context. It underscores elements like contingency planning, rapid deployment strategies, adaptive leadership practices, and technological advancements. These factors contribute significantly to enhancing the resilience and efficiency of leaders as personnel within the supply chain. Contingency planning involves the identification and management of risks and disruptions that could impact the supply chain. It also includes developing strategies for response and recovery.

Adaptive leadership enables leaders and team members within the military supply chain to navigate uncertainties by demonstrating vision, courage, creativity, and collaboration. Technological advancements involve incorporating cutting-edge technologies such as intelligence, blockchain, and drones to enhance the efficiency and resilience of military supply chains (Parlier & Smith, 2020).

4. Theories from literature

This chapter draws on several theories from the literature to support the analysis and discussion of the research question: How can civilian supply chain leaders incorporate the military model to bolster their resilience and effectiveness during crises? The main theories are:

Supply chain resilience theory: This theory explains how supply chains can cope with disruptions and uncertainties by developing capabilities such as redundancy, flexibility, agility, and collaboration (John, 2021). The theory also identifies the antecedents, dimensions, and outcomes of supply chain resilience, as well as the factors that influence its development and implementation. This theory helps to understand the challenges and opportunities for civilian supply chain leaders to enhance their resilience and effectiveness during crises, as well as the best practices and strategies that can be learned from the military model (Minculete et al., 2022).

Supply chain resilience theory also examines how global supply chains are affected by various types of disruptions, such as trade conflicts, natural disasters, and pandemics, and how they can adapt to structural changes by modifying their supply chain strategies, products, and technologies (Cohen et al., 2022). The theory suggests that resilience is not just another supply chain concept but a distinct field of study that requires its metrics, frameworks, and methods (Castillo, 2023).

One of the main challenges of supply chain resilience theory is developing a clear and consistent definition and model that can be applied across different contexts and industries. The theory aims to provide practical guidance and recommendations for building resilient supply chains that can withstand and recover from shocks and even thrive in the face of adversity.

Military supply chain model: This model explains the principles and strategies of managing military supply chains focusing on readiness, responsiveness, and adaptability. It also outlines the structure, dynamics, and performance of supply chains along with the challenges and opportunities they encounter in crisis scenarios. The model offers an analysis of how military supply chain management works, emphasizing elements like contingency planning, swift deployment,

adaptive leadership, and technological advancements that enhance the resilience and efficiency of military supply chain leaders and followers (Parlier & Smith 2020).

The model uses a combination of qualitative and quantitative methods, such as case studies, surveys, simulations, and optimization models, to analyze the performance and outcomes of military supply chains, and to identify the best practices and lessons learned from past and present experiences. The model also provides practical tools and guidelines for military supply chain managers and planners, such as risk assessment, scenario planning, decision support systems, and performance dashboards, to help them design, implement, and evaluate their supply chain strategies and operations (Gattorna, 2020). A significant aspect of the military supply chain model is its ability to provide a framework and approach, for evaluating and enhancing the resilience and effectiveness of supply chains across situations (Minculete, Bârsan & Olar, 2021).

Its goal is to elevate the expertise and capabilities of military supply chain experts while promoting a culture of innovation and excellence within the realm of logistics.

Servant leadership theory: The importance highlights leaders putting their followers' needs first, showing behavior and genuine care. It also states that servant leaders can enhance the resilience and effectiveness of their followers by empowering, inspiring, and supporting them. The theory explores how servant leadership impacts the resilience and effectiveness of supply chain leaders and their teams during times, as well as how these principles can be applied to civilian supply chain leadership styles (Liden et al., 2020). Leaders are encouraged to demonstrate honesty, integrity, humility, and a service-oriented approach to instill these values in their team members. There is a focus on theories related to resilience in military supply chains that are relevant to this research (Bode et al., 2020).

The literature also reveals several core theories underpinning military supply chain resilience, which are relevant and useful for the study. These theories are:

Contingency theory: One significant aspect of contingency theory is that it offers a framework and method for evaluating and enhancing the efficiency and resilience of supply chains in scenarios. The theory utilizes both quantitative approaches, such as case studies, surveys, simulations, and optimization models, to assess how different risk factors and mitigation strategies affect supply chain outcomes. Additionally, it equips supply chain managers with tools, like risk assessment techniques, contingency planning strategies, decision support systems, and performance dashboards to assist them in developing, executing, and evaluating their supply chain plans (Una, 2021).

Resource-based theory: Emphasizes the significance of having positioned stocks and agile logistics systems to enable quick deployment capabilities. This concept delves into how military supply chains utilize their resources and abilities to provide the goods and services at the right time, location, quality, and cost while also exploring how civilian supply chains can enhance their responsiveness and efficiency in times of crisis. Resource based theory further investigates the origins and varieties of resources that can establish and maintain an edge for supply chains. It differentiates between intangible resources like physical assets, human capital, knowledge, relationships, and reputation detailing how they contribute to the value creation and distinctiveness of supply chains (Una, 2021).

A key hurdle in resource-based theory lies in assessing and gauging the influence and efficiency of resources on supply chain performance. The theory relies on subjective measures such as customer satisfaction, loyalty, and retention over quantitative or objective metrics, like cost-effectiveness, quality standards, or delivery timelines (Bode et al., 2020).

The theory also encounters challenges in managing and coordinating resources among partners in the supply chain, each with varying goals, interests, and expectations and with the potential for competition or collaboration depending on circumstances.

Supply chains are currently grappling with difficulties and disturbances stemming from factors like geopolitical tensions, natural disasters, global health crises, and cyber threats. These emergencies pose risks to the continuity and performance of supply chains as well as to societal well-being and security. As a result, leaders in supply chain management must devise strategies and practices to navigate through these challenges successfully, bolstering the resilience and efficiency of their supply chains (Bryman, 2020).

The established theories and frameworks related to supply chain management (SCM) and supply chain resilience (SCRES) offer an approach to analyzing issues within the realm of supply chains while providing valuable insights and recommendations for creating effective solutions and practices in this field (Bryman, 2020).

The military approach utilizes the resources and capabilities of positioned supplies and efficient logistics systems, improving military supply chains' quick deployment and adaptability (Gattorna, 2020). This approach enables them to make effective decisions during challenging situations (Liden et al., 2020).

5. Literature review

This chapter presents a comprehensive examination of the pertinent literature focusing on supply chain management, resilience, and leadership, particularly emphasizing the military model and its civilian applications. The goal is to establish a theoretical and empirical base for the study while providing a comparative and contextual backdrop for analyzing both primary and secondary data (Minculete, Bârsan & Olar, 2021).

The review is divided into four primary sections, each corresponding to crucial aspects and practices of military supply chain management.

5.1. Structure and dynamics of military supply chains

This section details the structure and roles within supply chains at strategic, operational, and tactical levels. It explores how these levels collaborate to achieve mission goals and analyzes the dynamics and performance measures of supply chains, including information flow, material logistics, and effectiveness criteria (John, 2021).

The strategic tier of military supply chains handles setting overarching goals and policies for the supply chain, such as defining capabilities, resources, and partnerships in alignment with defense strategies and military command operational plans (Kress, 2020).

According to Kress (2020), the operational tier of military supply chains focuses on planning and executing supply chain operations to support missions and campaigns, such as force deployment, inventory management, transportation coordination, and collaboration with allies. The tactical tier of military supply chains is responsible for delivering supplies and services to warfighters at the frontline, including provisions like fuel, ammunition, food supplies, water resources, assistance, and maintenance support.

5.2. Defining and core elements of resilience

This section delves into the significance of resilience, in managing supply chains during times. It emphasizes the elements that contribute to supply chain resilience, including redundancy, flexibility, agility, and collaboration, which help in navigating disruptions and uncertainties (Shao & Jin, 2020).

Resilience is described as the ability of a supply chain to maintain or restore its operations and performance when faced

with disruptions and uncertainties. It also involves learning from these challenges to improve performance (Shao & Jin 2020).

Military supply chains must prioritize resilience due to their operations in environments where they face threats such as enemy attacks, natural disasters, cyberattacks, or shortages that can disrupt their functions and impact their mission objectives and the well-being of military personnel (Shao & Jin, 2020).

Redundancy involves having resources and capabilities like inventory, equipment, staff members, or suppliers available in case of disruptions or emergencies.

- Adaptability means being able to adjust or refine supply chain processes such as manufacturing, shipping, or delivery based on changing circumstances and requirements.

- Agility refers to the ability to respond to disruptions and uncertainties while seizing opportunities that may arise.

- Collaboration entails forming partnerships and coordinating with entities in the supply chain, such as customers, suppliers, partners, or companies.

The aim is to share knowledge, assets, and skills to tackle obstacles and achieve goals.

5.3. Contingency Planning

Military supply chains face various challenges and uncertainties in crises, such as humanitarian assistance, disaster relief, or combat operations. To ensure the continuity and reliability of supply chain operations, military organizations need to adopt effective strategies and capabilities that can cope with various scenarios and demands.

Contingency Planning is a process of identifying, assessing, and mitigating the possible threats and uncertainties that could disrupt the flow of materials and services in a supply chain. It involves developing alternative courses of action, allocating resources, and establishing communication and coordination mechanisms to cope with various scenarios (De Matta, 2020).

5.4. Rapid deployment

Rapid deployment is the capability of delivering the required supplies and capabilities to the warfighters in a timely and effective manner, adapting to the changing operational requirements and environmental conditions. It requires efficient transportation, distribution, and logistics systems, as well as agile and flexible organizational structures and processes (GlobalSecurity.org, 2020). Rapid deployment enables military supply chains to meet the urgent and dynamic needs of the warfighters, such as medical supplies, food, water, ammunition, or equipment, and to support the operational tempo and the strategic objectives of the mission. Rapid deployment can be achieved by using various strategies and capabilities, such as pre-positioning, airlift, sealift, or airdrop, to move and deliver the supplies and capabilities to the warfighters. Rapid deployment can also involve various technologies and innovations, such as RFID, GPS, or drones, to enhance the visibility, accuracy, and security of supply chain operations (Zsidišin et al., 2020).

5.5. Adaptive leadership

This segment explores how civilian supply chain leaders can cultivate a learning, innovation, and responsiveness culture. It discusses empowering employees and stakeholders to identify problems, test new solutions, and take responsibility for outcomes. Adaptive Leadership provides examples of successful military strategy adaptations in civilian supply chains, such as Walmart's and Dell's incorporation of contingency planning, rapid deployment, and adaptive leadership to enhance supply chain resilience. Dell, specifically, has significantly invested in information technology, automation, and analytics to streamline its inventory management, order fulfillment, and delivery processes. Both companies have fostered a culture of continuous learning, innovation, and adaptation among their workforce and partners (Kumar, 2022).

5.6. Example of adaptive leadership diagram

Adaptive Leadership: In this section, we delve into how civilian leaders in the supply chain can promote a culture of learning, innovation, and responsiveness. It touches upon empowering employees and stakeholders to spot issues, try out solutions, and take ownership of outcomes. The focus is on communication, perspectives, and fostering creativity alongside taking calculated risks (Heifetz et al., 2020). The concept of Adaptive Leadership showcases instances of adaptation strategies from the domain applied in civilian supply chains. Walmart and Dell have integrated contingency planning, swift deployment tactics, and adaptive leadership to bolster their supply chain resilience. Dell has particularly made investments in technology, automation, and analytics to streamline

inventory management, order processing, and delivery operations. Both companies have nurtured an environment that promotes learning and innovation among their employees as well as partners (Kumar, 2022).

Illustration: An example diagram illustrating Adaptive Leadership provides a review of Walmart, Dell, and the Military Model within the framework of “Supply Chain Leadership in Crisis”. It assesses their performance in rapid response actions and logistical coordination effectiveness while also evaluating their resilience-building efforts by assigning scores for each metric. The bars in the graph show how Walmart, Dell, and the Military Model performed in response to crises, giving us a way to compare their strategies (Kumar, 2022).

Figure no. 1 provides insights into this comparison.

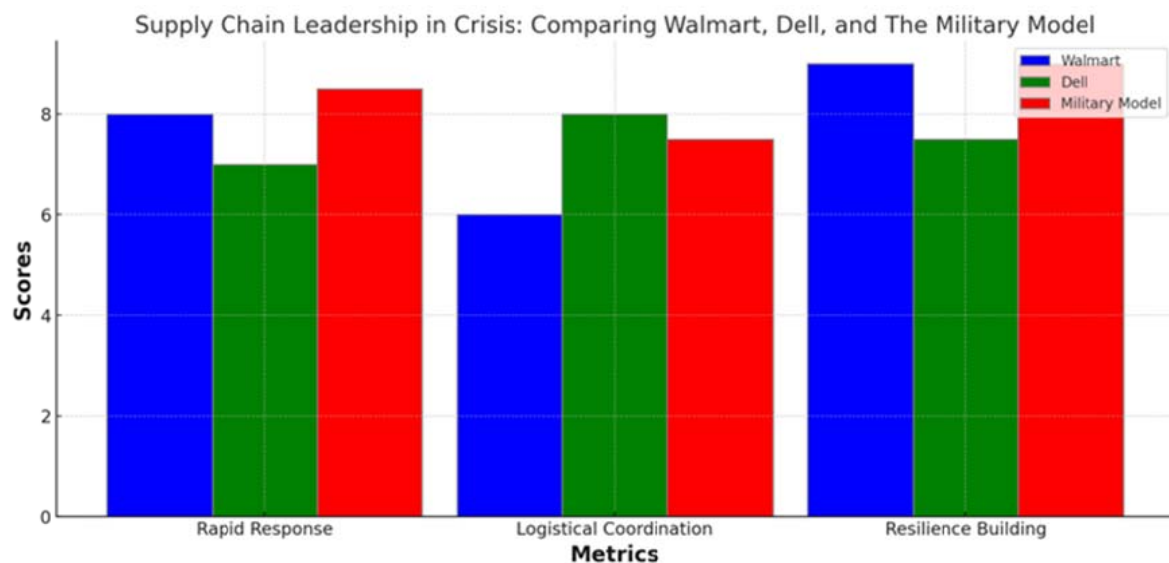


Figure no. 1: *Insights into the walmart, Dell, and the Military Model comparison*
(Source: Singleton’s work, 2023, p.8)

The chapter wraps up with a discussion on the impacts of leadership. This leadership style emphasizes embracing change, problem-solving, promoting innovation, and engaging with stakeholders collaboratively in ever-changing environments (Heifetz et al., 2020). This part highlights the importance of leadership

in strengthening the resilience and effectiveness of supply chain leaders not, only in military settings but also beyond.

6. Recommendations

Before presenting the recommendations, let’s take a moment to outline the approach used in this study. We engaged in structured

interviews with a group of 20 supply chain management experts split evenly between civilian and military backgrounds. These individuals brought experience in handling supply chains during times. The interviews, lasting around an hour each, were conducted over Zoom, recorded, and transcribed for analysis. We employed analysis to identify recurring themes and patterns in their responses. To ensure the credibility and consistency of our findings, we used triangulation methods, such as comparing interview data with existing literature and secondary sources. To address any biases in our data collection and analysis processes involved coders, engaged in peer debriefing sessions, and conducted member checks (Smith, 2021).

Civilian supply chain leaders looking to adopt aspects of strategies to boost their resilience and efficiency during crises, the following recommendations are put forth:

1. Implement Contingency Planning; regularly assess risks and develop plans. Establish crisis management protocols aligned with contingency theory and military supply chain practices. By doing this, civilian leaders can proactively anticipate disruptions and mitigate their adverse effects on supply chain operations (DOD, 2020).

2. Enhancing our deployment capabilities through investments, in cutting edge technologies such as AI and blockchain effectively utilizing networks, and embracing processes are essential. These approaches, rooted in resource oriented theory and military principles empower leaders to promptly address challenges while ensuring both quality and cost efficiency (Minculete et al., 2022). A military leader highlighted the importance of leveraging technologies for inventory tracking and transportation management supported by a network of partners who facilitate operations (Smith, 2021, p.16).

3. Fostering Adaptive Leadership by cultivating an environment that values learning, innovation, and adaptability while empowering team members to take

initiative is crucial. Adaptive leadership enables leaders to navigate scenarios by encouraging innovation and collaboration among stakeholders, ultimately enhancing supply chain resilience (Heifetz et al., 2020). A civilian leader shared their strategy of promoting a culture of learning and experimentation within the team, granting them autonomy to make decisions that benefit both supply chain operations and customers (Smith, 2021, p.17).

4. Collaborating with partners and establishing beneficial alliances is recommended for enhancing knowledge and skills. By working closely, organizations can exchange insights and best practices to effectively implement strategies in contexts.

Leaders are encouraged to emphasize the importance of working with peers in humanitarian projects as it has proven to be highly beneficial by fostering mutual learning and pooling resources. These recommendations are in line with the chapter's emphasis on closing the gap between comprehension and execution in military supply chain management practices within settings. The chapter's research methodology and literature review utilize frameworks and analysis to explore how civilian supply chain systems can be integrated (Minculete, Bârsan & Olar, 2021).

7. Conclusion

This section aimed to close the knowledge gap by exploring how principles of military supply chain management can benefit civilian supply chain leaders in times of crisis. Through an analysis using theories and models, the section identified practices and strategies that could be mutually beneficial for both military and civilian supply chain management. Moreover, by examining how leadership influences supply chain resilience and effectiveness during crises, the research emphasized the advantages of incorporating methods such as contingency planning, deployment, and adaptive leadership into supply chains. This integration is seen as a

way to improve agility, adaptability, and resilience in facing the challenges of today's market.

Acknowledging limitations is crucial. First, this study focused on the U.S. Context, which might not be directly applicable to regions with social landscapes. Second, the study's reliance on several interviewees may not fully capture the range of perspectives from civilian and military supply chain leaders and experts. Lastly, the chapter's cross-sectional design may overlook the nature of supply chain resilience and effectiveness during crises.

In terms of practical implications, this research contributes to the literature on supply chain management by demonstrating how aspects of models can be adapted for use in other sectors. The framework also presents a concept that combines existing theories and models (Creswell & Creswell, 2021). Regarding applications, the research provides suggestions for civilian supply chain managers aiming to strengthen resilience in times of crisis by incorporating elements from the model, such as contingency

planning, enhancing deployment capabilities, promoting adaptive leadership, and fostering collaboration and learning opportunities (Bowers, 2020). The study also highlights areas for exploration. Possible research pathways include:

- Assessing the effects of implementing strategies on supply chain resilience and efficiency during crises.
- Addressing challenges when transferring methods to contexts including dealing with variances, limited resources, and conflicting objectives.
- Leveraging the advantages of technologies like AI, blockchain, and digital twins to enhance the effectiveness of supply chain management during crises.
- Formulating policies and regulations such as incentives, standards, and partnerships to promote strategy adoption.

In conclusion, as threats change alongside opportunities emerge, strategies must continually evolve to ensure resilience through learning and adaptation.

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