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The Importance of Supply Chain Strategy in Logistics Service Delivery: An Exploratory Study from the Libyan Perspective

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Abstract

This study examines how supply chain management can enhance logistics service delivery in Libya. Drawing on recent literature and comparative evidence from the MENA region and Africa, it explores how supply chain strategies influence logistics performance in developing countries facing infrastructure, regulatory, and operational challenges. A qualitative approach is adopted, synthesizing academic studies, case examples, and regional analyses to demonstrate how supply chains can improve logistics services. The results show that Libya faces significant infrastructure deficiencies, fragmented regulatory frameworks, and conflict-related disruptions, which hinder effective strategic integration. However, adopting supply chain management practices, effective leadership, and partnerships can help develop competitive advantages. The study identifies significant gaps in logistics infrastructure, especially in ports and supply chain systems, while noting Libya's strategically important geographic location. Recommendations focus on strengthening institutions, investing in digital technology, developing a skilled workforce, and improving regulatory and policy frameworks to enhance supply chain resilience and effectiveness. This research contributes to the limited work on supply chain management in conflict-affected developing countries. It provides practical insights for policymakers, logistics experts, and international partners working in Libya and similar contexts.

Keywords: Supply Chain Management, Logistics Service Delivery, Supply Chain Strategy, Logistics Performance, Infrastructure Challenges, Competitive Advantage, Developing Economies, Libya.

1. Introduction

Supply chain management has become central to modern business operations, enabling organizations to remain competitive and deliver services effectively (Anca, 2019). In developing countries, where infrastructure limitations, regulatory constraints, and market instability often create significant challenges, supply chain management is especially important (Kuteyi & Winkler, 2022). In Libya and across the Middle East and North Africa (MENA) region, supply chain management is even more critical because of distinctive geopolitical, economic, and infrastructural challenges (Bhargav et al., 2026). Libya, a developing country in the MENA region, underscores the critical role of supply chains in logistics services. Its location, natural resources, and evolving institutions create both opportunities and challenges for supply chain development. Libya's weak logistics performance highlights the need

to examine how supply chain strategies can improve logistics under these tough conditions. Recent studies show that Libya ranks lowest in Africa on the Logistics Performance Index (LPI), highlighting substantial gaps that require urgent attention (Elferjani, 2024). Supply chains matter not only for operational efficiency but also for broader economic development. Effective logistics systems help facilitate economic activity by supporting trade, expanding market access, and supporting industry. In developing countries, logistics and supply chain challenges can be even greater obstacles, making them major barriers to economic competitiveness and integration into international markets (Janvier-James, 2012). For Libya, addressing these challenges is particularly important to economic recovery and to leveraging its strategic geographic position to strengthen its potential as a regional and international hub for trade and investment. This study examines the importance of supply chain management for logistics service delivery in Libya. Specifically, it has three main objectives: to examine supply chain management theory in developing countries, to identify and analyze the key challenges and opportunities for supply chains in Libya, and to provide practical recommendations to improve supply chain and logistics performance. By synthesizing existing research, case studies, and comparative evidence, this study contributes to the limited literature on supply chain management in conflict-affected developing countries.

2. Literature Review

2.1 Theory of Supply Chain Management:

Supply chain management is a comprehensive approach to coordinating the flow of materials, information, and financial resources across organizational boundaries to provide value to final customers. To create value for final customers, the theoretical foundation of supply chain management emphasizes integration, coordination, and strategic alignment among various parties and functions (Caniato et al., 2019). According to contemporary supply chain theory, competitive advantage depends less on the capabilities of individual organizations and more on the effectiveness of the entire supply chain network the effectiveness and integration of the supply chain as a whole among the various actors and functions involved in the supply chain, and its role in influencing organizational performance and competitive positioning (Sanders, 2025).

Research demonstrates that supply chain management practices significantly affect operational performance, which, in turn, contributes to overall supply chain performance (Obiri-Yeboah et al., 2025). In developing economy contexts, the strategic importance of supply chain management is further amplified by the need to address infrastructural deficits, institutional weaknesses, and market inefficiencies that characterize these environments (Dabrowski & Domínguez-Jiménez, 2021).

Emerging theoretical perspectives emphasize the importance of supply chain resilience, particularly in contexts characterized by disruption and uncertainty. Supply chain resilience refers to the ability to anticipate, prepare for, respond to, and recover from disruptions while maintaining operational continuity. Digital transformation, supply chain diversification, and collaborative partnerships support this multidimensional construct. However, resilience is not evenly distributed across regions,

as it is influenced by differences in institutional capacity, technological adoption, and governance structures (Kuteyi & Winkler, 2022).

The integration of logistics and marketing practices into core supply chain operations represents another important theoretical development. Research indicates that organizations in emerging markets with higher logistics performance indices demonstrate more extensive integration of logistics and marketing activities, resulting in stronger market-share performance than approaches focused exclusively on logistics or marketing (Obiri-Yeboah et al., 2025). This integration is driven primarily by strategic orientation rather than resource availability alone.

2.2 Logistics Service Delivery:

Logistics service delivery encompasses the planning, implementation, and control of the efficient flow and storage of goods, services, and related information from the point of origin to the point of consumption. The quality and efficiency of logistics service delivery directly affect customer satisfaction, operational costs, and competitive positioning (Rushton et al., 2026). In developing economies, logistics service delivery faces unique challenges associated with infrastructure quality, regulatory complexity, and institutional capacity (Kuteyi & Winkler, 2022).

The World Bank's Logistics Performance Index (LPI) provides a comprehensive framework for assessing logistics performance across countries. The LPI evaluates six dimensions: customs efficiency, infrastructure quality, ease of arranging shipments, logistics service quality, tracking and tracing capabilities, and timeliness (Arvis et al., 2014; Jayathilaka et al., 2022).

In the African context, logistics performance remains significantly below global benchmarks, with substantial variation across countries. Studies indicate that logistics and supply chain bottlenecks are particularly pronounced in Sub-Saharan African countries, creating barriers to regional integration and global competitiveness (Kuteyi & Winkler, 2022). However, recent research also highlights emerging opportunities, with African markets expected to expand at more than twice the rate of developed economies, thereby creating strategic imperatives for supply chain development (Klibi et al., 2025).

The determinants of logistics performance in developing economies include both hard infrastructures, such as ports, roads, and warehousing, and soft infrastructure, including regulatory frameworks, customs procedures, and the capabilities of logistics service providers (Khadim et al., 2025). Research on humanitarian logistics in Tanzania identifies trained experts, dedicated organizations, supportive policies, financial resources, and dedicated specialized logistics service providers as critical determinants of effective logistics performance (Rutaba, 2022). These findings suggest that logistics service delivery requires coordinated development across multiple dimensions rather than isolated interventions (Rutaba, 2022).

2.3 Supply Chain Strategy and Competitive Advantage:

Supply chain strategy refers to the deliberate configuration of supply chain structures, processes, and relationships to achieve competitive advantage. Strategic supply chain management involves aligning supply chain capabilities with market requirements and organizational objectives to create value and achieve differentiation from competitors. In developing economies, competitive logistics strategies are essential for improving operational efficiency and enabling organizations to compete in increasingly globalized markets (Amin & Shahwan, 2020; Fu et al., 2022).

The relationship between supply chain practices and competitive advantage operates through multiple mechanisms. Green supply chain management practices, including green purchasing, reverse logistics, environmental collaboration with suppliers, and green manufacturing, positively influence operational performance among manufacturing SMEs in developing economies (Amin & Shahwan, 2020).

Information technology plays an enabling role in strengthening strategic supply chain capabilities. Research demonstrates that IT positively influences SMEs' strategic purchasing, logistics integration, and business performance (Chinomona, 2013). This relationship is particularly important in developing economic contexts, where technology adoption can help address traditional infrastructure and coordination challenges. Digital supply chain maturity has become a strategic necessity, enhancing logistics responsiveness, service continuity, and overall service delivery (Al Jedi et al., 2026).

The strategic importance of supply chains extends to sector-specific contexts. In the petroleum sector, strategic supply chain planning tools enable evaluation of environmental and economic trade-offs, with optimization models demonstrating potential for significant carbon emission reductions while managing cost implications (Abdussalam et al., 2023).

2.4 Supply Chain Management in the Libyan and MENA Context:

The Libyan context presents distinctive challenges and opportunities for supply chain management and logistics service delivery. Libya's strategic geographic position offers the potential to serve as a critical node in international logistics and supply chains, with its ports potentially becoming important facilitators of regional and global trade (Elferjani, 2024). However, realizing this potential requires addressing substantial performance gaps and infrastructure deficits.

Recent assessments indicate that Libya ranks last among African countries in the 2023 Logistics Performance Index, highlighting significant challenges in logistics performance. Interestingly, this poor LPI ranking does not necessarily correlate with trade volume, as Libya ranks third in trade volume with Türkiye despite its last-place LPI position (Mercan & Aydın, 2024). This disconnect suggests that logistics performance indicators may not fully capture the complexity of trade relationships and that strategic geographic and resource advantages may partially compensate for logistics deficiencies (Mackenzie & Brown, 2026).

Infrastructure constraints significantly limit supply chain effectiveness in Libya. Although Libyan ports could capitalize on the country's strategic location, substantial improvements in performance are required to realize this potential (Mackenzie & Brown, 2026). Differences between urban and rural logistics conditions further illustrate the complexity of Libya's logistics system and the broader influence of supply chain management on performance (Saboun, 2025).

Conflict and institutional fragmentation create additional challenges for supply chain management in Libya. Research on conflict-affected MENA regions demonstrates that adaptive leadership within commercial supply chains enables managers to grant operational autonomy to local teams while maintaining strategic oversight, contributing to supply chain resilience (Awashreh, 2026). This finding suggests that human capital and leadership capabilities are critical drivers of supply chain performance in challenging environments.

Sector-specific supply chain challenges in Libya include cold-chain operations for vaccine distribution, where resilience in management, service delivery, and cold-chain operations is essential (Badi & Musbah, 2026; Dutta et al., 2026). The healthcare system faces critical supply chain gaps that require priority attention. In the petroleum sector, Libya's industry provides a context for evaluating green supply chain planning and carbon-abatement strategies (Aljaat, 2025).

The broader MENA and African contexts provide important comparative insights. African logistics systems remain more vulnerable than those in North America, Europe, and Asia, despite the emergence of adaptive strategies (Opuala-Charles et al., 2026). However, strategic use of Internet applications and digital technologies can support significant development among SMEs, including improvements in supply chain management and production (Aeshah & Ahmed, 2022). The need for policy reforms addressing challenges in trade logistics, industrialization, and governance is evident across the region (Mumin & Yakubu, 2025).

Institutional capacity and service delivery challenges extend beyond logistics to encompass broader development needs. Libya faces medium- and long-term challenges related to institutional transformation, the economic impact of conflict, and its consequences for people and public services (Irhiam et al., 2023). Industrial training and human capital development emerge as critical factors, with evidence indicating that a lack of skills and experience contributes to organizational failures (Almusmari et al., 2013). These broader institutional and human capital challenges directly affect supply chain management capabilities and the effectiveness of logistics service delivery (Gómez-Cedeño et al., 2015).

3. Research Methodology

This study adopts an exploratory qualitative approach to investigate the strategic importance of supply chains in logistics service delivery from the Libyan perspective. The exploratory design is appropriate given the limited existing research on supply chain management in the Libyan context and the need to develop a comprehensive understanding of complex, context-specific challenges, and opportunities.

The research methodology is based on systematic literature synthesis and comparative analysis. Data sources include peer-reviewed journal articles, case studies from Libya and comparable contexts in the MENA region and broader Africa, and analytical reports from international organizations and research institutions. The literature search focused on supply chain management, logistics service delivery, logistics performance, and related topics in developing-economy contexts, with particular emphasis on Libya, MENA countries, and African nations facing similar challenges.

The analytical approach involves thematic synthesis of evidence across multiple sources to identify patterns, relationships, and insights relevant to the research objectives. Key themes examined include infrastructure challenges, the regulatory and institutional environment, strategic integration of supply chain practices, mechanisms of competitive advantage, and performance outcomes. Comparative analysis draws on evidence from countries with similar development profiles, including other North African nations, Sub-Saharan African countries, and developing economies in other regions.

The study synthesizes evidence from diverse methodological approaches employed in the source literature, including quantitative studies using multi-criteria decision-making frameworks (Abdussalam, 2021; Badi & Musbah, 2026). Case study research examining port performance and organizational practices (Elferjani, 2024). A Survey-based assessments of service quality and logistics performance (Miskeen et al., 2015). Optimization modeling for supply chain planning and mixed-methods research combining analytical techniques such as phone surveys and secondary data analysis (Abdussalam et al., 2023).

Notably, the limitations of this exploratory approach include reliance on existing published research, which may not fully capture recent developments or unpublished practitioner insights. The limited availability of comprehensive and recent data on Libyan supply chains constrains the depth of analysis possible for some topics. Additionally, the conflict-affected Libyan context means conditions may vary substantially across regions and time periods, limiting the generalizability of the findings. Despite these limitations, the exploratory approach provides valuable insights into the strategic importance of supply chains in logistics service delivery and identifies critical areas for future research and practical intervention.

4. Findings and Discussion

4.1 Infrastructure Challenges:

Infrastructure deficits fundamentally constrain supply chain effectiveness and logistics service delivery in Libya. The available evidence identifies several dimensions of infrastructure-related challenges that collectively hinder logistics performance and restrict the country's ability to capitalize on its strategic geographic advantages.

Port infrastructure represents a critical area of concern and opportunity. Libyan ports are recognized as important nodes … because of their strategic geographic position (Elferjani, 2024). However, their

current performance falls short of their potential to facilitate regional and global trade (Elferjani, 2024).

The gap between strategic potential and actual performance underscores the need for substantial investment in port infrastructure, alongside improvements in operational efficiency and management practices. Transportation infrastructure challenges extend beyond ports to encompass road networks, intermodal connectivity, and last-mile delivery capabilities. Research shows transportation accounts for 30.7% of air pollutant emissions in Libya, second only to the electricity industry (Nassar et al., 2017). This proportion highlights the environmental significance of transportation and may also reflect the need to examine the efficiency of logistics. Evidence concerning urban and rural logistics performance suggests that infrastructure constraints vary across Libya, with rural and peripheral areas facing particularly acute constraints (Saboun, 2025).

Cold-chain infrastructure also requires particular attention. Studies examining vaccine distribution strategies highlight the importance of resilience in cold-chain logistics, with implications extending beyond health care to food security and pharmaceutical supply chains (Badi & Musbah, 2026). Lessons from COVID-19 vaccination efforts in North African countries, including Libya, show that strengthening vaccine supply chains requires comprehensive national strategies addressing infrastructure, equipment, and operational capabilities (Dutta et al., 2026).

Libya's infrastructure challenges are not unique but are magnified compared to regional peers. Libya's last-place ranking in the African Logistics Performance Index reflects cumulative deficits across infrastructure dimensions (Mercan & Aydın, 2024). Comparative evidence from other African countries demonstrates that infrastructure quality significantly influences logistics performance, with countries investing in ports, roads, and warehousing achieving better LPI scores and trade outcomes (Eyob & Kahsai, 2019).

Digital infrastructure is an emerging dimension of supply chain infrastructure. The strategic use of Internet applications can significantly develop SMEs, including improving supply chain management (Aeshah & Ahmed, 2022). However, Libya faces challenges in digital transformation, with gaps in infrastructure expansion and service delivery (Mansour, 2026). Addressing digital infrastructure deficits is essential to enable modern supply chain practices such as real-time tracking, data analytics, and digital coordination platforms.

4.2 Regulatory Environment and Institutional Capacity:

The regulatory environment and institutional capacity significantly shape supply chain effectiveness and logistics service delivery in Libya. The available evidence indicates that regulatory fragmentation, institutional weaknesses, and governance challenges create substantial barriers to supply chain development while also highlighting opportunities for reform.

Institutional fragmentation represents a fundamental challenge. Research on Libya's institutional landscape identifies uncoordinated, unregulated, and fragmented delivery systems as factors contributing to organizational failures. This fragmentation extends to supply chain management,

where a lack of coordination among government agencies, regulatory bodies, and service providers create inefficiencies and increases transaction costs. Addressing challenges related to institutional transformation is essential for developing inclusive institutions and directly impacts supply chain operations (Irhiam et al., 2023).

Customs and border-management procedures significantly influence logistics performance. The Logistics Performance Index framework identifies customs efficiency as a critical dimension of logistics performance (Çakır, 2017). While the reviewed literature provides limited data on Libyan customs performance, comparative evidence from other developing economies indicates that customs delays, documentation requirements, and procedural complexity can substantially impede service delivery (Arvis et al., 2016). Streamlining customs procedures and strengthening border-management capabilities represent priority areas for regulatory reform.

Policy coherence and strategic planning capacity emerge as critical institutional requirements. Implementing national strategies to strengthen supply chains, as demonstrated in vaccine distribution efforts, requires coordination across multiple government agencies and alignment with broader development objectives (Dutta et al., 2026). However, Libya faces challenges in developing and implementing coherent strategies because of conflict-related disruptions and institutional fragmentation (Irhiam et al., 2023).

Human capital and organizational capacity represent essential components of institutional organizational failures in Libya, with training and development emerging as critical factors for enhancing productivity and performance (Almusmari et al., 2013). In the supply chain context, human capital contributes to supply chain resilience, with adaptive leadership enabling managers to maintain strategic oversight while granting operational autonomy to local teams (Awashreh, 2026). Comparative evidence from the broader MENA and African contexts highlights the importance of supportive policies and governance structures for logistics performance. Research on humanitarian logistics identifies supportive policies as a critical determinant of effective disaster-relief operations (Rutaba, 2022). Studies of trade openness and logistics performance in Africa indicate that political stability and governance quality significantly influence logistics efficiency (Mumin & Yakubu, 2025). These findings underscore the need for Libya to strengthen governance structures and policy frameworks to support supply chain development.

4.3 Strategic Integration and Supply Chain Practices:

Strategic integration of supply chain practices is critical to improving logistics service delivery and competitive performance. The available evidence reveals multiple dimensions of strategic integration, from inter-organizational collaboration to technology adoption, that shape supply chain effectiveness in developing-economy contexts (Mashaba & Emwanu, 2026).

Collaboration among supply chain actors represents a fundamental strategic practice. Research on national oil corporations in developing countries shows that collaboration among supply chain actors in transport and distribution represents an appropriate approach to effective supply chain management

(Kiptum et al., 2024). This finding highlights the importance of moving beyond arm's-length transactional relationships to develop collaborative partnerships that facilitate coordination, information sharing, and joint problem-solving.

Integrating logistics and marketing practices into core supply chain operations creates competitive advantages. Evidence from emerging markets demonstrates that organizations integrating logistics and marketing activities achieve higher market-share performance than those pursuing logistics-only or marketing-only approaches (Dadzie et al., 2023). This integration is more prevalent in emerging markets with higher logistics performance indices, suggesting that strategic orientation and coordination capabilities may contribute to differences in performance (Dadzie et al., 2023).

Green supply chain management practices represent an important dimension of strategic integration. Research on manufacturing SMEs in developing economies demonstrates that green purchasing, reverse logistics, environmental collaboration with suppliers, and green manufacturing positively influence operational performance (Mafini & Loury-Okoumba, 2018). Environmental collaboration with suppliers demonstrates particularly strong effects, indicating that sustainability-oriented partnerships may create value beyond traditional cost and efficiency considerations (Mafini & Loury-Okoumba, 2018).

Information technology adoption enables the development of strategic supply chain capabilities. Studies demonstrate that IT positively influences SMEs' strategic purchasing, logistics integration, and business performance (Chinomona, 2013; Egdair et al., 2015). In the Libyan context, the strategic use of Internet applications can support significant SME development, including improvements in supply chain management and production (Aeshah & Ahmed, 2022). However, realizing these benefits requires addressing digital infrastructure gaps and developing organizational capabilities for effective technology adoption and use (Egdair et al., 2017).

Digital supply chain maturity has become a strategic necessity, particularly amid disruption and uncertainty. Research indicates that digital transformation, supply chain diversification, and collaborative partnerships underpin logistics resilience. Digital capabilities enhance logistics responsiveness, service continuity, and overall service delivery, creating competitive advantages for organizations and regions that successfully implement digital supply chain strategies (Al Jedi et al., 2026).

Adaptive leadership and organizational flexibility emerge as critical strategic capabilities in conflict-affected contexts. Evidence from Libya demonstrates that adaptive leadership within commercial supply chains enables managers to grant operational autonomy to local teams while maintaining strategic oversight (Awashreh, 2026). This approach can strengthen supply chain resilience by enabling rapid responses to local conditions while preserving strategic coordination and control.

The strategic importance of supply chains extends to sector-specific contexts. In the petroleum sector, strategic supply chain planning tools enable the evaluation of environmental and economic trade-offs, and optimization models demonstrate the potential for significant reductions in carbon emissions

while managing cost implications (AlEdan & Erfani, 2023). In vaccine distribution, multi-criteria decision-making frameworks support the prioritization of resilient distribution strategies that balance multiple objectives, including coverage, cost, and service quality (Jamwal et al., 2026).

4.4 Competitive Advantage and Performance:

The relationship between supply chain strategies and competitive advantage operates through multiple mechanisms that shape organizational and national-level performance. Evidence demonstrates how supply chain capabilities create competitive differentiation and contribute to performance outcomes in developing-economy contexts.

Logistics performance is a strategic socio-economic driver that facilitates trade, enables market access, and supports industrial development (Van Rensburg, 2024). Efficient logistics systems reduce transaction costs, improve service reliability, and enhance responsiveness to customer requirements, thereby contributing to competitive advantages for organizations and regions. In the African context, improving logistics management is essential to supply chain success, and the need to develop and adopt effective competitive logistics strategies is particularly acute in developing countries (Amin & Shahwan, 2020).

The Logistics Performance Index provides a framework for understanding competitive positioning. Research demonstrates that the LPI has a positive relationship with net exports globally and specifically within Asia, Europe, and Oceania (Jayathilaka et al., 2022). However, the relationship between LPI and trade performance varies across contexts, with Libya's third-place ranking in trade volume with Turkey despite last-place LPI positioning illustrating that strategic geographic and resource advantages can partially compensate for logistics deficiencies (Mercan & Aydın, 2024).

Supply chain practices directly influence operational and overall performance. Evidence from manufacturing SMEs demonstrates that green supply chain management activities positively influence operational performance, which in turn strongly influences supply chain performance (Mafini & Loury-Okoumba, 2018). This cascading relationship highlights how strategic supply chain practices create competitive advantages through improved efficiency, quality, and responsiveness.

Strategic geographic positioning offers Libya a potential competitive advantage. The country's location offers opportunities to serve as a critical node in international logistics and supply chains, with ports that could become important facilitators of regional and global trade (Badi & Abdulshahid, 2023). Transforming southern Libya's infrastructure and logistics capabilities could enhance the region's strategic importance within national and continental development initiatives. However, realizing these geographic advantages requires addressing infrastructure deficits and institutional weaknesses that currently constrain performance (Elferjani, 2024; Ndulu, 2006).

Resilience capabilities create competitive advantages in contexts characterized by disruption and uncertainty. Research demonstrates that logistics resilience is multidimensional and underpinned by digital transformation, supply chain diversification, and collaborative partnerships (Opuala-Charles et al., 2026). African logistics systems, including those in Libya, remain more vulnerable than systems

in North America, Europe, and Asia, despite emerging adaptive strategies (Opuala-Charles et al., 2026). Building resilience through investment in digital infrastructure, diversifying supply sources and routes, and developing collaborative partnerships is an important strategic approach to enhancing competitive positioning.

The relationship between supply chain performance and broader economic outcomes underscores the strategic importance of logistics service delivery. Studies show that megatrends, including shifts in demand, disruptive technologies, cybersecurity concerns, and government policy changes, are transforming the logistics and supply chain management sector globally. Organizations and countries that successfully adapt to these megatrends through strategic supply chain investments and capability development may strengthen their competitive position in increasingly dynamic and interconnected markets (Millar, 2015; Sujatmiko et al., 2024).

4.5 Recommendations for Enhancement:

Based on the findings and analysis presented, several strategic recommendations can be identified to enhance supply chain effectiveness and logistics service delivery in Libya. These recommendations focus on infrastructure development, institutional strengthening, strategic integration, and capability building.

4.5.1 Infrastructure Investment and Development:

Priority investment in port infrastructure and operations is essential to leverage Libya's strategic geographic position. Recommended measures include modernizing port facilities, improving intermodal connectivity, and enhancing operational efficiency through technology adoption and process improvements (Elferjani, 2024). Attention should be given to cold-chain infrastructure to support vaccine distribution, food security, and pharmaceutical supply chains (Elgiurnazi & Elwani, 2026; Salim et al., 2025).

Transportation infrastructure development should address both primary networks and last-mile connectivity. Investment in road infrastructure, particularly in connecting ports with inland markets and linking urban and rural areas, could reduce logistics costs and improve service reliability (Khalil, 2024). Greater attention to environmental sustainability in transportation planning could also help address the sector's substantial contribution to air pollution while supporting improvements in operational efficiency (Bakar & Taha, 2024).

Digital infrastructure development represents a critical enabler of modern supply chain practices. Investment in broadband connectivity, data infrastructure, and digital platforms can facilitate real-time tracking, data analytics, and digital coordination capabilities, thereby enhancing supply chain visibility and responsiveness (Aeshah & Ahmed, 2022; Al Jedi et al., 2026). Public-private partnerships could mobilize resources and technical expertise for digital infrastructure development while ensuring alignment with broader digital transformation objectives (Mansour, 2026).

4.5.2 Institutional Strengthening and Regulatory Reform:

Institutional coordination and policy coherence require priority attention. Establishing clear governance structures for supply chain development, supported by coordination mechanisms across relevant government agencies, could help address institutional fragmentation and facilitate coherent strategy implementation (Irhiam et al., 2023). A national logistics strategy aligned with broader economic development objectives could provide a framework for coordinated investment and reform efforts.

Customs and border-management reform should focus on streamlining procedures, reducing documentation requirements, and enhancing transparency. Adopting the best international practices, including risk-based inspection approaches and single-window systems, could improve customs efficiency while maintaining security and compliance objectives (Amin & Shahwan, 2020). Investment in customs infrastructure and staff training would strengthen the capacity to implement reformed procedures effectively.

Regulatory frameworks for specific sectors require attention to support supply chain development. In the petroleum sector, clear environmental regulations and carbon-pricing mechanisms can guide green supply chain planning and investment decisions (Abdussalam et al., 2023). In healthcare, regulatory frameworks for cold-chain management and pharmaceutical distribution should ensure quality and safety while supporting efficient supply chain operations (Badi & Musbah, 2026; Dutta et al., 2026).

4.5.3 Human Capital Development:

Human capital development represents a critical priority across multiple dimensions. Training programs should address supply chain management competencies, including strategic planning, operations management, technology utilization, and collaborative relationship management (Almusmari et al., 2013). Leadership development programs should emphasize adaptive leadership capabilities that enable effective management in uncertain and rapidly changing environments (Awashreh, 2026; Sott & Bender, 2025).

Partnerships with international organizations, academic institutions, and private-sector organizations can provide access to expertise, training resources, and best practices. Exchange programs and study tours can expose Libyan supply chain professionals to successful practices in other contexts while building networks for ongoing knowledge sharing and collaboration.

4.5.4 Strategic Integration and Collaboration:

Promoting collaboration among supply chain actors should be a strategic priority. Initiatives designed to facilitate information sharing, joint planning, and coordinated operations among suppliers, logistics service providers, and customers can enhance supply chain effectiveness (Kiptum et al., 2024). Industry associations and public-private dialogue mechanisms can provide platforms for collaboration and collective problem-solving.

Integration of logistics and marketing practices into core supply chain operations can enhance competitive performance. Organizations should adopt integrated approaches that align supply chain capabilities with market requirements and customer expectations (Dadzie et al., 2023). Supporting SMEs in developing strategic supply chain capabilities, including technology adoption and collaborative partnerships, can enhance their competitiveness and contribution to economic development (Chinomona, 2013).

Green supply chain management practices should be promoted as potential sources of competitive advantage and sustainability. Encouraging green purchasing, reverse logistics, environmental collaboration with suppliers, and green manufacturing can improve operational performance while addressing environmental challenges (Mafini & Loury-Okoumba, 2018). Policy incentives and technical assistance can support the adoption of green supply chain practices, particularly among SMEs.

4.5.5 Resilience Building:

Building supply chain resilience requires attention to multiple dimensions. Digital transformation initiatives should prioritize technologies that enhance visibility, flexibility, and responsiveness in supply chain operations (Opuala-Charles et al., 2026). Supply chain diversification strategies, including the development of alternative supply sources and routes, can reduce vulnerability to disruptions (Opuala-Charles et al., 2026). Collaborative partnerships among supply chain actors, supported by information sharing and joint contingency planning, can enhance collective resilience capabilities (Opuala-Charles et al., 2026).

Organizations should develop scenario risk-management capabilities to proactively identify and mitigate supply chain risks. Investment in monitoring and early-warning systems can provide timely information about potential disruptions, enabling rapid response and adaptation (Awashreh, 2026).

5. Conclusion

This exploratory study examined the strategic importance of supply chains in logistics service delivery from the Libyan perspective by synthesizing evidence from academic literature, case studies, and comparative analyses across the MENA region and the broader African context. The findings indicate that supply chain management plays a critical strategic role in shaping logistics performance, competitive advantage, and economic development outcomes in developing economies characterized by infrastructure deficits, institutional weaknesses, and operational challenges.

The Libyan context presents both significant challenges and strategic opportunities for supply chain development. Infrastructure deficits, particularly in port operations, transportation networks, and cold-chain capabilities, constrain logistics performance and limit the country's ability to leverage its strategic geographic position. Regulatory fragmentation, institutional weaknesses, and governance challenges create additional barriers to supply chain effectiveness. The conflict-affected Libyan

environment further amplifies these challenges while highlighting the importance of resilience and adaptive leadership.

Despite these challenges, Libya has strategic advantages that it could leverage through effective supply chain development. The country's geographic position offers potential to serve as a critical node in regional and global logistics networks. Natural resource endowments, particularly in the petroleum sector, provide an economic foundation for investment in supply chain infrastructure and capabilities. Emerging opportunities in digital transformation, green supply chain practices, and collaborative partnerships provide potential pathways for strengthening competitive positioning.

The findings indicate that strategically integrating supply chain practices can create competitive advantages through multiple mechanisms. Collaboration among supply chain actors enhances coordination and efficiency. Integrating logistics and marketing practices can improve market responsiveness and performance. Green supply chain management activities can generate operational improvements while addressing environmental challenges. Adopting information technology enables strategic capabilities such as real-time visibility, data analytics, and digital coordination. Adaptive leadership and organizational flexibility can further support resilience in uncertain and rapidly changing environments.

Recommendations for enhancing supply chain effectiveness and logistics service delivery emphasize coordinated action across multiple dimensions. Infrastructure investment should prioritize port modernization, transportation network development, and digital infrastructure expansion. Institutional strengthening should address regulatory reform, policy coherence, and governance capacity. Human capital development should build supply chain management competencies and adaptive leadership capabilities. Strategic integration initiatives should promote collaboration, technology adoption, and green supply chain practices. Resilience-building should focus on digital transformation, supply chain diversification, and collaborative partnerships.

This study contributes to the limited body of research on supply chain management in conflict-affected developing economies by providing a comprehensive analysis of challenges, opportunities, and strategic priorities in the Libyan context. The findings indicate that supply chain development requires holistic approaches that address infrastructure, institutions, human capital, and strategic practices rather than relying on isolated interventions. Comparative evidence from the MENA region and broader Africa provides insights into common challenges and potentially transferable practices that can inform policy and practice in Libya.

Future research should address several important gaps identified in this study. Empirical research examining specific supply chain practices and performance outcomes in Libyan organizations and sectors would provide deeper insights into effective strategies and implementation challenges. Longitudinal studies tracking supply chain development over time could examine how infrastructure investments, institutional reforms, and capability-building initiatives influence logistics performance and competitive outcomes.

Comparative case studies examining successful supply chain transformation in similar contexts could identify transferable lessons and best practices. Research on emerging technologies and their applications in Libyan supply chains could further inform digital transformation initiatives and technology adoption strategies.

The strategic importance of supply chains in logistics service delivery extends beyond operational efficiency to encompass broader economic development, social welfare, and national competitiveness objectives. For Libya, effective supply chain development represents a potential pathway for economic recovery, institutional strengthening, and integration into regional and global markets. Realizing this potential requires sustained commitment from government, the private sector, and international partners to address infrastructure deficits, strengthen institutions, build human capital, and promote strategic integration of supply chain practices. The evidence and recommendations in this study provide a foundation for these efforts and may contribute to improved supply chain effectiveness and logistics service delivery in Libya and similar contexts.

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