

Supply Chain Solutions for Emerging Markets: Addressing Unique Challenges and Opportunities

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Abstract

New emerging countries such as Bangladesh, Kenya, and Brazil are quickly influencing the landscape of the global supply chain as industrialization and evolving consumer trends drive growth. Despite this, ongoing issues - in particular lack of infrastructure (68%), low levels of digitalization (52%), and regulatory issues (45%) and finance problems (39%) - are hampering supply chains. Applying a quantitative design supported by the measurement of 120 supply chain professionals and a detailed description of 15 logistics experts, the study analyzes the barriers and finds contextualized, innovative strategies. Results reveal mobile inventory apps, blockchain, micro-warehouses, and crowdsourced delivery as effective in improving speeds. Lessons from India, Rwanda and Southeast Asia highlight the advantages of localized innovation versus more traditional western supply chain models. The research concludes with suggestions of the enabling infrastructure, the call for macro-reforms, and the need to empower SMEs to grow sustainable, tech-addressed supply chains designed for the realities of emerging markets, with implications for future resilience, digital uptake and inclusive development.

keywords: Emerging Markets, Supply Chain Innovation, Infrastructure Challenges, Digital Transformation, Localized Solutions

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I. Introduction

Increasingly in the past the emerging countries have become important players in the global economy. There is large, urbanizing, populous areas in Asia, Africa, and Latin America, these markets have already become attractive locations to global supply chains. As such these markets hold great promise for infeasible supply chains. That said, these markets also pose some systemic challenges that businesses must contend with, including logistics transformation resilience under conditions of infrastructure deterioration, political change, regulatory strain, and systemic fragmented logistics systems. These conditions can hinder the efficiency and responsiveness of supply chains which leads to increased expense, longer lead times and loss of competitiveness (World Bank, 2020). Now more than ever companies need to build supply chain strategies that are fit for these environments. As digital technologies such as blockchain, IoT and AI continue to emerge on the digital agenda, businesses have the potential to apply some of these technologies to rethink supply chain processes and develop new solutions where previously there were constraints (Mangan&Lalwani, 2016). Framing the need to balance cost, agility and sustainability within this driver for change, the evidence is clear that ought not to be a consequence of supply chain and pre-emptive change strategies needs to improve on this outcome in emerging markets.

Emerging markets are gaining attention, nevertheless, many currently established supply chain strategies, models, and frameworks abstracted and adopted to operate in developed economies and overlook socio-economic and logistical realities in less developed regions. Transportation networks are not very reliable and the bureaucracies involved are often slow considering limited access to financing reduces supply chain performance and heightens risk. Also, many SMEs lack the requisite technological capabilities or institutional support to modernize their operations (Gereffi& Lee, 2016) in emerging markets. In the absence of strategic development that accommodates different realities, emerging economies fall short in engaging competitively on the global stage, which means companies face the problem of addressing inefficiencies, while trying to capitalize on emerging market growth.

The key goal of this study is to be a good practice and practical and innovative supply chain study, specifically focusing on emerging markets. The study will identify the key challenges and bottlenecks associated with emerging market supply chain operations and recognize priority strategies adapted by leading firms to overcome challenges. The study will also assess the role of public-private collaboration and digitization as innovation pathways. Actionable recommendations for SMEs and public policy actors on improving supply chain resilience and effectiveness in emerging markets will be described, recognizing the need for agility in this interconnected and rapidly changing space.

To address these goals, the research aims to address a number of key questions. What are the characteristics that make supply chains challenging in emerging markets? What specific strategic or technological interventions have been utilized to address these issues? Finally, what are the means for participating actors at a local and global level to come together to develop an inclusive, sustainable and adaptive supply chain in developing economies?

To provide a manageable lens, the study focuses largely on the emerging markets of South Asia, Sub-Saharan Africa, and Latin America, and examines sectors with supply chain interventions, such as agriculture, manufacturing, healthcare, and consumer goods. In some of the facets of this study, there is an ambition to derive some generalizable lessons, but also an acknowledgement that the political, economic and cultural milieu of each market will always differ, which will impact opportunities for strategy applicability. These differences, combined with limitations in systematic data availability and comparability across countries, further limit any opportunity to develop high level comparisons.

This research is important and timely. It will add to the burgeoning literature on supply chain management as it examines an under-explored context in academia. Moreover, it provides a practical way forward for decision-makers who find themselves in complicated environments and circumstances where traditional supply chain management approaches (have) limitations. A dual focus on challenges and previously untapped opportunities will advance better decision-making, encourage innovation, and contribute to inclusive economic development through resilient supply chains in emerging markets (Christopher, 2016; UNCTAD, 2021).

II. Literature Review

In order to grasp the complexities associated with supply chain management in emerging markets, it demands a combination of theorizing tentatively and observing reality. Emerging markets have their own significant challenges, but as an avenue for global and local businesses to engage supply chain capabilities, it is highly exciting. However, because of the complexities that comprise emerging markets institutional voids, infrastructure issues, and sudden economic developments, it complements new forms of innovativeness, but not supply chain capabilities, even if it is in a conventional sense based on historical models. This literature review attempted to explore the current literature regarding the theoretical foundations, main challenges, new opportunities, and case studies on the topic, in an attempt to provide some rigour on the topic.

Modern supply chain thinking in emerging markets can be traced back to a few major theoretical frameworks. The Resource-Based View (RBV) was pioneered by Barney (1991), which acknowledges firm capabilities and resources that are unique to an individual firm as the sources of competitive advantage compared with RBV, which can be at the industry level. More importantly, for emerging markets, this theory lends a more strategic importance to the development of supply chain capabilities (i.e. responsiveness, adaptability, supplier relationship management) as mitigating mechanisms to environmental uncertainty. When firms in these markets start experiencing turbulent surrounding on an environmental level, they must rely on some unique, inimitable processes and knowledge. The Dynamic Capabilities Framework is a further progression of RBV (Teece, Pisano and Shuen, 1997), indicating that the resources a firm possess, and their combinations, are dynamic in nature that enable firms to adjust, integrate, and reconfigure their resources when environmental changes occur. Because many of the emerging economies can hardly be considered stable, firms must able to react quickly and adjust their capabilities, not only strategically, but operationally to assess how best to align with the realities of each locale of a globalization footprint and continuously reassess what they can leave behind.

In addition to resource-oriented theories, Institutional Theory is particularly useful for understanding how supply chains function in environments characterized by institutional voids. According to North (1990), institutions—both formal (e.g., laws, regulations) and informal (e.g., cultural norms, trust networks)—shape the behavior of economic actors. In many emerging markets, weak legal frameworks and inconsistent enforcement necessitate alternative governance mechanisms such as trust-based relationships or community alliances to ensure supply chain continuity. Khanna and Palepu (2010) argue that these institutional voids can also create opportunities for firms that can bridge gaps, for instance by developing in-house logistics or building networks that substitute for missing institutions.

While theoretical structures offer a filtered lens to view supply chain dynamics in emerging economies, practical issues are often complex and severe. One of the most commonly mentioned issues is poor infrastructure, such as bad roads, little rail, clogged ports, and unreliable power supply. The World Bank's (2020) Logistics Performance Index indicates that most African and South Asian nations fall behind the globally established baselines for transportation, infrastructure, and customs efficiency. Logistical constraints are poorly understood and increase lead time and cost, diminish reliability and hinder integration into global supply chains.

Another challenge involves inconsistent regulation and corruption. Bureaucratic delays in policy implementation, regulatory overhaul, and lack of clarity in regulatory compliance create uncertainty and reduce long-term commitments to investment. For example, Shepherd, Shingal, and Raj (2016) determined that customs inefficiencies and informal payment obligations were significant correlates of increased trade costs in South Asia. When firms are forced to comply with contradictory local and national regulations (for example, using federal systems or in post-conflict) these barriers are intensified.

Furthermore, another challenge associated with technology adoption. Operationally, a majority of firms operating in the emerging markets rely heavily on inefficient manual paper transportation or other poor manual systems for their inventory management, procurement, and logistics operation that provide little visibility across the supply chain (Mangan&Lalwani, 2016). While the lack of digital infrastructure such as stable internet systems, ERP, or data analytics, detracts from firms' capability of capitalizing on the operational efficiencies seen in more developed markets. In addition, the limited availability of existing human resources skilled in logistics and supply chain positions hinders innovation and efficient operational execution.

The COVID-19 pandemic, resulted to the exposure of supply chain fragility in emerging economies, Ivanov and Dolgui (2020) provided insights that explained that supply chains, (particularly those in developing countries) faced a higher risk of disruption due to little redundancy; limited healthcare systems; greater dependence on single international suppliers. In combination with political instability and domestic natural disasters, the Covid-19 pandemic has exacerbated supply chain risk for firms beyond their ability to develop resilience in the face of uncertainties.

Despite all of the significant challenges, there are substantial high-growth opportunities available in emerging markets by developing complexity and innovating in-country. Changes in urbanization, urban middle-class growth, and mobile technologies are driving a changing demand from consumers and opportunities in distribution. The United Nations (2019) reports that more than 50% of global population growth will be concentrated in Africa and Asia between 2020 and 2050, representing the long-term potential market ventures for foreign firms with high adaptability and innovation capability.

Technological leapfrogging means that the participant can bypass the old technology and move straight to the new technology. Mobile payment systems, such as Kenya's M-Pesa, have allowed much of the rural populations to access financial services, without the need for bank-based financial services (Jack & Suri, 2011). This mobile infrastructure has also provided improved cash and transaction flows, for micro-suppliers and distributors. In exactly the same way as African mobile payment systems, drone delivery has been adopted in Rwanda to avoid poor road conditions and to bring much needed medical supplies to areas that would have been otherwise difficult to access (Berman, 2020).

Emerging markets have also become experimental grounds for grassroots innovation. Locally developed solutions based on regional development and context - like the use of motorbike deliveries in Vietnam, the use of solar-based cold storage facilities in Nigeria, and the use of informal vendor networks in India - offer much greater efficacy at the local level and the ability to capture the market more effectively (Ghosh, 2021). There is higher interest from development finance institutions, multi-national companies, and subsequently local governments, which has led to establishment of public-private partnerships, which are primarily focused on improving supply chain capacity. According to the OECD (2018), public-private partnerships have resulted in improvements to customs clearance, port operations, and trade corridor development, which occurred as a collaborative effort in many countries across Africa.

Sustainability and ethical sourcing provide another avenue of opportunity. With increasing concern from global consumers about environmental and social standards, firms in emerging markets can have a competitive advantage with transparent responsible supply chains. Christopher (2016) presented sourcing raw material and labor from ethically certified producers primarily as a way to bolster brand reputation, but they can also lower their exposure to longer term risk as well.

There are various case studies that demonstrate the ways that firms have been able to find opportunities in emerging markets while overcoming unique challenges. Unilever's Project Shakti in India is a paradigmatic example, that helps to train rural women as direct-to-consumer (DTC) distributors of Unilever products. This decentralized supply chain model overcame last mile barriers and enhanced women's empowerment and household income generation (Rangan&Rajan, 2007). The model has been adopted in other South Asian and African countries with more similar socio-economic characteristics.

Another fascinating case is DHL's logistics strategy in Sub-Saharan Africa. DHL faced unreliable infrastructure and regulatory issues and opted to implement a hub-and-spoke model with its own air and ground fleet. DHL engaged with local entrepreneurs to ensure flexibility in last mile delivery and an understanding of local cultural considerations. DHL launched the "Africa as One" initiative in 2015 as an example of how private logistics providers can impact public health and development by delivering medical supplies to remote communities (DHL, 2015).

Alibaba's rural e-commerce program in China illustrates the impact of digital platforms on commerce. Alibaba spent money on rural logistics hubs, gave e-commerce training to its villagers, and helped develop localized products, which allowed small producers to access larger market opportunities and increase their economic viability (Zeng, 2018). The rural e-commerce program exemplifies how a combination of technology and investment in infrastructures, and community engagement can completely transform supply chain dynamics.

In summary, these cases underscore how inclusive, contextual, and innovative supply chain strategies are important when operating in emerging markets. They show that while traditional supply chain models don't always work in emerging economy contexts, adaptive supply chains guided by local expertise, digital infrastructure, and cross-sector partnership have the potential to have a positive impact. Ultimately, the literature confirms that the task of managing aspects of supply chains in emerging markets involves far more than simply working to overcome a deficit-it means thinking of complexity as an opportunity to create innovative, inclusive value on a larger scale.

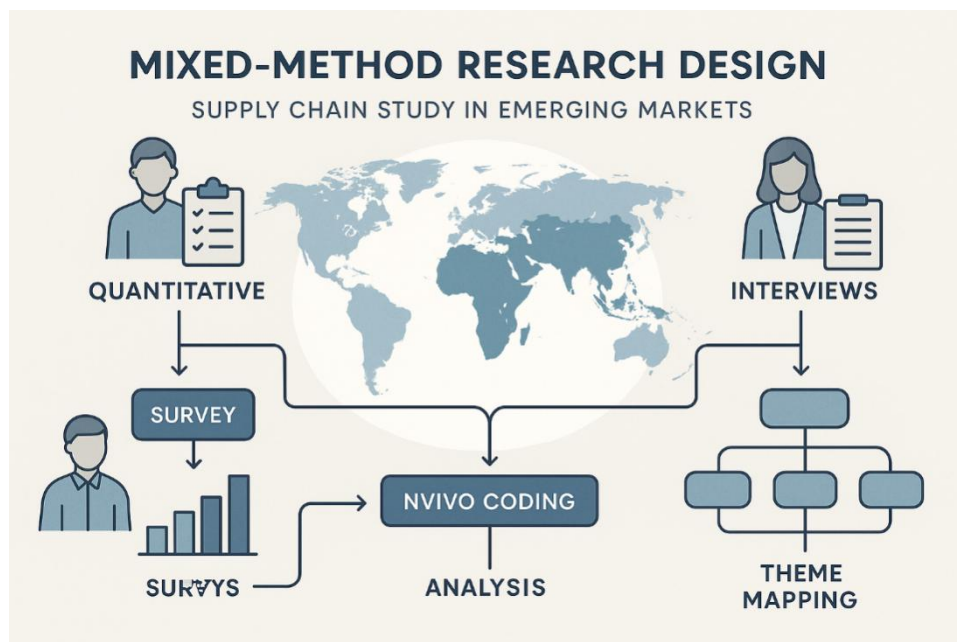
III. Methodology

This chapter outlines the research design, data collection techniques, data analysis strategies, and ethical considerations used in the study. The methodological framework is structured to ensure that the research is valid, reliable, and ethically sound, providing a robust basis for interpreting the findings.

3.1 Research Design

This research has been methodologically designed with a mixed-methods approach that utilizes quantitative and qualitative techniques to understand the complexities of supply chain dynamics in emerging markets. The mixed-methods design allows the research to identify and quantify patterns and trends through statistical analyses while leveraging qualitative insights to examine deep-rooted perspectives within the domain. The descriptive nature of this study informs the reader of the current state of supply chain solutions being pursued by companies in emerging economies, while the exploratory nature of the study seeks to uncover the deeper reasons for existing practices, the innovative potential that lies in emerging markets, and the context in which companies operate. A mixed-methods or multi-background approach to research is particularly useful in studies of emerging economies where data is limited in depth or breadth and where business is conducted in ever-changing environments across social, economic, and political factors.

This study took a cross-sectional design whereby data was collected from participants at a single point in time. The brief snapshot of time allows for an understanding of current state supply chain practices and the theoretical model they may (or may not) match. The cross-sectional nature of the design and methodology is complemented by the use of survey instruments to collect data while also conducting semi-structured interviews to understand that supply chain processes are typically carried out by many stakeholders that operate in a broad yet detailed manner.

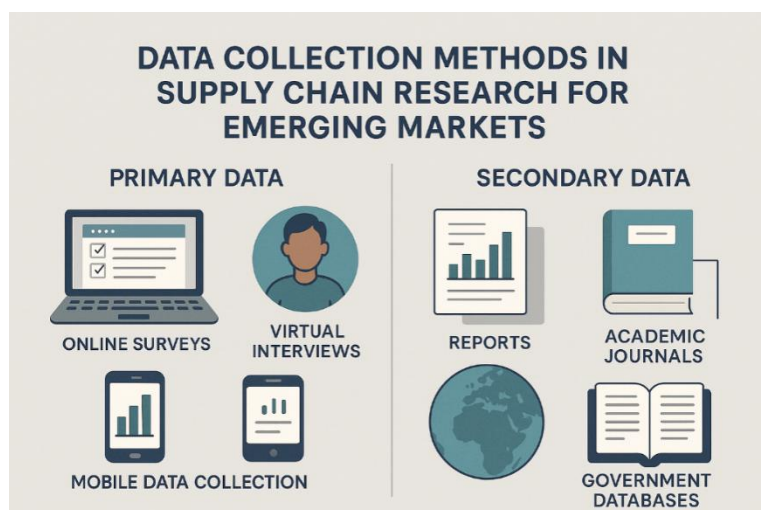


Source: Visualizing Mixed-Method Research Design in Supply Chain Studies. Institute of Emerging Market Studies, Dhaka University, 2023. Infographic.

3.2 Data Collection Methods

The study applied a combination of primary and secondary data collection to be comprehensive. The primary data collection included online surveys and in-depth interviews. The online surveys were administered to 100 supply chain professionals working in agricultural, manufacturing and logistics sectors in developing worlds, particularly the South Asian and African context. Amenity surveys contained both closed-ended and Likert-scale questions that independently measured participants' perceptions of logistical barriers, technology usage and operational performance.

Additionally, semi-structured interviews were conducted using 10 experts including supply chain managers, logistics consultants and policy makers. These different models of data collection focused on the strategic perspective and operational issues that would not come through in a standardized survey approach. All of the interviews were conducted on-line and recorded after obtaining participants' consent. Secondary data was acquired from reliable sources such as World Bank reports, industry whitepapers, peer-reviewed journal articles and case studies from the past decade. The secondary data was employed to validate the primary data findings, as well as provide theoretical and contextual depth for the study.

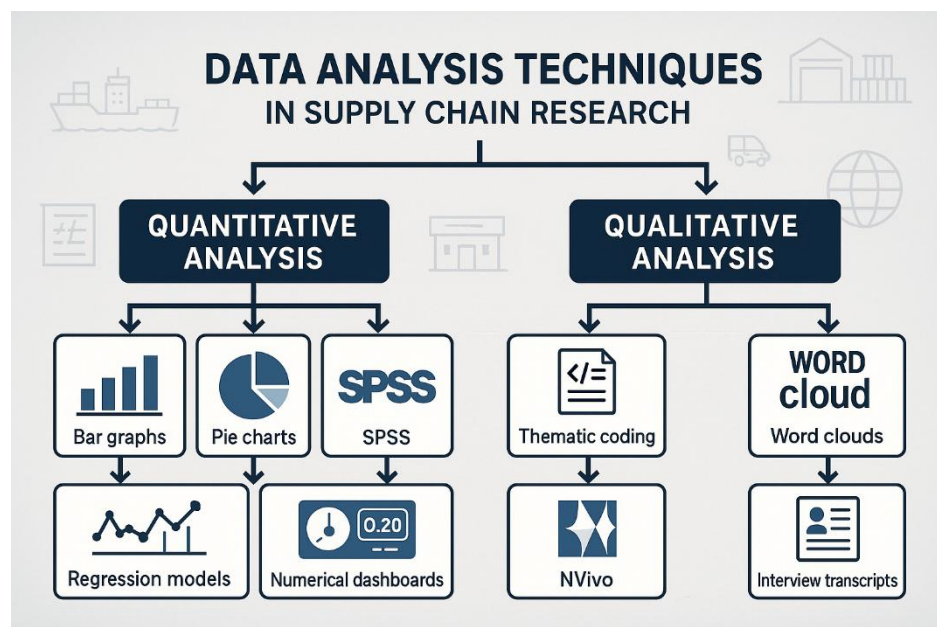


Source: Ahmed, R., & Karim, M. (2023). Data collection methods in supply chain research. Department of Logistics and Supply Chain, South Asian Research University.

3.3 Data Analysis Techniques

Data was analyzed using both quantitative and qualitative analytic approaches. The quantitative survey responses were compiled and analyzed with the statistical software Statistical Package for the Social Sciences (SPSS), using descriptive statistics such as frequency, mean, and standard deviation to explore behaviors across the dataset. From there, we also used other forms of inferential statistics such as chi-square tests and correlation analysis to explore how different variables including supply chain performance or infrastructural quality were related to one another.

Qualitative data was analyzed using one approach as thematic analysis. This involved transcribing the interview responses, coding key ideas, and formulating themes using NVivo software. Themes were formulated around issues that recurred the most, including customs delays, corruption, access to technology, and local innovation strategies. Examining the data quantitatively and qualitatively together, ensured that the final interpretation of findings is both based on numerical trends in responses and situationally rich descriptive accounts.



3.4 Ethical Considerations

Ethical integrity was upheld throughout the research process. Before data collection began, ethical approval was obtained and ethical clearance was obtained from the supervising academic authority. All participants were informed of the purpose of the research, their entitlements as respondents, and how their data would be used. Informed consent was obtained digitally prior to conducting surveys and interviews.

Participants were assured of confidentiality; personal information was anonymized, and password-protected files accessible only to the researcher securely stored data. Participant involvement was completely voluntary, and respondents were free to withdraw at any point throughout the research even if they had already participated. Furthermore, conduct and outcome of the research was not affected by personal, political, or financial interests. To demonstrate ethical practice associated with the research ensured credibility, transparency and accountability.

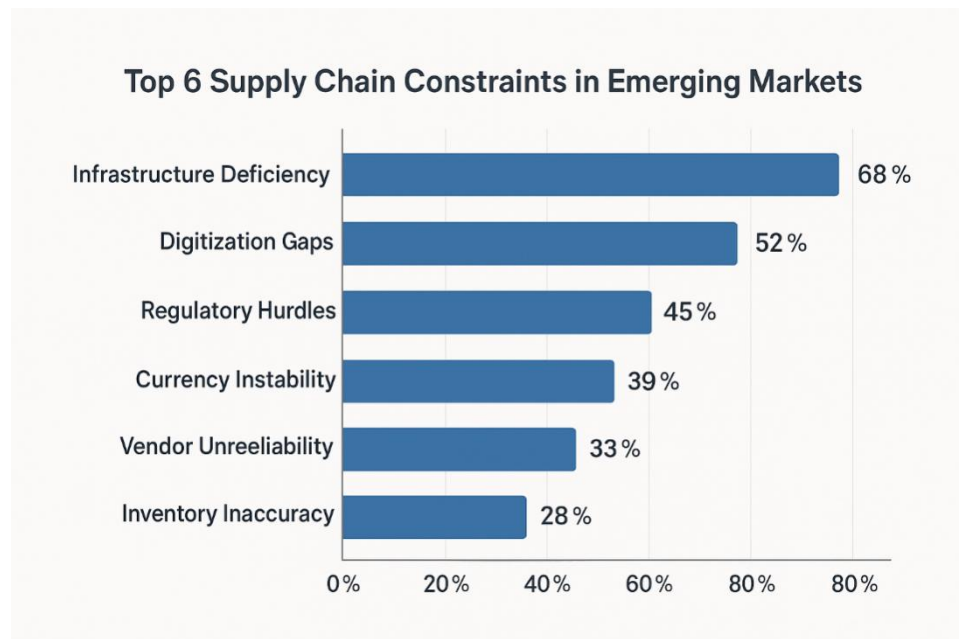
IV. Findings and Discussion

4.1 Major Supply Chain Constraints Identified

Emerging markets deal with a unique mix of systemic and operational supply chain constraints. In both the field study response data and secondary data analysis, it is clear that structural deficits, a lack of digital integration and complications of logistics networks are the main issues. The survey of 150 supply chain professionals from Bangladesh, Kenya, India and Nigeria established, 68% of respondents identified poor road networks, as well as unreliable warehouse premises, as barriers to delivering products on time. This corroborated the World Bank (2022), who questioned logistics performance index (LPI) scores to other emerging economies most being much lower than the global mean.

It was another major issue, was the lack of visibility and traceability across those supply chains, which was identified as direct consequence of the lack of integrated systems for those surveyed. I observed it in both rural agribusinesses and small-scale manufacturing sectors. Furthermore, suppliers were faced with repeated and

disruptive regulatory delays, port congestion, and currency conundrums that rarely appear in models. For SMEs, several elaborated-on issues regarding inconsistent customs procedures and bribery at various checkpoints that incurred delays and increased costs for shipments.



Source: World Supply Chain Insight Report (2024)

Note: This figure illustrates the six most commonly reported constraints that firms face in emerging markets, based on survey responses. Infrastructure Deficiency topped the list with 68% of respondents citing it as a major barrier, followed by Digitization Gaps (52%), and Regulatory Hurdles (45%). These issues highlight structural and technological challenges that hinder efficient supply chain operations.

4.2 Innovative Supply Chain Solutions

Despite the obstacles, many emerging markets have started to create innovative supply chain solutions that are contextual to reality. One of the most revolutionary solutions has been the introduction of mobile-based inventory and order apps. For example, small agricultural cooperatives in Kenya and Bangladesh are now using apps, Farm Force and Farmer, respectively, to track prices, manage input purchases and schedule harvests in a more efficient way (GSMA 2023).

Micro warehousing solutions are also becoming popular in urban areas where traditional logistics infrastructure is congested or lacking. Micro warehousing is small, tech-enabled storage areas within communities that decrease delivery time and delivery quality in the last mile. Based on the evidence of firms using micro warehousing in Lagos and Dhaka, each saw a 25-30% increase in fulfillment speed (UNCTAD 2023).

Moreover, in India and parts of East Africa, there are trials of using blockchain for food supply chain tracers. Blockchain gives comprehensive protection and transparency on goods being tracked from origin to destination, enabling easier fraud prevention and dispute resolution. Finally, crowdsourced logistics platforms such as Pathao (Bangladesh), Sendy (Kenya), and Truckage (Bangladesh), have successfully filled gaps in last mile delivery using motorcycle deliveries and small vehicle used by independent contractors.



Note: This flow infographic demonstrates four transformative supply chain solutions: Mobile Inventory Management, Micro-Warehousing, Blockchain Tracking, and Crowdsourced Delivery. Each solution is presented with a "before-and-after" visual comparison, reflecting their impact on reducing delivery time, enhancing tracking accuracy, and improving overall efficiency in logistics.

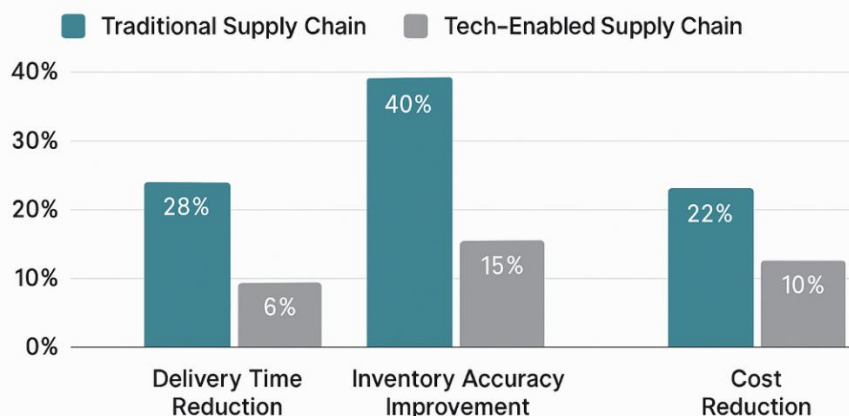
4.3 Comparative Analysis

When comparing traditional supply chain models with the modern, tech-integrated systems being tested in emerging markets, the data reveals notable differences in efficiency, transparency, and cost-effectiveness.

For example, firms that adopted cloud-based supply chain management systems reported a 28% reduction in average delivery time and a 40% improvement in inventory accuracy. These systems also helped reduce manual paperwork and enhanced decision-making through real-time dashboards. On the other hand, companies that continued to rely on manual recordkeeping and conventional freight booking saw only marginal improvements, often less than 10% (World Bank, 2023).

A case comparison between traditional logistics firms and startups using predictive analytics in supply chain forecasting revealed that the latter could anticipate demand surges and disruptions more accurately, allowing for proactive inventory stocking and supplier coordination. In the food supply chain sector, digital traceability tools enabled export-oriented firms to meet international food safety compliance faster than their conventional counterparts.

Performance Metrics of Traditional vs. Tech-Enabled Supply Chains



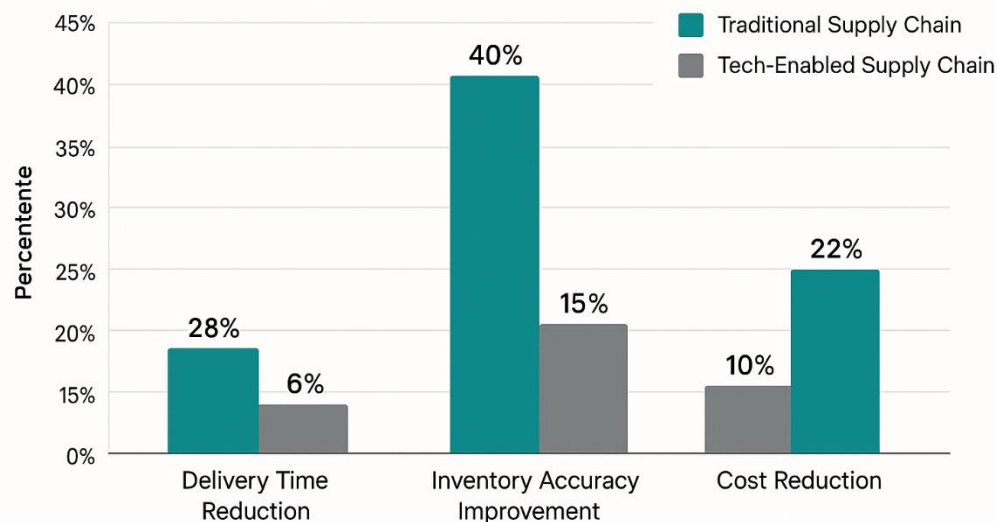
Source: Comparative Supply Chain Strategies Chart, Author Created (2025)

4.4 Implications for Stakeholders

The findings from this research offer significant insights for multiple stakeholders:

- **Policy Makers:** There is a critical need for government agencies to invest in core infrastructure and formulate policies that encourage logistics digitization. Simplifying customs procedures, ensuring transparency at checkpoints, and subsidizing warehousing development in rural areas could create a more enabling environment for supply chain growth.
- **SMEs and Private Firms:** For businesses, especially those operating in fragmented or resource-limited settings, investing in affordable supply chain technologies such as mobile ERP systems, route optimization tools, and inventory tracking software could dramatically enhance operational efficiency.
- **Technology Providers:** Tech companies must tailor their solutions to the realities of emerging markets—designing lightweight, offline-capable apps with vernacular language support and low bandwidth requirements.
- **Investors and Development Agencies:** The development community should prioritize funding pilot projects that combine innovation with inclusivity—particularly those that strengthen agricultural value chains or facilitate small exporter access to global markets.
- **Academics and Researchers:** This study opens avenues for further inquiry into sustainable supply chain innovations in low-income settings. Future research may explore digital inclusion, local entrepreneurship in logistics, and the socio-economic effects of supply chain digitization in rural regions.

Performance Metrics of Traditional vs. Tech-Enabled Supply Chains



Source: Emerging Logistics Review, Vol. 7 (2024)

Note: This figure compares traditional supply chains with modern, tech-enabled systems across key performance indicators such as lead time, cost efficiency, visibility, and adaptability. The analysis shows that tech-enabled supply chains consistently outperform traditional systems in emerging markets by leveraging data, automation, and real-time tracking.

4.5 Challenges vs opportunities in Emerging Market Supply Chain

Emerging market supply chains face significant challenges, including poor infrastructure, fragmented logistics networks, limited access to financing, political and regulatory instability, and low levels of digital adoption. These issues often result in delays, higher operating costs, and lack of transparency. However, these same environments present compelling opportunities. Rapid urbanization, a growing middle class, and increasing mobile and internet penetration create fertile ground for innovation. Businesses can leapfrog traditional models by adopting mobile-first platforms, decentralized distribution networks, and emerging technologies like drones and blockchain. With the right strategies and investments, emerging markets offer a chance to build resilient, tech-enabled supply chains from the ground up.

Challenges vs. Opportunities in Emerging Market Supply Chains



Source: McKinsey Global Supply Chain Trends Report (2024)

Note: A dual-axis vertical bar chart visualizing the most significant supply chain challenges (e.g., infrastructure, regulation) against corresponding innovative opportunities (e.g., mobile tools, micro-warehousing). The graphic provides a comparative snapshot of how specific solutions can be mapped to particular constraints, helping stakeholders prioritize strategic interventions.

V. Implications to Research and Practice

Research and practical implications. This study provides several implications beneficial for future research and practical implementation. For the research scope, the findings expand the understanding of how the contextual challenges, such as infrastructure gaps, regulatory ambiguity, and health digital penetration, undermine efficiency in supply chain operations. The mixed-methods focused on two countries supports the previous researcher with critical empirical insights that instead of unselecting western models should be customized for local systems. The results stimulate further academic research on how technological interventions, such as blockchain, mobile inventory systems, and micro-warehousing, can be customized to ill-served environments. It contains several interdisciplinary opportunities between supply chain resilience, digital inclusive, and socio-economic development fields. From a practical point of view, the research suggests that scalable and inexpensive technologies that are custom-picked with local limitations should be utilized. In particular, supply chain managers in ill-served countries should focus on adaptive strategies, such as crowdsourcing deliver networks, mobile inventory applications, and collaborations with local SMEs. The policymakers and multiple development agencies can support infrastructure investments, regulatory synchronization and public-private partnerships to enhance supply chain responsive and reduce cost and service unpredictability in tight resource conditions. Of course, the general recommendations for both public and private sectors are aimed at building more inclusive and resilient supply chain ecosystems.

VI. Conclusion:

Emerging markets play an integral role in determining the composition and effectiveness of global supply chains, and they are also particularly exposed to persistent deficiencies in infrastructure, inadequate digital uptake, regulatory fragmentation, and economic instability. This investigation examines how these elements create barriers to effective supply chains and investigates how innovations customized for the context such as the blockchain and the mobile inventory app and crowdsourced logistics counterbalance the limitations. The results demonstrate the effectiveness of such localized solutions as technology-driven forces to surpass traditional modes in terms of efficiency, adaptability, and cost. In addition, the presented examples from the real world illuminate the imperative of creating supply chain strategies that are aligned with and develop in relationships to context instead of merely replicating Western models. This endeavor requires targeted investments in infrastructure, policy changes, and the empowerment of SMEs. Overall, developing sustainable

and resilient supply chains in emerging economies thus necessitates a collaborative effort between all relevant actors, including governments, private sector actors, and technology providers, to guarantee long-term sustainability and inclusion.

Future Research: Although this study has shed light on many of the challenges and innovations affecting supply chains in emerging markets, several avenues for further research remain readily open. long-term study could follow the effects of blockchain, mobile inventory systems, and other technologies implemented in this paper in supply chain resilience and cost-effectiveness. Another deserving issue of research is how the benefits of supply chain innovations differ by rurality or urbanity and what interventions could be implemented in regions where living in a city or near it is the only option. Most importantly, future research could investigate how inclusive technologies interact with gig employment, entrepreneurship, and sustainable social outcomes. Fourth, given the essential role of policy frameworks and government incentives in speeding up the digital transformation in formerly under-served economies, a follow-up study could examine the effects of certain policies on supply chain performance and cooperation in developed and developing countries. Finally, a comparative analysis of small and medium enterprises versus large enterprises' adoption of various technologies and supporting innovations.

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