Operational Challenges and Efficiency Improvement in Cross-Border logistics for Indian SMEs

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Abstract

Small and Medium Enterprises (SMEs) are vital to the Indian economic growth pattern. These enterprises are crucial to employment, production, and exports. In this context, Indian SMEs are actively engaging in cross-border trade to capture emerging business opportunities in the global market. This is in response to the changing global trade environment characterized by rapid globalization and the emergence of cross-border electronic commerce. However, this is accompanied by a series of complexities that have profound implications for Indian SMEs. These complexities include intricate international shipping logistics, customs and regulatory compliance, documentation procedures, and warehousing. Indian SMEs are adversely impacted by such complexities due to their inherent financial constraints, poor technological uptake, and critical infrastructural limitations. These complexities have profoundly impacted Indian SMEs in terms of trade-related inefficiencies. These inefficiencies are characterized by highly inflated logistics costs and a lack of end-to-end supply chain visibility. Therefore, this study aims to systematically identify the complexities associated with cross-border trade that impact Indian SMEs. Additionally, this study identifies various strategies that can enhance trade efficiency. This chapter is based on a descriptive research approach that exclusively incorporates secondary research methodologies. This chapter offers a rigorous framework for improving Indian SMEs' performance in cross-border trade. By systematically analysing industry reports, policy frameworks, and academic datasets, this chapter offers critical insights into how Indian SMEs can effectively engage in efficient and coordinated supply chain management to address existing complexities.

Keywords: Cross-border trade, Indian SMEs, logistics challenges, trade efficiency, supply chain management

INTRODUCTION

1.1 Background of the Study

Cross-border logistics management refers to the transfer or movement of goods or services into or between another country through interconnected or coordinated operations. This may include activities like international transport, customs and compliance regulations, documentation, warehousing, inventory management, and the distribution of services or goods into the market. Cross-border logistics management plays a critical role in the modern global economy to ensure international trade, market access, and interdependence between or among nations.

The logistics industry plays a vital role in the economy of India, which has significant implications for both national and international trade. The Indian government has taken critical initiatives in the form of the National Logistics Policy, the PM GatiShakti National Master Plan, and the Unified Logistics Interface Platform to transform the logistics industry in the country. The country has experienced high logistics costs in the past, estimated to be in the range of 13% to 14% of its Gross Democratic Product.

1.2 Cross-Border Logistics and Indian SMEs

For small and medium-sized enterprises, cross-border logistics imply conducting a series of intricate operations that enable them to deliver their products to global markets in a timely manner. This includes choosing the right modes of transport for delivering their goods, such as air transport for urgent goods and sea transport for transporting bulk goods, in addition to complying with ever-changing international trade regulations.

Indian Micro, Small, and Medium Enterprises (MSMEs) are a significant part of India's overall export market, currently contributing close to 46% of India's total exports. MSMEs in India generally operate in export-oriented industries like handicrafts, textiles, garments, engineering goods, leather products, and consumer goods. These enterprises are increasingly employing new strategies like selling their goods directly to international customers through digital platforms and e-commerce websites, thus reaching a wider global market easily.

1.3 Statement of the Problem

Though cross-border trade holds tremendous growth opportunities for Indian SMEs, executing it is a highly complex process. Indian SMEs are currently facing tremendous friction in international logistics, which is causing a steep rise in transportation costs and resulting in severe shipment delays and supply chain management issues.

The major issues that are affecting Indian SMEs are high cost pressure and complexity. A report published in 2026 states that 70% of senior decision-makers in Indian companies feel that cross-border trade is more complex today than it was three years ago. In addition, Indian companies are currently spending an average of 11.43% of their cross-border revenue solely on customs, taxes, and regulatory compliance issues. Recent geopolitical issues like the West Asian conflict and disturbances in the Red Sea region have added fuel to these issues by artificially increasing international shipping prices by five to ten times and causing inevitable shipment delays that are affecting profit margins.

Moreover, Indian SMEs face infrastructural imbalances in the country. The freight infrastructure in India is mainly dominated by road transport, which carries 64% of the total freight traffic, whereas the share of the railway sector is only 27%-29%. As the Indian SMEs transport fewer cargo units, they cannot afford to bargain for favorable rates as multinational corporations do in their business transactions with the world's top cargo companies. In addition, the lack of knowledge about the latest technologies in the logistics sector and the government's initiatives to provide assistance in this regard further makes it difficult for Indian SMEs to remain competitive in the export market compared to the well-funded global enterprises. Hence, it is essential to identify the underlying reasons for the smooth flow of cross-border logistics services for Indian SMEs.

1.4 Research Objectives

The primary research aim of the current research is to explore the issues faced by Indian SMEs in the context of the smooth flow of cross-border logistics services, as well as the strategies which could be implemented to make the same efficient.

Specific Objectives:

1. To identify the issues faced by Indian SMEs in the context of the smooth flow of cross-border logistics services.
2. To propose the strategies which could be implemented to make the cross-border logistics services efficient.

1.5 Parameters of the Investigation

The scope of the present investigation is limited only to the operations of Indian SMEs in the context of cross-border logistics operations, which include the operations of transportation, customs clearance, and warehousing and supply chain management. In terms of geography and economy, the scope of the investigation is limited only to Indian SMEs who trade with the major economies of the world. In terms of sectors, the focus of the investigation is heavily skewed towards export-oriented industries such as textiles, handicrafts, consumer products, and engineering products, as they are the most dynamic and vulnerable sectors of the Indian MSME export economy. In terms of methodology, the present investigation is entirely based on secondary data and a rigorous review of existing academic literature and other relevant data and policy frameworks on the subject.

1.6 Academic and Practical Significance

The present investigation is of significant importance and relevance to a wide range of stakeholders in the field of international trade and logistics. In the context of Indian SMEs, the investigation provides significant insights into the nature of systemic problems faced by Indian SMEs in the context of cross-border logistics and provides modern and effective strategies and tools such as supply chain digitalization and optimal routing and blockchain technology for the improvement of logistics and cost reduction. In the context of the Indian government and other relevant policymaking institutions, the investigation provides significant insights into the areas where Indian SMEs require improved trade facilitation and infrastructure support.

LITERATURE REVIEW

2.1 Macroeconomic Evolution of Logistics Cost Assessments in India

The academic and institutional discourse on India's logistics landscape has historically been characterized by an overarching theme of inordinately high operational expenses. Previous academic research and institutional evaluations have commonly cited India's logistics expenditures to account for between 13% and 14% of India's Gross Domestic Product (GDP) The high base level has put Indian exporters at an unprecedented structural disadvantage in comparison to competitors from developed economies, where logistics expenses tend to stabilize at an historically consistent level of 8%. Nevertheless, recent academic research and institutional evaluations have fundamentally altered this understanding. As clearly outlined by Poonam Munjal and Sanjib Pohit in their foundational framework published in 2023, and further elaborated in the joint reports published by the Department for Promotion of Industry and Internal Trade (DPIIT) and the National Council of Applied Economic Research (NCAER) in 2024 and 2025, there has been an unprecedented paradigm shift in India's logistics cost assessment. Utilizing an advanced hybrid methodology involving both secondary national account statistics and extensive nationwide primary surveys, the NCAER report published for the 2023-2024 period has clearly established that India's national logistics expenses have contracted to an ultra-competitive level of 7.97% of total GDP, aggregating to a monetary value of ₹24.01 lakh crore. Though this macroeconomic stabilization is an undeniable indicator of the success of unprecedented investments in India's infrastructure under the PM GatiShakti National Master Plan and the National Logistics Policy (NLP) 2022, recent research has clearly outlined how such macroeconomic efficiency has not translated to micro-level agility. According to recent research, it has clearly been established how micro-scale enterprises have historically remained insulated from such macro-level capacity expansions due to an inability to achieve economies of scale, resulting in an unprecedented dual-tier logistics landscape where only conglomerates thrive while MSMEs struggle to overcome operational frictions.

2.2 Cross Border E-commerce and the Genesis of Logistical Frictions

The widespread adoption of digital technologies has spearheaded an exponential growth trajectory in cross-border e-commerce, which is set to assume a pivotal role in global commerce. However, as succinctly argued by Zhang et al. (2022) in their exhaustive systematic literature review of Scopus-indexed research articles between 2015 and 2024, the physical movement of goods is deemed to be the most critical yet vulnerable factor for international commercial success. In this context, a plethora of academic literature reviews conducted using the PRISMA protocol has consistently established that cross-border e-commerce is inherently associated with a triad of primary logistical challenges that are critical to international commercial success. These challenges are deemed to be extremely stringent and opaque compliance requirements, complex last-mile logistics in foreign jurisdictions, and prohibitively high operational costs arising from high-value transportation and handling requirements.

Extensive comparative analyses conducted by researchers and academic literature have revealed a stark contrast between India and global export powerhouses like China. In this context, research conducted by premier advisory firms has revealed that China has been able to successfully engineer a frictionless export ecosystem that is characterized by seamless online customs declarations that can process export cargo in a matter of 24 hours and extremely liberal courier consignment value limits that can rise up to US$ 50,000. In stark contrast, Indian SMEs are forced to contend with an antiquated regulatory environment that is characterized by extremely stringent variance limits on export payment realizations and significantly lower consignment value limits of approximately US$ 12,000. In addition to these challenges, a critical gap has been revealed in the Indian logistics infrastructure in relation to reverse logistics. In this context, it has been revealed that cross-border e-commerce is inherently predicated upon a frictionless return policy for consumers; however, researchers have revealed that the absence of a reverse logistics infrastructure in India forces international return cargo to be subjected to prolonged physical verification and reconciliation procedures, thereby diminishing the competitive viability of Indian MSMEs at the global level.

2.3 Technological Integration, Industry 4.0, and the Digital Divide

There is a growing body of literature on the interrelationship of Industry 4.0 technologies and supply chain resilience in MSMEs. Contemporary literature on logistics has highlighted that Blockchain, Artificial Intelligence, and IoT technologies are no longer peripheral technologies in supply chain management, but integral drivers of supply chain transparency and economic sustainability in achieving a more resilient supply chain in MSMEs. However, a significant body of research has identified a staggering digital divide in the Indian context. Despite a theoretically high potential for technological implementation, the actual rate of adoption of Blockchain, AI, and IoT technologies in grassroots logistics service providers and small-scale industries is disconcertingly low. By applying the TOE and TTF theories,

Wong et al. (2024) and Yadlapalli et al. (2022) have identified that in India, the main barriers to technological implementation in MSMEs are organizational and environmental, rather than technological. From an organizational perspective, the highly fragmented MSME sector is hampered by high capital costs, in terms of both financial and credit constraints, where the MSME sector's overall credit gap in India is a staggering 24%, as identified by SIDBI in 2025. From a macro-environmental perspective, MSMEs in India are confronted by a lack of standardization in data formats, ambiguity in regulations related to DLT, and inadequate infrastructure.

2.4 Geopolitical Shocks and Supply Chain Vulnerability

In the recent past, there has been a significant shift in the focus of the academic community toward the examination of the vulnerability of SME supply chains in the wake of geopolitical shocks. In the literature of 2024 and 2025, there is overwhelming evidence of the examination of the maritime shock in the Red Sea. Studies using high-frequency transit estimates obtained through the use of platforms such as the IMF Port Watch reveal evidence of a 50% year-on-year decline in transits through the Suez Canal in the early stages of the crisis and a 74% year-on-year increase in vessels being forced to undertake the laborious and costly detour around the Cape of Good Hope. In the case of Indian MSMEs, the prevailing economic conditions are characterized by economic distress with a significant increase in the freight costs of specific categories of exports rising by as much as 233%, as revealed in the prevailing literature. Using empirical evidence, the studies reveal that 78% of export-oriented MSMEs experienced significant increases in the cost of freight and 55% experienced acute working capital stress owing to the delays in the shipment of products. As a result of the inherent liquidity constraints of SMEs, there is a significant emphasis in the literature on the need for strategic interventions by the state in the form of the ₹497 crore RELIEF scheme initiated in 2026 with the aim of offering financial surety and reimbursement of extraordinary freight costs.

RESEARCH METHODOLOGY

3.1 Research Design

The current research has employed a descriptive research design that is exploratory in nature and has used secondary research data exclusively. This research design is very suitable for integrating existing knowledge, for exploring complex supply chain issues, and for developing a cohesive understanding of the fragmented logistics ecosystem without needing direct intervention in the industry. By employing a descriptive research design, this research has answered very specific questions, interpreted trends, and mapped existing data sets to understand the competitive landscape of Indian MSME Exports.

3.2 Data Collection and Sources

The required data was gathered from a very diverse range of authentic secondary sources. Scholarly works and academic literature were sourced from peer-reviewed, indexed journals such as Scopus, Web of Science, and EBSCO. Critical pieces of information regarding crucial institutional and macroeconomic factors were gathered from government publications, specifically by employing very detailed reports published by the National Council of Applied Economic Research (NCAER) and the Department for Promotion of Industry and Internal Trade (DPIIT) in 2024 and 2025, respectively.

3.3 Search Strategy and Selection Criteria: The process of literature identification was conducted with the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist, ensuring a rigorous and unbiased selection of the literature. A set of systematic keywords such as "cross-border logistics," "Indian MSMEs," "supply chain digitalization," "National Logistics Policy," and "geopolitical supply chain shocks" were applied. To ensure the study incorporates the latest and most pertinent information in the field, the selection criteria heavily emphasized the latest literature published between 2020 and 2026.

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3.4 Data Analysis Techniques

The secondary data gathered was subjected to a qualitative thematic data analysis technique. Thematic data analysis is a very structured yet flexible technique of analyzing qualitative text data, such as industry reports and policy documents, by thoroughly examining the data in order to uncover themes, topics, and patterns of meaning that are generally shared . This technique of data analysis is a very structured, multi-step procedure that involves a deep familiarity with the texts compiled, coding of the texts, and developing themes . Through this technique of data analysis, massive data was classified into very precise operational bottlenecks and opportunities, thus helping the research avoid confirmation bias and draw well-founded conclusions.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

The data obtained from macro-institutional reports, high-frequency logistics monitors, and global trade barometers creates a quantitative and qualitative basis for understanding the operational frictions that are holding back MSME growth in cross-border trade.

4.1 Quantitative Evaluation of Logistics Cost Disparities

The landmark 2025 NCAER-DPIIT report on logistics assessments reveals that while there is improvement in national logistics infrastructure with total logistics costs reducing to 7.97 percent of GDP (₹24.01 lakh crore), there is a highly asymmetric distribution of financial burden based on the size of the enterprise .

Table 1: Logistics Cost Disparity by Firm Size (2024-2025)

Firm Turnover Category	Logistics Cost as % of Total Output
Micro & Small Enterprises (Up to ₹5 crore)	16.9%
Large Enterprises (Above ₹250 crore)	7.6%

Interpretation: Table 1 shows a critical economies of scale gap in which small businesses have to spend 16.9% of the total output value on logistics, which is more than double the 7.6% spent by large corporations . This is because large corporations are able to reduce transport costs through consolidated transport arrangements or long-term freight contracts. MSMEs are only able to make Less-Than-Truckload transport arrangements, resulting in premium ad-hoc pricing.

Table 2: Breakdown of National Logistics Cost Components

Cost Component	Share of Total Logistics Cost (%)	Estimated Value (₹ lakh crore)
Transportation (Road + Pipeline)	41.7%	10.01
Storage & Warehousing	24.8%	5.95
Material Handling	16.0%	3.84

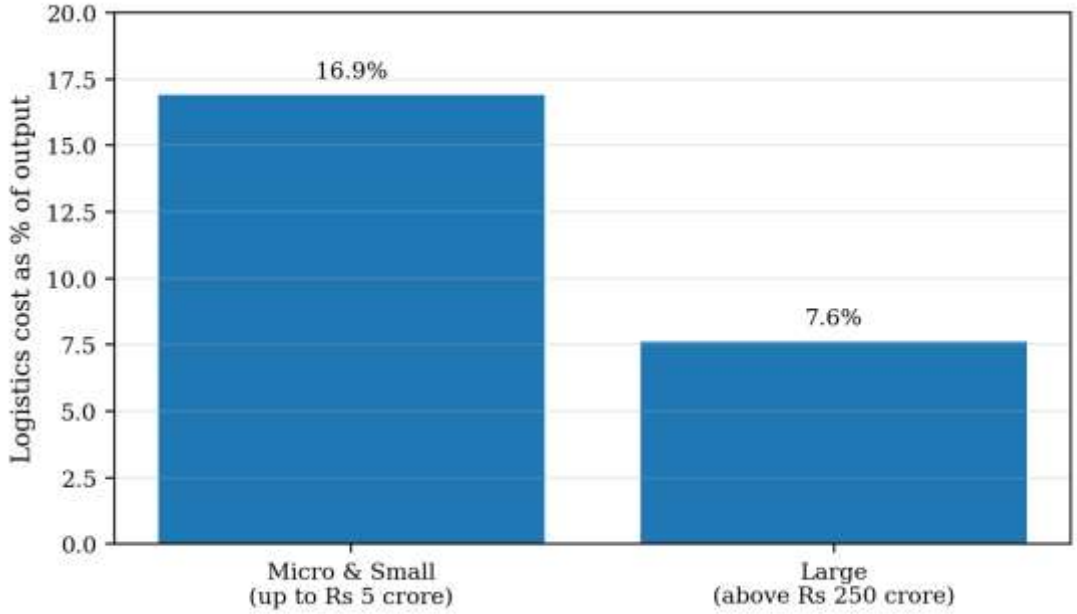

Figure 4.1: Logistics Cost Burden by Firm Size (2024-2025).

Explanation: Table 2 shows a breakdown of national logistics expenditure figures . Transportation and warehousing combined account for two-thirds (66.5%) of the entire logistics cost. For MSMEs heavily reliant on a disjointed and unorganized domestic trucking infrastructure and poor local warehousing conditions, these two figures are the chief drivers of cash flow erosion.

4.2 Regulatory Compliance and Administrative Friction

Cross-border commerce is still constrained by non-tariff barriers like high levels of regulatory complexity and customs clearance speeds. In a report by Avalara's 2026 Cross-Border Chaos Report, 70% of senior decision-makers at Indian companies rate international trade as more complex than it was three years ago, and 86% report that this is true over just the past year. The unpredictability of changing compliance requirements has compelled 78% of these companies to slow or put off entering new international markets ``.

Table 3: India vs. China E-Commerce Customs Efficiency

Key Logistics Metric	Indian Export Ecosystem	Chinese Export Ecosystem
Air Cargo Clearance Time	1 to 2 days	Under 24 hours
Sea Cargo Clearance Time	4 to 6 days	Under 24 hours
Maximum Courier Consignment Value Limit	~US$ 12,000 (INR 10 Lakh)	~US$ 50,000

Interpretation: Table 3 uses information from Ernst & Young (2024) to compare the administrative agility of India relative to the world's leading nations in manufacturing, such as China. For instance, the disparity in customs clearance, where it takes up to 6 days in India for sea freight as opposed to less than 24 hours in China, highlights the issue of bureaucratic agility causing huge barriers in the course of trade. Additionally, the value of the consignments also affects the amount of money that the Indian MSMEs in the e-commerce export business can earn, thereby limiting the scalability of the business in terms of the number of consignments. Furthermore, the Indian business has to spend 11% of its cross-border revenue just to manage the intricate tax, customs, and regulations landscape.

4.3 Impact of Exogenous Geopolitical Shocks

Operational Impact Metric	Percentage of Affected MSMEs
Experienced significantly higher freight costs	78%
Suffered severe shipment delays (> 2 weeks)	64%
Facing acute working capital and liquidity stress	55%
Lost contracts or forced into commercial renegotiations	42%

Considered switching to expensive air freight alternatives	18%

The risks faced by the Indian MSMEs have been quantitatively established in the recent maritime crisis in the Red Sea that commenced in 2024-2025. Using high-frequency monitoring tools such as IMF Port Watch, the 50% decline in trade volume through the Suez Canal resulted in a huge increase of 74% in the volume of trade that was forced to take the longer route around the Cape of Good Hope.

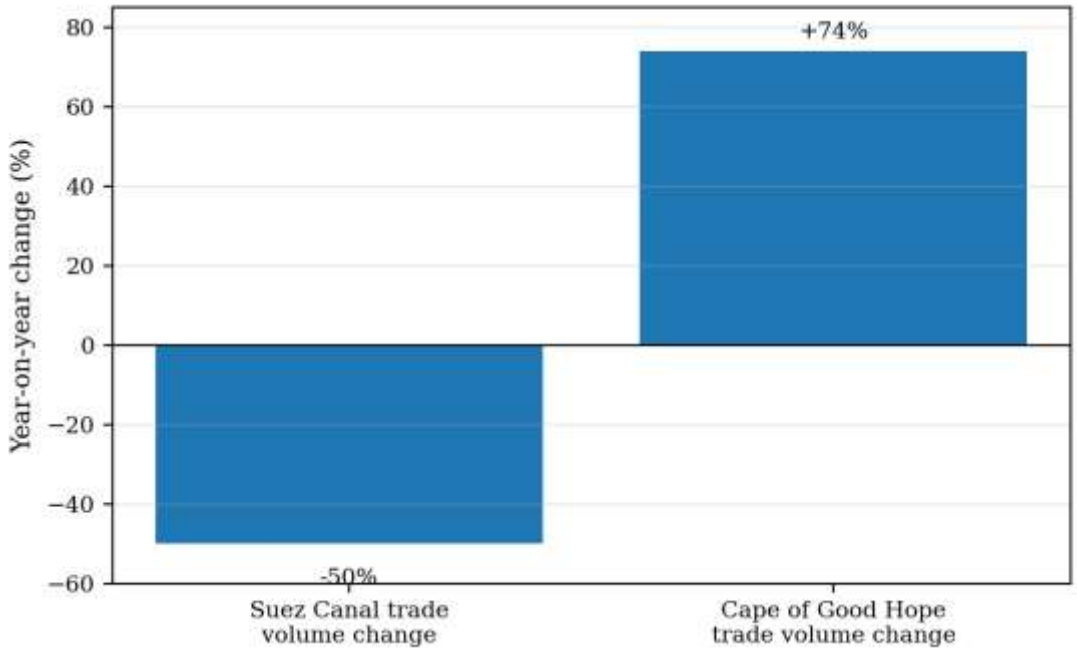

Figure 4.4: Red Sea Re-routing Shock in Global Maritime Trade.

Interpretation: Table 4 presents a synthesis of the empirical survey results on the consequences of the Red Sea crisis. It demonstrates that exogenous logistical disruptions directly correlate with acute financial stress for smaller businesses. For instance, 55% of MSMEs experience working capital pressure, while 42% experience contract losses due to delay-related issues. It is, therefore, obvious that the business sector cannot cope with the prolonged freight disruptions. In order to prevent the collapse of the sector, the government was forced to announce the ₹497 crore RELIEF program in March 2026 ".

4.4 Technological Integration and the Digital Divide:

To address the problems of the logistics sector, the government of India has taken a major push towards the digitalization of the logistics sector by promoting the concept of digital public infrastructure (DPI) in the country. Unified Logistics Interface Platform (ULIP) has already set a new benchmark in the country by successfully integrating more than 30

digital infrastructuresand facilitating more than 160 crore (1.6 billion) secure digital transactions by August 2025

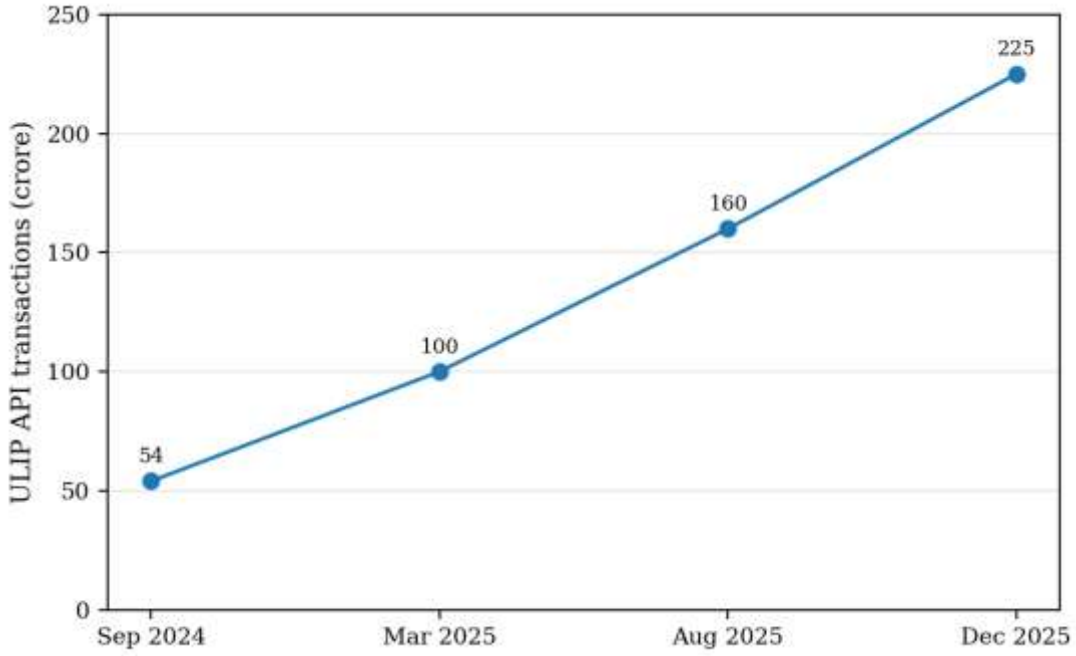

Figure 4.5: Growth in ULIP API Transactions, 2024-2025.

Interpretation: It has been observed that while the government has established world-class top-down technology infrastructure, the reality faced by the MSME sector is a stark reality of the bottom-up digital divide. Research shows that the capital cost required for the integration of Industry 4.0 technologies poses a significant challenge to small-scale Logistics Service Providers due to its high capital requirements. However, filling this gap is vital to the economic development of MSMEs in the country. According to a report published by PwC India in 2026, the integration of Artificial Intelligence in MSME manufacturing and logistics activities has the potential to inject between $135.6 billion and $149.9 billion into the value creation process of MSMEs in the country by the year 2035 ".

Results and Findings

This study establishes the following key findings regarding the operational challenges faced by MSMEs in India in the context of cross-border trade through rigorous analysis of secondary data, literature, and existing logistics metrics:

1. Severe Economies of Scale Deficit: The study finds through conclusive evidence from secondary data that the logistics cost burden in the country is highly asymmetric in nature. MSMEs in the country spend as much as 17% of their output on logistics, whereas large corporations spend only 7.6%. Due to severe market fragmentation, small-scale exporters in the country do not have sufficient bargaining power to negotiate with transporters to get better consolidated transport costs.
2. Regulatory Bottlenecks Cripple Agility: Though infrastructure is developing at a rapid pace, a massive non-tariff barrier is the administrative burden. Documentation is a multi-step affair, and it is this factor that has kept India's customs clearance far behind global peers such as China. This chaotic situation has forced MSMEs in India to spend a staggering 11% of their revenue merely on complying with regulations, resulting in a situation where over three-fourths of these MSMEs are hesitant to enter new markets
3. Vulnerability to Exogenous Shocks: MSME supply chains possess extremely thin liquidity margins, rendering them vulnerable to global events. For instance, the recent Red Sea maritime crisis has shown that unforeseen freight cost inflations and transit delays translate into immediate working capital crises for over half of MSME supply chains “. Though fiscal support is necessary in such a situation, and initiatives such as the RELIEF scheme by the government in 2026 are a welcome move, a more long-term solution is required in terms of supply chain diversification.
4. Digital Divide: There is a significant contrast between the rapid development of digital public infrastructure by the government, such as ULIP, and the rate of adoption of technology by MSMEs “. For instance, a lack of capital, digital literacy, and standardized data protocols has meant that small exporters and

logistics players are yet to adopt technologies such as AI, IoT, and blockchain. This is a significant issue, given that bridging this gap has the potential to unlock almost US$150 billion in value creation for MSMEs over the next decade ".

RESULT & DISCUSSION

On the basis of the above-mentioned operational frictions and empirical evidence, the following strategic recommendations are made for the improvement of the cross-border logistics efficiency of Indian MSMEs:

5.1 Streamlining Customs and Reforming Reverse Logistics

To remain competitive with other major manufacturing hubs in the world, India needs to expedite its customs clearance process. Therefore, the Indian government is recommended to adopt a fully seamless and integrated online electronic customs declaration system that can clear export cargo in less than 24 hours and also consider increasing the value of courier consignment. In addition, the reverse logistics vacuum in India is also a major operational friction that needs to be addressed. Therefore, the strategic development of "E-commerce Export Hubs" near major international airports in India is recommended. This can potentially optimize the returns management of Indian MSMEs in the international market.

5.2 Financial Incentives and Blockchain Integration

The Indian government is recommended to introduce various initiatives and schemes that provide tax incentives and other forms of funding for Indian MSMEs that adopt Industry 4.0 supply chain technologies. In particular, the adoption of blockchain technology in the field of trade finance and supply chain management can potentially reduce transactional costs by up to 80%, and same-day payment realizations can be made. This can potentially resolve the working capital stress faced by Indian exporters.

5.3 Aggressive Integration of Artificial Intelligence

To remain competitive in the international market, Indian MSMEs are recommended to adopt Artificial Intelligence (AI) in the field of logistics and supply chain management. In particular, the adoption of AI in the field of logistics can potentially empower Indian MSMEs in the field of exports and enable them to meet stringent logistics and supply chain demands of the international market. In particular, the adoption of AI can potentially enable Indian MSMEs in the field of exports to meet the stringent logistics and supply chain demands of the international market and integrate with the Global Value Chain (GVC) while sourcing sustainable products. As the adoption of AI is likely to contribute between $135.6 billion and $149.9 billion to the Indian MSME manufacturing economy by the year 2035, the adoption of AI is an economic imperative.

5.4 Human Capital and Skill Development

To close the gap between the digitally empowered and the digitally excluded, a combined effort by policymakers and industry players is a must to initiate vocational training and apprenticeships specifically designed for MSMEs . Such training and skill development programs need to be exclusively directed toward acquiring skills in digital literacy, international trade compliance, and contemporary supply chain management to enable workers to cope with sophisticated supply chain systems .

CONCLUSION

7.1 Synthesis of the Research Problem and Findings

The integration of Indian Micro, Small, and Medium Enterprises (MSMEs) into global trade networks is an extremely important driver for the larger economic trajectory of India as a nation-state. This research has systematically explored the numerous operational and structural barriers that MSMEs face in facilitating trade relations with other nations in the

global economy. While the macro-level data suggests an extremely favorable and stabilizing trend in India's economic trajectory-with aggregate logistics costs successfully contracting to 7.97% of the national GDP -the reality on the ground for MSMEs is disconcertingly difficult.

The major research finding of this paper points to an extremely severe economies-of-scale deficit in India's MSME sector. Indian MSMEs face an extremely fragmented and disorganized domestic logistics sector, compelling them to spend an astonishing 16.9% of their total output solely on logistics and supply chain management services. This is in stark contrast to large corporate houses that leverage massive economies of scale in transportation and long-term freight contracts, compelling them to keep logistics costs restricted to merely 7.6% of their total output . Such extremely high operational costs severely cripple the cost-competitiveness of MSME exports in extremely price-inelastic global markets. Moreover, this structural cost disadvantage is severely compounded by an extremely archaic system of customs documentation processes and an acute shortage of domestic warehousing infrastructure. As this data suggests, the sheer financial burden of managing shifting cross-border tax and customs compliance presently requires an average of 11.43% of an Indian firm's cross-border revenue .

7.2 The Impact of Geopolitical Volatility and State Responsiveness

In addition to the issues of internal constraints, this study has also identified the extreme susceptibility of Indian MSME supply chains to unexpected, external geopolitical disruptions. With their limited liquidity positions and extremely fragile, one-tier supply chains, Indian MSMEs are inherently incapable of coping with the extreme fluctuations of global maritime trade. The maritime disruptions of 2024-2025, which impacted the Red Sea and the Bab-el-Mandeb Strait, served as a brutal stress test for the Indian MSME sector. As global container trade came to a grinding halt, with vessels being forced into lengthy detours through the Cape of Good Hope, Indian MSMEs were subjected to extreme inflation rates of freight costs, which surpassed 233% in the commodity sector. This led to catastrophic delays and extreme working capital paralysis for the sector . However, as a result of this crisis, a paradigm shift can also be identified in the strategic state response. In recognition of the existential threat faced by grassroots exporters, the Government of India launched the RELIEF (Resilience & Logistics Intervention for Export Facilitation) program during early 2026. This program, which had a financial outlay of ₹497 crore, successfully leveraged a highly targeted reimbursement program (providing a reimbursement of up to 50% of freight costs, capping it strictly at ₹50 lakh for each exporter) to ensure that the much-needed liquidity support did not flow into the coffers of conglomerate groups, but reached the grassroots exporters of India, thereby acknowledging the emerging reality that the overall export performance of India can only be secured by securing the financial resilience of the MSME sector.

7.3 Navigating Emerging Global Trade Architectures

With this, MSMEs in India will have to prepare to tackle the latter half of the decade with an emerging global trade structure that will be driven by the introduction of sweeping environmental regulations and ambitious global connectivity projects. The impending full-scale implementation of the European Union's Carbon Border Adjustment Mechanism (CBAM) in 2026 will undoubtedly pose one of the biggest threats to Indian exporters in the near future. The European Union's CBAM will impose stringent carbon tax measures on imported products. The impact of this will be felt in the Indian steel and aluminium sectors, which have a high MSME base. The impact of CBAM will be felt in the form of a 4.36 USD tax on each ton of emissions, and if MSMEs in India do not rapidly adopt the necessary technology to provide real-time batch-wise ESG data, they will be pushed out of the lucrative European market in the near future.

On the flip side, the emerging trade architectures in the global scenario are also set to offer unprecedented opportunities for the MSMEs in India to circumvent the traditional logistical challenges. The development of the India Middle East Europe Economic Corridor is set to emerge as a counter-strategic move to circumvent the Suez Canal, which has been prone to disruptions in the recent past. The development of the corridor is set to result in a reduction of 40% in the time taken to transport goods to Europe and is also set to result in a reduction of 30% in the logistical costs incurred in the process. The effects of this are set to manifest themselves in the form of an increase of 5% to 8% in the valuation of exports from India to Europe, thereby resulting in an increase of $21.85 billion in exports to Europe. To avail themselves

of the emerging trade architectures in the process, the MSMEs in India are set to have to upgrade their internal supply chains in the process7.4 The Digital Imperative and the 2047 Vision for India.

Going ahead, the actual driver for the sustainability of the export resilience of Indian MSMEs lies in the imperative to bridge the deep-seated digital divide. Although the Indian government has been successful in pioneering the development of world-class Digital Public Infrastructure (DPI) in the country, as demonstrated by the seamless facilitation of over 1.6 billion safe API transactions by the Unified Logistics Interface Platform (ULIP) across 11 different ministries, the ground-level adoption of such facilities is dismal. The inability of small-scale logistics players to access and implement Industry 4.0 technologies such as Artificial Intelligence and blockchain represents a critical disconnect between the national-level infrastructure and ground-level supply chain visibility.

The bridging of this disconnect is not just an operational imperative but a macroeconomic necessity closely linked to the Viksit Bharat 2047 vision. To achieve the status of a developed, $30 trillion economy by the year 2047, the Indian manufacturing sector must grow manifold, and the MSME sector must move from the current labor arbitrage model of service exports to a technology-driven outcome-oriented model of global manufacturing exports. The adoption of AI for demand forecasting and quality management, the integration of blockchain for customs compliance, and the institutionalization of reverse logistics are not just desirable but essential upgrades for the survival of Indian MSMEs in the Global Value Chain. If bridged successfully, the digital divide holds the enormous potential to unlock between $135.6 billion and $149.9 billion in new value creation for Indian manufacturing MSMEs by the year 2035.

To sum up, although the structural challenges in cross-border trade and logistics continue to pose a huge challenge to the Indian MSME sector, the way ahead for the sustainability of the export resilience of Indian MSMEs is now clearly laid out. This calls for a synchronized approach from the government and the MSME sector itself, wherein the government must invest in the development of the necessary infrastructural and trade facilitation platforms, and the MSME sector must wake up to the digital imperative and sustainability challenges by adopting the necessary technological and sustainability upgrades to emerge as agile and highly responsive logistical platforms that can overcome the historical challenges faced by the sector and place Indian MSMEs in their rightful place in the evolving landscape of global trade.

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