CHAPTER 95

Logistics Costs and Competitiveness of Indian Products in Global Market

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ABSTRACT

Logistics costs have several components, such as order processing, inventory control, warehousing, transportation, material handling, storage, logistical packing, and information flow. If any of these logistics components are decreased, the overall logistics cost is reduced, creating a positive cascade effect in the economy by increasing revenue generation. Therefore, logistics play an important role in the economy. As per studies by the National Council of Applied Economic Research, the report publish by the Department for Promotion of Industry and Internal Trade suggest that the logistics cost in India is 12-14% of the Gross Domestic Product (GDP), which is very high compared to developed countries, where it ranges between 8-10% (NITI Aayog, 2022) of the GDP. Due to this, the price of products increases, making them less competitive in the global market. The main factor responsible for the high logistics cost is the heavy dependence on road transport. Other contributing factors include poor infrastructure, a fragmented transportation sector, a lack of proper documentation, and insufficient automation. The Indian Government has implemented various initiatives to reduce logistics costs and enhance efficiency. These include the National Logistics Policy, which focuses on lowering logistics expenses; Bharatmala Pariyojana, which aims to enhance freight movement; and the Gati-Shakti Multi-Modal Cargo Terminal Policy, which aims to establish new cargo terminals. Additionally, the Sagarmala Pariyojana seeks to improve port connectivity and reform the logistics sector, while the National Rail Plan is designed to enhance logistics and goods movement via rail. The Dedicated Freight Corridor is a new railway corridor dedicated to freight transport, and Multi-Modal Logistics Parks enhance connectivity between different transport modes. Also, organizations like Logistics Ease Across Different States (LEADS) have been established to assist in reducing logistics costs.

Keywords: Logistics; Bharatmala; Gati-Shakti; Sagarmala; LEADS

1.0 Introduction

1.1 Background

Logistics plays an important role in how efficiently trade flows and how competitive a country is in the global market.

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It encompasses transportation, warehousing, inventory management, and supply chain coordination. These components of logistics cost need to be managed separately to reduce logistics cost because the increase in logistics cost generates a cascading effect on the economy in monetary terms. In India, logistics cost accounts for approximately 13-14% of the GDP, which is significantly higher than the global standard of 8-10%. This extra 3-5 %, if saved, would be invested somewhere else and would generate a cascading effect on the economy. These high logistics costs serve as a disadvantage as due to this increased cost, Indian products become expensive in the global market and hence reduce their competitiveness. To process the function of the logistics, the major components include description, technical details, delivery period, payment terms, and other commercial terms.

In India implementation of Information Technology (IT) is a new issue and most of companies follow traditional methods that are time-consuming which as a result increases the ordering time and as a result increases the cost associated with the product. Inventory management is another function of the logistics activity, and the carrying cost of inventory is very high in India due to the absence of infrastructure in many places. Most companies need to keep huge amounts of inventory for the satisfaction of the customers, and that results in an increase in the cost associated with the logistics activity.

Warehousing is the backbone of logistical activity, but the management and construction of warehouses require a huge amount of investment. One of the studies shows that approximately 7% (McKinsey & Company, 2024) of the greenhouse gases of the world are generated by warehousing activities, so to comply with the rules and regulations, warehouse construction becomes trickier. Due to most of the material being handled with the help of human aid in India, it becomes more complicated to measure productivity in terms of cost and time effectiveness.

The major problem with India is the absence of data in terms of Logistical activities. Even the government doesn't have data on many activities related to logistics due to an unorganized fleet of trucks and many more reasons. Due to this reason, the government can't formulate a proper policy which as a result leads to further increases in logistics costs. Now, if we work efficiently, then the money that we are currently spending on logistics will be reduced to half, and half of the money will be used somewhere else that will further bring more development, so it is necessary to reduce logistics costs.

1.2 Research objective

This study will have the following broad objectives:

- To analyze factors contributing to high logistics costs in India.
- To examine their impact on the competitiveness of Indian exports.
- To evaluate government initiatives aimed at reducing logistics costs.
- To recommend strategies to improve India's logistics efficiency.

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2.0 Literature Review

India's logistics industry is responsible for giving the nation its trade efficiency and competitiveness globally. Logistics costs in India, nonetheless, remain at 13-14% of GDP, much greater than the worldwide benchmark of 8-10%. The high-cost results from excessive use of road transport, poor multimodal connectivity, congestion at ports, as well as old warehousing infrastructure (World Bank, 2023). Over time, the industry has evolved from a dispersed chain of transporters to a consolidated supply chain system, with third-party logistics (3PL) and fourth-party logistics (4PL) vendors assuming an increasingly important role (Samir et al., 2006). Even during times of enhanced efforts, India ranks behind other countries in global logistics rankings. India was ranked 44th on the Logistics Performance Index (LPI) in 2018 because of delays at customs, weak port performance, and high last-mile transportation expenses (World Bank, 2018). By 2023, India's ranking improved to 38th, thanks to investments in freight corridors and digital tracking systems (McKinsey & Company, 2024).

However, road freight still accounts for nearly 60% of total cargo movement, significantly increasing costs compared to China, where rail and waterways dominate (Verma & Joshi, 2021). Second, India's 55-hour port dwell time, significantly above developed economies 40-hour level, delays export and raises transport costs (Sarkar & Banerjee, 2023). Lastly, the deficiency of cold storage and automated warehousing is the other significant hindrance, costing $11.6 billion a year, specifically in agriculture (Gupta & Kumar, 2021).

To tackle these issues, the National Logistics Policy (NLP), which was launched in 2022, plans to bring down logistics costs to 8% of GDP by 2030 by enhancing digital integration, multimodal transport, and Artificial Intelligence (AI) based logistics management (Department for Promotion of Industry and Internal Trade, 2022). Other initiatives by the government, including Bharatmala and Sagarmala, have been quite successful. Bharatmala Pariyojana has added 60% of the country's highway network since 2014 by prioritizing freight corridors and expressways for streamlining trucking efficiency (Press Information Bureau, 2024). In a similar way, the Sagarmala Programme promises to produce $5 billion per annum savings through improving coastal shipping and port connectivity (Sagarmala Report, 2023). The Dedicated Freight Corridor (DFC), planned to raise the rail freight capacity to 1,600 million tonnes by 2025, is another flagship program to curb congestion and minimize transport costs (Indian Railways Freight Policy, 2024). The Gati Shakti program, with an outlay of ₹100 trillion, brings road, rail, and waterways together under one single logistics umbrella (Ministry of Railways, 2023). Technology is revolutionizing India's supply chain. Blockchain technology has been expanding in use to enhance tracking of shipments, boost security, and minimize fraud during logistics transactions (Goyal & Kumar, 2020).

Artificial Intelligence is also having a great impact, AI-based route optimization has enabled logistics companies to save costs by up to 15% (Sharma & Yadav, 2019). Growth in e-commerce has further redefined the industry, with smart last-mile delivery solutions cutting

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down transit times by 30% in urban localities (Mishra & Roy, 2021). Looking at the world's best practices, China has rationalized logistics by giving top priority to rail freight, inland waterways, and high-speed cargo rail systems (Kumar & Gupta, 2019). European countries like Germany and the Netherlands have also been able to effectively deploy AI-based customs clearance and predictive analysis for real-time tracking of cargos, ensuring greater efficiency in logistics activities (McKinsey & Company, 2021).

Yet, India continues to have several obstacles in the complete adoption of multimodal transport systems. Today, rail and waterways transport only 34% of freight, lagging far behind China's 60% (Khan & Jain, 2023). It is also imperative to encourage green logistics solutions like electric trucks and solar-powered warehouses, which can potentially save up to ₹1.2 lakh crore per year in fuel expenses (NITI Aayog, 2022). Also, the lack of a common National Logistics Data Bank impacts real-time visibility of freight movement, resulting in inefficiency (Deloitte, 2022). To enhance India's logistics competitiveness globally, India needs to attempt to decrease road dependency, increase multimodal infrastructure, and expedite digitalization. Investment in AI-based logistics, blockchain-based freight tracking, and green supply chains will be pivotal in lowering logistics costs to 8% of GDP and enhancing India's export competitiveness.

3.0 Research Methodology

This study relies on secondary data from the World Bank's LPI reports, the Government reports (NITI Aayog, Ministry of Finance, Ministry of Road Transport & Highways), academic research papers and industry reports. A comparative analysis of India's logistics costs with global benchmarks is conducted. Government policies are evaluated based on their impact on reducing logistics inefficiencies.

4.0 Analysis and Discussion

4.1 High logistics costs and their impact on trade

India's logistics inefficiencies lead to increased costs for exporters. The average cost of road freight in India is ₹2.3 per ton-km, whereas in China, it is ₹1.7 per ton-km and more than 60 percent of trade volume if India is handled through roadways (Transport Corporation of India Limited, 2014-15). Port dwell time in India is around 55 hours, compared to 40 hours in developed nations due to which indirect cost increases hence increasing logistics costs (Economic Survey of India 2020-21). Inventory holding costs in India are higher due to inadequate warehousing infrastructure. The modal split- freight movement in India in 2022 is 3.05 trillion ton-km which is 66% of the total and by rail is 0.82 trillion ton-km which is 31% of the total, by shipping medium it is 1108 million metric ton which is 3% and by air it is 2068 million ton-km which is 1% of the total freight movement (Economic Survey of India 2022-23).

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In terms of infrastructure the roadways infrastructure present is 63.73 lakh km, the railways present are 1.08 lac km, waterways contain 12 major and 200+ non-major ports and a number of airports in India is 131. For support infrastructure 129 inland container depot. 168 Container Freight stations, 1 multimodal logistics park currently under construction, and a 300 sq. ft warehouse is present in India (Economic Survey of India 2021-22). Currently, 62% of logistics cost in India is attributed to transportation and 34% to inventory management. China's average vessel size is 1.12 times larger than India's, and its median time in port is approximately 11% shorter (Logistics Performance Index Report 2022). This difference is likely due to superior systems, processes, and a higher level of digitization in Chinese ports. The road sector in India handles approximately 10000 commodities with employment of 22 million people but it is one of the most fragmented sectors as 10% of this sector is only handled by organized players. India loses around $11.6 billion (₹92,651 crore) worth of agricultural goods every year due to insufficient storage and poor transport infrastructure (Economic Survey of India 2018-19).

4.2 Impact on competitiveness

Higher logistics costs reduce the price competitiveness of Indian exports. Sectors such as agriculture, textiles, and electronics are particularly affected. Comparatively, China's efficient supply chain management enables it to dominate global exports.

Table 1: Comparison Table of Logistics Costs as a Percentage of GDP for Different Countries, using India as a Reference

Country/Region	Logistics Cost (% of GDP)
India	14%
USA	8-10%
Europe	8-10%
China	9%
Global Avg	8%

Source: Reimagining India's Supply Chain, CII Report, 2020

India has significantly higher logistics costs, accounting for 14% of its GDP. In contrast, developed regions like the USA and Europe have logistics costs between 8-10% of their GDP, which is 4-6% lower than India's. Similarly, China has a logistics cost of 9% of GDP, making it 5% more cost-effective than India. Globally, the average logistics cost stands at around 8% of GDP, meaning India spends 6% more than the rest of the world. These high costs make the movement of goods within India more expensive, creating challenges for businesses and impacting the country's economic efficiency.

4.3 Government initiatives

NLP Implementation: The National Logistics Policy (NLP) is a framework to improve India's logistics sector and make it more efficient and cost-effective. The policy was released in

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September 2022 by the Indian government. Major objectives of this policy include to reduce Logistics costs by improving India's logistics performance index ranking, creation of a data-driven decision mechanism for an efficient logistics ecosystem, generating employment opportunities and making Indian products more competitive in global market.

Infrastructure Investments: The government is building a 2 lakh-kilometer national highway network by 2025 **(**Economic Survey of India 2021-22**)**. Over the last 10 years, the national highway network has grown by 60%, increasing from 91,287 km in 2014 to 146,145 km in 2023. The length of highways with four lanes or more has also expanded significantly, growing 2.5 times from 18,387 km in 2014 to 46,179 km in 2023 (Economic Survey of India 2023-24). There are currently 108 port connectivity road projects that cover a total of 3,700 km. So far, 294 km have been completed, 1,808 km have been awarded for construction, and 1,595 projects are now in the planning stage (Economic Survey of India 2022-23). These projects will improve connectivity and lower logistics costs.

The Bharatmala Pariyojana aims to make the movement of goods across the country more efficient. It focuses on building a specific length of national highways and includes developing economic corridors, and feeder routes, improving national corridor efficiency, and enhancing border and international roads, coastal and port connectivity, and expressways. To date, 27,384 km have been awarded for construction, and 15,045 km have been built. Under the Bharatmala project, multimodal logistics parks (MMLPs) are being set up. A network of 35 MMLPs will be developed, with an investment of 46000 crores. Once these parks are operational, they will handle 700 million metric tonnes of cargo (Economic Survey of India 2022-23). The MMLPs will act as hubs for transporting goods from various industrial and agricultural areas to consumer markets and seaports. In some cases, MMLPs are being built alongside inland waterway terminals as part of the Sagarmala project. This approach will help reduce the cost of moving cargo inland compared to traditional road transport. India has 87 ports that are either operational or under development along its coastline (Economic Survey of India 2021-22). All major ports have last-mile road connections with at least four lanes. The Ministry of Road Transport and Highways (MoRTH) and its agencies plan to develop 108 Port Connectivity Road (PCR) projects, which will cover about 3,700 km to enhance last-mile connections for these ports (Economic Survey of India 2022-23).

The Sagarmala Programme, launched with a focus on port-led development, operates across four core pillars: port modernization and development, connectivity enhancement, port-led industrialization, and coastal community development. Through these interventions, the programme has successfully reduced logistics costs by approximately US$5 billion annually, improved port efficiency by minimizing turnaround times, and strengthened multimodal connectivity by integrating road, rail, inland waterways, and coastal shipping networks (Economic Survey of India 2021-22). Additionally, the creation of Coastal Economic Zones (CEZs) has attracted investments, stimulated regional industrial development, and generated employment, while promoting environmentally sustainable coastal shipping has contributed to

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lowering carbon emissions. The Dedicated Freight Corridor (DFC) aims to modernize rail freight infrastructure, enhance port connectivity, and lower logistics costs, with a target of reducing logistics costs from 14% of GDP to single digits (Economic Survey of India 2021-22). The DFC supports national initiatives such as 'Make in India' and 'One District One Product,' enabling faster movement of goods from production hubs to domestic and international markets. As of FY 2023-24, the DFC operates 241 freight trains daily, a 42% increase from the previous year's 170 trains, and has resulted in the saving of 11.62 lakh liters of diesel, thereby reducing carbon emissions by 3,075 tonnes (Economic Survey of India 2023-24).

Gati Shakti Multi-Modal National Master Plan (GMNMP): The Gati Shakti Multi-Modal National Master Plan (GMNMP) is introduced with a massive investment of ₹100 trillion. This initiative aims to streamline the nation's transport and logistics sectors by improving multi-modal connectivity and breaking down the traditional barriers between departments, ensuring different modes of transport work together seamlessly. The Ministry of Railways launched the Gati Shakti Multi-Modal Cargo Terminal (GCT) policy in December 2021. This policy focuses on expanding and improving cargo terminals to boost India's rail freight capacity. Although railways offer a reliable and environmentally friendly way to transport goods, the number of freight terminals hasn't kept up with the rising demand. In 1951 India's freight traffic was 73 million tonnes which increased by huge amount to 1210 million tonnes in 2021. But freight terminals have remained same in number, due to which congestion and larger turnaround times for wagons- upto 120 hours on average (Economic Survey of India 2022-23). To improve this the policy of GTC has been introduced which aims to fix these issues by promoting the construction of new cargo terminals and also upgrading the existing ones to handle the increasing freight traffic. The main goal of it is to cut down the present congenstion by 50 percent and increase the railway freight capacity to 1,600 million tonnes by the year 2024-25 (Economic Survey of India 2021-22). Due to this effort that is focused on improving the infrastructure and logistics, India is aiming to meet the growing transportation needs, strengthen its economyand setting the stage for further growth. Due to the development of new hubs in Gati Shakti Cargo Terminals (GCTs), the rail cargo handling would be more efficient and streamlined. Till now, 15 of this cargo So terminals have been set up, and 96 additional locations are identified as the potential sites for setting up of these terminals in future (Economic Survey of India 2022-23). The main goal of GTC is of having and running 100 Gati Shakti Cargo Terminals over the next three financial years (Economic Survey of India 2023-24).

The government has increased the budget for Indian Railways for the fiscal year 2024 25 by 5.8%. The aim of India is to invest approximately 135-145 lakh crore over the course of next 25 years. It is the target to increase the railway share in freight transport to 40-45% by 2030 (Economic Survey of India 2023-24). Another target is to develop seven hyperloop lines out of which two are dedicated only for cargo.

Zero Emission Trucks (ZETs) & Logistics Cost Reduction: Niti Aayog mentions Zero emission trucks are a solution to many problems related to logistics. Transportation is a big part

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of logistics expenses in India, making up about 62% of the total and contributing 14% to the country's GDP. Given that diesel costs dominate transportation expenses, switching to Zero Emission Trucks (ZETs) could bring significant savings and have a positive ripple effect on the economy. Diesel fuel takes up a huge share of transportation costs, so a shift to ZETs can make a real difference. While ZETs come with higher initial purchase prices compared to diesel trucks, they make up for it with much lower running costs. Over their lifetime, ZETs can cut fuel costs by as much as 46%. This could lead to a 17% reduction in total logistics costs, which directly benefits consumers by reducing the price of goods. The benefits of adopting ZETs are substantial. By 2050, widespread use could save India from consuming 838 billion liters of diesel. This would lower oil import expenses by an estimated ₹116 lakh crore (NITI Aayog, 2022). The result? Lower national expenditure on oil and stronger economic stability, helping India manage its resources more effectively and sustainably.

5.0 Findings and Implications

5.1 Key findings

India's logistics costs stand at approximately 13-14% of GDP, significantly higher than the global benchmark of 8-10% in developed countries. This directly impacts the competitiveness of Indian products in global markets, increasing product prices and reducing export competitiveness. The Sagarmala Programme has reduced logistics costs by approximately US$5 billion annually through improved port efficiency, reduced turnaround times, and better port connectivity via new and upgraded road, rail, and inland waterway links. Development of Coastal Economic Zones (CEZs) has attracted investments, fostered regional economic growth, and created employment opportunities. The Dedicated Freight Corridor (DFC) is enhancing rail freight efficiency, with 241 trains operating daily in FY 2023-24 (a 42% increase from 170 trains in FY 2022-23). The truck-on-train service saved 11.62 lakh liters of diesel and reduced carbon emissions by 3,075 tonnes, significantly improving both cost efficiency and environmental sustainability. Both programs promote greener logistics, Sagarmala encourages inland waterway transport, reducing emissions, while the DFC supports Track on Green initiatives, which include tree plantation, energy-efficient infrastructure, and solar power installations. Sagarmala's focus on coastal community development through skill training, tourism promotion, and fisheries infrastructure has directly improved livelihoods in coastal areas. Similarly, DFC's infrastructure development, including Gati Shakti Cargo Terminals, is boosting industrial output, enhancing supply chain efficiency, and creating job opportunities.

5.2 Policy implications

These reduced logistics costs would decrease the cost of Indian products and, hence, make them more competitive in global markets. This, in turn, would support 'Make in India'

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and also increase the export of Indian products. The investments that are made in ports, rail, and multimodal infrastructure would generate a cascading effect that would attract private investments, enhance regional development and boost GDP growth. Due to these policies, there would be a reduction in dependency on road transport, and other alternatives would be promoted, like railways and waterways, which are greener; therefore, all these programs would also contribute to India's climate change reduction goals, and they would also align with sustainability. In Sagarmala, the approach taken is a community-centric approach, and hence, it also supports social equity, therefore ensuring that economic development benefits local populations through job creation and enhanced livelihood opportunities.

6.0 Conclusion and Recommendations

6.1 Conclusion

Lowering logistics costs is crucial for enhancing India's competitiveness in global trade. Government initiatives like Sagarmala and the Dedicated Freight Corridor (DFC) are key steps in transforming India's logistics sector. Sagarmala focuses on port-led development, improving connectivity, boosting efficiency, and driving industrial growth along the coastline. This initiative is expected to cut logistics costs by $5 billion annually and promote sustainable coastal development. Meanwhile, the DFC is modernizing freight transport by increasing rail capacity and integrating multimodal logistics, resulting in faster cargo movement, a 42% rise in daily freight trains, diesel savings, and reduced carbon emissions. Other reforms include promoting startups, digital platforms like ULIP, and allowing 100% FDI in key infrastructure sectors. These initiatives make India's logistics more efficient, sustainable, and globally competitive while supporting regional growth. However, challenges like high road transport dependency, inefficiencies in multimodal transport, delays in clearances, outdated regulations, and limited digital adoption persist. Strategic investments in technology, policy reforms, and infrastructure are crucial to reducing logistics costs to 8% of GDP, making Indian products more competitive globally. The key lies in enhanced infrastructure development, technological adoption, and streamlined policy frameworks.

6.2 Recommendations

Continuous investment in port infrastructure, freight corridors, and multimodal logistics parks is critical to maintaining momentum. Future expansions should integrate technology, including smart port systems and digital freight management, to further reduce turnaround times and enhance supply chain visibility. The implementation of real-time cargo tracking, blockchain-enabled documentation, and port community systems should be accelerated to enhance transparency and reduce delays, particularly at customs checkpoints. Enhanced collaboration between government bodies and private investors can accelerate project delivery and ensure efficient operations through private sector expertise and capital infusion.

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Comprehensive policy harmonization across transport modes (road, rail, waterways, and air) should be pursued under the National Logistics Policy, ensuring smooth modal shifts and encouraging businesses to adopt cost-efficient transport combinations. Continued emphasis on green infrastructure (solar-powered terminals, energy-efficient equipment), increased share of rail and waterways, and incentives for low-carbon technologies (like electric trucks) can align logistics transformation with India's climate commitments. Training programs for port workers, logistics managers, and freight operators should focus on digital literacy, green logistics, and global supply chain management, ensuring a future-ready workforce. Developing a National Logistics Data Bank to track logistics performance metrics, analyze bottlenecks, and guide evidence-based policy reforms will be essential for continuous cost optimization and competitiveness improvement.

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