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Gujarat's Exporters and Shipping Services: A Review of Service Quality Standards

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Abstract

Over time, several shipping lines have formed terminal operation companies, some of which are separate businesses. When it comes to managing India's cargo transportation, Gujarat leads all other Indian states. Because Gujarat's ports handle a sizable amount of India's seaborne commerce in POL and associated goods, coal, and LNG, they are vital pieces of energy infrastructure for both Gujarat and India. Gujarat's strong position in managing energy commodities stems from its near proximity to international energy markets and its excellent connection with India's hinterland regions. Gujarat's non-major ports are becoming increasingly significant due to their significant rise in energy commerce over time. However, local governments and port authorities have not always embraced foreign control and investment. It's still unclear what the optimum solutions for each stakeholder are and the economic ramifications. In many nations and areas, ports are vital to the economy. Port consumers, shipping lines, and cargo owners may become dissatisfied if port services are unreliable or fail. At the majority of Indian ports, increased efficiency has coincided with the rise in traffic levels over the last several years. In order to overcome the difficulties presented by competition from foreign ports, smaller ports, and private terminal operators, the main ports have taken the initiative. The management style of the port trusts that oversee major Indian ports has drastically changed as a result of competition and the concomitant concern of losing market share. These recommendations are intended to facilitate the promotion of sustainable growth in the export supply chain. The study includes the recommendations for enhancing service standards and promoting sustainable growth in the export supply chain.

Keywords:- Exporters, Shipping Industry, Service Quality, Customer Satisfaction, Trade Facilitation, Maritime Logistics.

Introduction

Exports have historically driven economic growth in most nations. Building infrastructure is essential to economic growth. The nation advances on its aviation, water, rail, and road logistics infrastructure. India's logistics infrastructure is insufficient to meet demand despite its fast-growing economy. The global economy relies on ships for cross-border trade and product mobility. Recent competition and evolving customer expectations have made service quality understanding and improvement more important. Maritime economics is booming. Ports and ships form a large business that is growing. Ports facilitate international trade, uniting nations.

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Port management, shipping finance, multimodal transportation, minimizing shipping emissions and attaining the best turnaround time, space allocation, ship types that stop at ports, and technology use are all important in port studies. The literature review helps the researcher understand the issues. In the context of shipping, the characteristics of service quality include things like customer support, handling efficiency, safety, and timeliness (Akdoğan et al., 2011). Research emphasizes the importance of timeliness and reliability as foundational elements, both of which are necessary to satisfy customer expectations. Studies have indicated that the degree of customer satisfaction experienced by shipping companies is significantly influenced by their ability to communicate clearly, provide reliable customer care, and deliver services consistently. This is especially true for exporters who need reliable logistics to be competitive in the market (Syriopoulos, 2012).

Exporters choose shipping companies with consistent, transparent services and strong customer assistance, according to several studies. However, delays, limited-service customization, and poor communication persist. Shipping companies must focus cutting-edge technology, human training, and port and customs optimization to handle these concerns (Talib et al., 2012). These improvements might improve Gujarati exporters' operating efficiency, competitiveness, and happiness abroad. Recently performed logistics industry studies show the sector's expansion in India. However, little study has examined how Gujarat's logistical infrastructure affects exporters. The current study will reduce the gap by assessing logistical facilities' primary pros and cons from exporters' perspectives. This study was inspired by the rapid expansion of port container terminals that provide efficient and effective services and high port productivity for optimal port performance. The issue of quay cranes and prime movers and port throughputs of 20 food equivalent units is being studied (Thamrin, 2012). These parameters were linked to port turnaround time using a regression model. Crane allocation, container loading and unloading, and vessel turnaround time are strongly correlated. This method lets port managers determine the appropriate crane allocation depending on container volume to meet turnaround time. Containers are most vulnerable while stationary, thus ports and terminals are vital for their safety. Secure container transit is essential for supply chain management and security. The article discusses port-related supply chain container integrity technology. E-seals, tracking devices, cameras, and improved gate processes are possible solutions. Information interchange across various stakeholders is needed to maximize technology use (Tenold & Theotokas, 2013).

There is a little difference between "Logistics" and "Supply Chain Management" (SCM), despite the fact that the terms are occasionally used interchangeably in everyday speech. Bowersox and Closs' book on logistics management mentions this. While logistics is more operational in nature, supply chain management (SCM) is more strategic. Logistics can be thought of as a part of supply chain management (SCM), which encompasses tasks like organizing, carrying out, and managing the effective forward and backward flow of products, services, and related data between the point of origin and the point of consumption in order to satisfy legal and customer requirements. Inbound and outbound activities are terms frequently used to describe the activities involved in a typical supply chain (Tenold & Theotokas, 2013). Activities related to bringing goods into the firm are referred to as inbound logistics, whilst activities related to removing the things from the company are referred to as outbound logistics. Harmonization of state tax systems is a priority for Indian logistics firms.

Logistics firms are struggling with local taxation and centralized sales tax legislation. Because of the consistent tax structure, third-party logistics should gain market share (Fugazza, 2015).

According to the Deloitte Report, India's logistics business has grown in importance. Since the Indian economy has grown rapidly for years, freight traffic has increased significantly. One of the main causes is this. Traffic volume has opened up opportunities for logistics expansion, including transportation, warehousing, freight forwarding, quick cargo delivery, container services, shipping services, and more. The growth route has increased pressure on the industry to provide answers for future growth. The logistics sector's strength will undoubtedly be a major element in the economy's future growth. Most of the port's customers come from the hinterland, or the surrounding area. The hinterland of a port includes the markets it serves, the destinations of goods, and its own market reach, or the locations where things come from (Munim & Schramm, 2017). The roles and operations of ports have changed significantly over the last several decades as a result of a stronger focus on port hinterland development. The expansion of land transportation networks has increased port competition for goods from a wider hinterland. The development of multimodal transportation is associated with this expansion into the hinterland (Kapnissis et al., 2020). Value-added services that can change the port market for cargo include inland container depots, on-dock rail transshipment facilities, inland terminal facilities, container freight stations, warehouses, freight distribution centers, and other maintenance facilities. Because loading and unloading are crucial components of multimodal transportation, this is the case.

METHOD

This study used a narrative literature review approach to summaries the body of research on Gujrat ports and shipping facility services. Scopus, Web of Science, Google Scholar, and ScienceDirect were among the major academic databases that were thoroughly searched. Inclusion Requirements investigated with a focus on Gujarat, India's port operations, the reviewed literature emphasizes the critical role that service quality plays in the logistics and maritime transportation sectors.

RELATED WORKS

When compared to developed nations like the US and Europe, India's high logistics costs might be attributed to poor infrastructure and services. The transportation, logistics, warehousing, and packaging industry in India is dominated by the unorganized sector, which comprises small warehouse operators, freight forwarders, custom brokers, and businesses with four vehicles that are connected to third-party brokers or transport firms. Less than 10% of the nation's total logistics market is comprised of the organized segment. According to the Deloitte Report, India's logistics business has grown in importance. Since the Indian economy has grown rapidly for years, freight traffic has increased significantly (LAMAI et al., 2020). One of the main causes is this. Traffic volume has opened up opportunities for logistics expansion, including transportation, warehousing, freight forwarding, quick cargo delivery, container services, shipping services, and more. The growth route has increased pressure on the industry to provide answers for future growth. The logistics sector's strength will undoubtedly be a major role in the economy's future growth (Munim & Schramm, 2017). India's high logistics costs relative to developed countries are due to

poor infrastructure and services, according to the ICRA Report. In India, the unorganized sector—small warehouse operators, freight forwarders, custom brokers, and enterprises with four vehicles connected to third-party brokers or transport companies—dominates transportation, logistics, warehousing, and packaging. Less than 10% of the country's logistics market is organized (Le et al., 2020). Since ports are centers that connect the open economy to the world, their development and economic growth are closely intertwined (Trivedi et al., 2021). Advances in multimodal transportation and port operations have allowed non-coastal hinterland communities to benefit from port accessibility. The 1990s economic reforms that aimed to boost economic growth led to approximately 90% of India's foreign commercial transactions taking place at its ports. Gujarat has created its own port policy to assist port expansion in line with national initiatives to improve India's port infrastructure. Gujarat's large hinterland supplies goods to India's expanding north. This article examines the link between the gross state product (GSDP) of eight hinterland Indian states and cargo shipped by Gujarat ports (Misra, 2019).

The gross state product (GSDP) of eight hinterland Gujarat states is compared to port cargo volume using a two-variable logistic regression model. This study uses 2011–2019 data. Data shows that cargo traffic at Gujarat's ports increases 0.39 to 0.55% for every 1% increase in Gujarat, Rajasthan, Haryana, Punjab, Himachal Pradesh, Jammu & Kashmir, Delhi, and Madhya Pradesh's GSDP. This suggests both hinterland state output and Gujarat's own output affect container traffic at Gujarat's ports. Ports handle most of the world's commerce, making them increasingly vital as globalization increases international trade (Le et al., 2020). Ports connect the global and open economies. Port development and economic growth are linked. Port building benefits coastal areas, as is widely known. Due to multimodal transportation and port operational improvements, port expansion is benefiting inland and offshore, boosting economic growth. Port development is essential to infrastructure construction for economic growth. Developing ports also draw firms to their hinterlands, promoting import-export and forward-backward economic links. Thus, economic authorities prioritize port expansion (Song, 2021). Chudasama used the same strategy to evaluate India's main ports, while Park and Seo (2016) used an enhanced Solow model to study South Korean seaports' economic effect on the surrounding region. Button examined the economic effects of connecting the Northern Sea Route to Adriatic seaports. Gil-Saura et al. (2018) (United Nations Conference on Trade and Development, 2022) examined freight forwarding business-to-business client satisfaction and loyalty. Munim and Schramm (2017) estimated container shipping freight prices for the Far East-Northern Europe trade route. In 2018, Wiegmans B. I. and colleagues examined hinterland stakeholder-deep-sea container port interactions. Huang S. T. and colleagues evaluated East Asian international freight forwarders' service in 2019. In 2020, Rui Liang and Ziyang Liu studied how trade, logistics, and port connections affected economic growth (Brrar et al., 2023).

Most port customers come from the hinterland. Ports' hinterlands include their marketplaces, where goods are shipped, and where they originate. Port functions and operations have changed significantly in recent decades due to a stronger focus on port hinterland development. Due to land transportation network expansion, ports compete more for goods from a bigger hinterland. This hinterland expansion is tied to multimodal transportation. Value-added services including inland container depots, on-dock rail transshipment facilities, inland terminals, container freight stations,

warehouses, freight distribution centers, and maintenance facilities can change cargo port markets (Munim et al., 2020). The predicted low growth rates for seaborne commerce indicate that global trade is about to reach a more advanced stage characterized by more regional focus and technological developments (Saini & Saini, 2016). Maritime operations are anticipated to evolve as a result of supply chain strengthening tactics, shifts in customer behavior, and the use of technology into logistics. To ensure the sector's long-term survival and consistency with global economic trends, leaders and industry players must place a high priority on fostering innovation, enhancing infrastructure, and addressing environmental concerns. This is because multimodal transportation requires loading and unloading. The marine industry had a notable surge in activity in 2021 as economies recovered thanks to financial assistance and the reopening of markets (G & J, 2023). However, the slow recovery of seaborne commerce relative to merchandise traffic highlights enduring issues such labor shortages, port inefficiencies, and shifts in trade routes brought on by geopolitical tensions. Furthermore, the adoption of green technology and a move toward more sustainable practices in the shipping sector have added new facets to the growth of the sector.

GLOBAL MARITIME SCENARIO

Over the past decade, the global marine sector has exhibited dynamic patterns that are strongly linked to shifts in global GDP and commercial trade (David & Luis, 2022). Between 2014 and 2023, there were significant swings in the growth of the global GDP, with the COVID-19 pandemic in 2020 causing a 3.1% drop, and a robust 5.8% recovery in 2021. Similarly, there were significant swings in the increase of merchandise trade volume, which fell to -5.0% in 2020 before rising sharply to 9.7% in 2021. Similar trends were seen in seaborne trade, a crucial component of international trade, with annual growth rates ranging from a -3.8% fall in 2020 to a little 3.2% rise in 2021. Due to persistent supply chain interruptions, port congestion, and geopolitical concerns, the marine sector's recovery has trailed behind that of the commerce trade. The steady but moderate growth in seaborne commerce throughout the ensuing years—2.0% in 2023—emphasizes the maritime sector's enduring importance in bolstering international economic activity. The connections between trade volumes, global economic trends, and marine transport demonstrate how much the industry is impacted by more significant economic shifts and unforeseen circumstances. The data emphasizes how crucial it is to implement coordinated international policy initiatives to support sustainability and resilience in maritime and broader commerce systems. These figures highlight the connection between maritime transportation, products commerce, and global economic activity. The fact that the COVID-19 pandemic directly caused the 2020 drop and that a rebound was observed in 2021 is also remarkable. The 2023 data are approximations based on existing patterns (Singh et al., 2023). The marine industry witnessed a sharp rise in activity in 2021 as economies recovered with the aid of financial assistance and the reopening of markets. Despite this, the slow recovery of maritime commerce compared to merchandise trade highlights ongoing issues such labour shortages, inefficient ports, and shifting trade routes due to geopolitical concerns. The shipping industry's development has also taken on new dimensions as a result of the adoption of green technology and a drive towards more sustainable practices.

Going forward, the projected moderate growth rates for maritime commerce indicate that international trade is moving into a more advanced phase characterized by increased regional concentration and technological breakthroughs. Maritime operations are anticipated to undergo a transformation due to the incorporation of technology in logistics, shifts in consumer behaviour, and supply chain strengthening tactics. For the sector to remain viable and consistent with global economic trends, it is imperative that leaders and industry players place a high priority on fostering innovation, enhancing infrastructure, and addressing environmental concerns..

Table 1. Interconnectedness of global economic activity, merchandise trade, and maritime transport

Year	Global GDP Growth (%)	Merchandise Trade Volume Growth (%)	Seaborne Trade Volume Growth (%)	Year
2014	2.8	3.4	3.2	2.8
2015	2.9	2.6	2.1	2.9
2016	2.5	1.3	2.6	2.5
2017	3.3	4.7	4.1	3.3
2018	3	3.7	2.7	3
2019	2.3	0.5	0.5	2.3
2020	-3.1	-5	-3.8	-3.1
2021	5.8	9.7	3.2	5.8
2022	3.2	2.5	1.4	3.2
2023	2.7	2.5	2	2.7

Table 1 depicts the Interconnectedness of global economic activity, merchandise trade, and maritime transport.

INDIAN MARITIME SECTOR

India's marine industry plays a crucial role in the country's economic structure, serving as a link between seaborne trade volumes, goods trade, and GDP development. India's GDP has grown at a remarkable rate over the past 10 years, averaging 6–8% annually until the pandemic-related fall of -7.3% in 2020. Merchandise trade (-10.1%) and seaborne commerce (-5.9%) volumes significantly decreased during the current economic slump, highlighting the interdependence of these elements. Following the epidemic in 2021, there was a robust rebound, with GDP growing by 8.2%, goods trade volumes increasing by 26.5%, and seaborne commerce increasing by 7.0%. This expansion demonstrated the industry's capacity to adapt and address global issues. With an anticipated 6.1% GDP growth and a 4.0% increase in seaborne commerce, the falling growth rates seen in 2022 and 2023, however, point to a time of stability influenced by shifts in supply chains, trade policy, and geopolitics (Tae YEO et al., 2015).

With almost 95% of its commerce by volume and 70% by value passing via its ports, India's reliance on marine trade is evident. The Sagarmala program, digital logistics, and port infrastructure investments have all been instrumental in increasing connectivity and efficiency. India's commitment to balancing maritime growth with global environmental goals is demonstrated by the growing emphasis on sustainable practices, such as reducing carbon footprints and using green shipping technology. Despite challenges such as shifting global demand and unequal trade across regions, India's marine industry remains an essential component of its economic strategy, fostering commerce, generating employment, and strengthening regional ties (Nadjhan, n.d.). Addressing infrastructure issues, promoting cooperation between the public and private sectors, and grasping fresh chances in the changing global trade environment are all necessary for future prosperity.

As a critical conduit for global commerce and a driver of economic growth, India's marine industry is essential to the country's economic structure. The sector's success over the last 10 years demonstrates its resilience and crucial role in facilitating regional and international commerce. India's ports handle about 1.2 billion metric tons of cargo annually, demonstrating their vital role in supporting the country's trade objectives. Seaborne commerce grew steadily during periods of robust economic expansion, such as 2015–2018, which was a reflection of increased industrial activity and a rising demand for both raw materials and completed goods. However, unforeseen circumstances like the COVID-19 pandemic exposed the industry's flaws, emphasizing reliance on certain trade routes and deficiencies in port operations

Table 2. Interconnectedness of Indian economic activity, merchandise trade, and maritime transport

Year	GDP Growth (%)	Merchandise Trade Volume Growth (%)	Seaborne Trade Volume Growth (%)
2014	7.4	1.8	4
2015	8	-1.3	2.5
2016	8.3	1.3	5.7
2017	6.8	5.9	4.8
2018	6.5	7.5	3.5
2019	4	-5.6	1.3
2020	-7.3	-10.1	-5.9
2021	8.2	26.5	7
2022	6.7	14.6	5.5
2023	6.1	5	4

Table 2 depicts the Interconnectedness of Indian economic activity, merchandise trade, and maritime transport.

And Table 3 depicts the cargo traffic (in million tons) at major ports in India and Gujarat over the last 15 years.

Table 3: cargo traffic (in million tons) at major ports in India and Gujarat over the last 15 years

Year	Major Ports (India)	Minor Ports (India)	Gujarat Ports (Total)	Major Port (Paradip)	Minor Port (Mundra)
2008	530	330	200	50	60
2009	540	350	210	52	65
2010	550	380	220	55	70
2011	560	400	240	58	75
2012	570	420	250	60	80
2013	580	440	260	62	85
2014	600	450	270	65	90
2015	620	470	300	67	100
2016	640	490	320	70	110
2017	650	500	340	72	120
2018	660	520	360	75	130
2019	670	540	380	78	140
2020	680	550	400	80	150
2021	690	560	420	82	160
2022	700	580	450	85	170
2023	710	600	470	87	180

GUJRAT MARITIME SECTOR

Gujarat is between latitudes 20.6 and 24.42 and longitudes 68.10 and 74.28 on the west coast of India. Its shoreline is around 1600 kilometres long, and its total land area is about 1.96 lakh square kilometres. It is surrounded by the Arabian Sea in the west, the States of Rajasthan in the northeast, Madhya Pradesh in the east, and Maharashtra in the southeast. Gujarat gains from its strategic location for improvements in the maritime industry. Gujarat has a natural advantage in that it attracts a lot of cargo from the vast hinterland of the northern Indian states to its ports for international trade. For foreign trade, Gujarat is the only state in India that is closest to the Middle East, Africa, and Europe (Morgeson et al., 2023).

Over the past decade, Gujarat, a major Indian marine state, has made impressive economic strides. Its Gross State Domestic Product (GSDP) increased from ₹11.67 trillion in 2017 to ₹25.63 trillion in 2024. The state's booming marine and commerce trade operations are closely linked to this expansion. About 40% of India's maritime

freight is handled by Gujarat's ports, both public and private, with Mundra Port being the biggest in the country in terms of the amount of cargo handled. The state has developed into a major hub for international trade because to its advantageous position and extensive coastline. Gujarat became the third-largest state economy in India in 2023 when its GSDP surpassed that of Uttar Pradesh. About 20% of India's total comes from the state's industrial production and merchandise exports, underscoring its vital role in the country's economy. Gujarat's marine capabilities have been greatly enhanced by investments in port facilities and programs, making it a vital component of India's commerce and economic landscape.

Cargo volume at Indian ports has steadily increased during the past 15 years (2008–2023), with big ports growing from 530 million tons to 710 million tons and small ports growing from 330 million tons to 600 million tons. Gujarat's ports, particularly Mundra, have been vital, since overall traffic has grown from 200 million tons to 470 million tons. While Mundra Port has achieved notable progress among minor ports, growing from 60 million tons to 180 million tons, Paradip Port has continuously distinguished itself among big ports, raising its capacity from 50 million tons to 87 million tons. This expansion highlights Gujarat's crucial role in the nation's port logistics and demonstrates the growing potential of India's marine trade (World Treade Organization, 2024). When it comes to overseeing the movement of commodities in India, Gujarat is the most advanced state in the country.

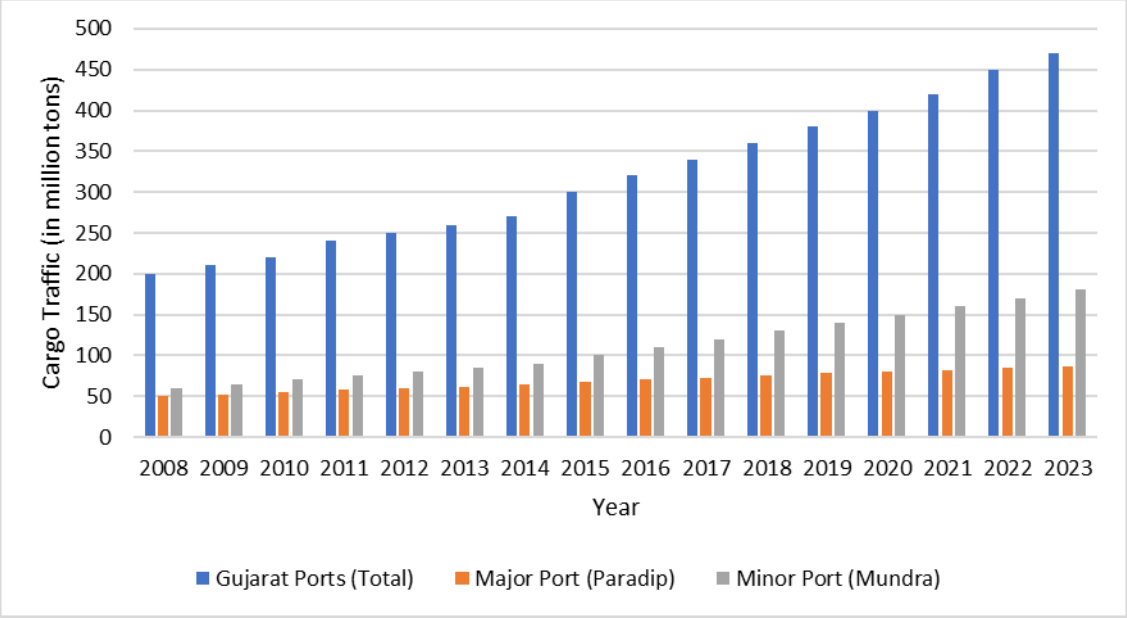

Figure 4: Ports in Gujarat Handle Cargo (in Million Tons)

The non-major ports inside the state are growing more and more important since Gujarat's contribution to the energy trade has significantly expanded over time. The ports of Gujarat are an integral part of India's energy infrastructure since they handle a sizable amount of the country's seaborne traffic in coal, LNG, POL and related products. In terms of managing energy commodities, Gujarat is well-positioned due to its near proximity to global energy markets and its strong linkages to India's hinterland states .

Table 4: cargo traffic (in million tons) at major ports in India and Gujarat over the last 10 years

Year	Crude and Oil Products (%)	Coal (%)	Iron Ore (%)	Fertilizers & Raw Materials (%)	Others (%)
2014-15	51.14	2.83	1.57	20.98	23.48
2015-16	52.31	3.37	1.94	18.46	23.92
2016-17	53.14	2.73	2.26	17.29	24.58
2017-18	51.74	1.93	2.67	16.57	27.09
2018-19	47.78	2.21	3.03	18.24	28.74
2019-20	44	2.4	2.7	16	34.9
2020-21	43.8	2.3	2.8	15.6	35.5
2021-22	44.1	2.3	3	15.7	34.9
2022-23	44.5	2.4	2.9	15.5	34.7

Table 5: Port and Shipping Statistics of Gujarat (2023-24)

Category	Details	Analysis
Number of Ports	- 1 major port (Deendayal Port, Kandla) - 48 non-major ports managed by the Gujarat Maritime Board (GMB	Gujarat's extensive port network underscores its critical role in India's maritime economy, fostering robust trade and connectivity.
Cargo Volume	- Non-major ports handled **449.26 MMT** in 2023-24, a 5% increase over the past decade - Private ports handled **247.5 MMT** in 2023-24	Growth in cargo volume reflects Gujarat's strong industrial base and the efficient operations of private ports like Mundra, Hazira, and Dahej.
Export and Import Growth	- Exports: 19% increase, reaching 68.5 MMT - Imports: 13% increase, reaching 179 MMT	The rise in exports and imports signifies Gujarat's increasing integration with global markets and its role as a trade gateway for India.
Coastal Economic Zones	3 zones under the Sagarmala project: - Kachchh - Saurashtra - Suryapu	Coastal Economic Zones are pivotal for enhancing trade efficiency, driving regional development, and boosting

		Gujarat's maritime economy.
Key Greenfield Projects	- Bulk terminal at Chhara - CNG Terminal at Bhavnagar	Sustainable infrastructure development supports Gujarat's focus on eco-friendly growth and diversification of cargo handling capabilities
Heritage Initiative	Development of a **National Maritime Heritage Complex** at Lothal, showcasing India's maritime legacy	Aims to enhance tourism and awareness of India's maritime history, positioning Gujarat as a cultural and economic hub.
Private Port Operations	Mundra Port: Significant share in total cargo; high operational efficiency	Private ports' superior efficiency and infrastructure continue to attract higher volumes of trade, strengthening Gujarat's maritime prominence.
Logistics Connectivity	Gujarat ranked high in the **LEADS Index** for superior road and rail connectivity to ports	Efficient logistics contribute to reduced turnaround times and bolster Gujarat's position as a preferred trade destination in India.

CONCLUSION

With a focus on Gujarat, India's port operations, the reviewed literature emphasizes the critical role that service quality plays in the logistics and maritime transportation sectors. Some of the most important lessons learned include the growing focus on digital transformation, the need for innovations in customer-centric service, and the integration of sustainable practices to increase competitiveness. The study's conclusions indicate that the industry is heavily reliant on the dynamics of international trade, making strong infrastructure and legal frameworks essential to achieving operational efficiency. There are significant gaps in the empirical understanding of regional problems despite the large amount of study. This is particularly true when it comes to addressing policy uncertainty and infrastructural deficiencies in Gujarat's maritime sector. The socio-environmental impacts of port operations and the integration of cutting-edge technology like blockchain and artificial intelligence into the local environment have also been the subject of very few studies. Empirical study should be carried out in order to better comprehend the operational and environmental challenges that are specific to Gujarat's ports.

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