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TAMILNADU STATUS OF DRY AND SEA PORTS INFRASTRUCTURE IN MARINE TRADE: AN EMPIRICAL STUDY

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ABSTRACT

This empirical study investigates the status of dry and sea port infrastructure in India and its implications for marine trade. With the increasing volume of trade and the critical role of efficient logistics, the research aims to evaluate the existing infrastructural facilities, operational efficiency, and service quality of these ports. Data were collected from various stakeholders, including exporters, importers, logistics providers, and shipping agents, to assess their concerns and satisfaction levels. The findings reveal significant gaps in infrastructure quality and operational processes, impacting overall trade efficiency. Key issues identified include congestion, inadequate facilities, and cumbersome documentation procedures that lead to delays in cargo movement. The study emphasizes the need for targeted investments in modernization and technology adoption to enhance service delivery and user satisfaction. Additionally, it recommends fostering stakeholder engagement and collaboration to ensure that diverse perspectives are considered in policy-making. This research serves as a valuable resource for policymakers, port authorities, and maritime traders, providing actionable insights to improve the effectiveness and competitiveness of India's marine trade infrastructure.

Introduction

PREAMBLE OF THE STUDY

"If the world is cold, make it your business to build fires"-Horace Traubel.

Indian maritime history begins during the 3rd millennium BCE when inhabitants of the Indus Valley initiated maritime trading contact with Mesopotamia. (Wikipedia)The growth in world trade is now more marked, in relation to the growth in global gross national product. Since the greater part of exports now is transported by sea, this helps in boosting the demand for shipping services. (IAME 2007). India is becoming a major trading partner in world commerce. A large proportion of the country's trade with rest of the world moves on containers.

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The contours of global maritime trade movement are changing. India's infrastructure needs to change, too. (Hary valentine, June 12, 2014).

India's exports are expected to reach USD 500-510 billion by 2024-25, according to the Federation of Indian Export Organisations (FIEO). To achieve this ambitious target, Indian exporters must adapt to the evolving global landscape. Strengthening India's presence in emerging markets across Asia, Africa, and Latin America is essential for positioning the country as a major player in world trade by 2030. The Indian Ocean has emerged as a critical strategic arena in the 21st century, primarily due to the growth of Asian economies and their rising demand for raw materials and energy from the Middle East to fuel their development. Maritime transport plays a vital role in the social and economic advancement of nations. It is widely acknowledged that over 95% of India's trade by volume and 70% by value is conducted through maritime routes. Enhancing maritime infrastructure will positively impact India's trade and contribute to economic growth.

Since liberalization, India's international trade has surged, with the contribution of trade in goods and services to GDP increasing from 16% in 1990-91 to 47% in 2021-22. As of recent estimates, India's economy ranks as the fifth-largest globally by nominal GDP and third-largest by purchasing power parity (PPP). Despite this progress, India faces challenges, including a significant slowdown in economic growth, which was around 5.0% in the fiscal year 2022-23. The government projects a growth rate of 6.1% to 6.7% for 2023-24.Additionally, as one of the fastest-growing economies in Asia, India is grappling with the inadequacies of its land transport infrastructure, which has not kept pace with rising demand. The country's road network, responsible for nearly 90% of passenger traffic and 65% of freight movement, is heavily congested and in need of modernization. Addressing these infrastructure challenges is crucial for sustaining economic growth and enhancing international trade.

The Indian coastline spans 7,517 km and includes 13 major and around 200 minor ports, which collectively handle about 95% of the country's trade by volume and 70% by value. However, major ports are already operating above capacity, and sea-borne trade is projected to grow by 7% annually. To meet this rising demand, there is a pressing need to enhance the infrastructure of minor and intermediate ports, which currently lack the capacity to support increased traffic. Efficient logistics services are crucial for facilitating marine trade, as poor logistics can lead to higher costs in both time and money. As developed nations transition from traditional manufacturing to modern practices, the importance of high-quality logistics services

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becomes even more pronounced, especially for countries far from major markets. This study will explore the current status of infrastructural facilities, service quality, customer satisfaction, documentation processes, operational efficiency, cargo volume, and movement speed at dry and sea ports.

INDIA'S INFRASTRUCTURAL FACILITIES STATUS OF MARINE TRADE

In the 21st century, "soft infrastructure" has become essential for enhancing cargo movement capacity in India, complementing traditional "hard infrastructure" like roads and ports. Historically, India's share of world exports declined from 2% in 1950 to 0.4% in 1980, with only a slight recovery to 0.5% by 1990 and 0.8% by 2002. Cargo traffic at India's major ports is influenced by global and domestic economic activities; for example, cargo handled increased by 4.8% to 95.87 million tonnes in April-May 2014, reversing a prior decline. However, India's infrastructure, particularly in sea and inland ports, remains inferior to that of East Asian competitors, which has hampered investment and trade volumes. Upgrading this infrastructure necessitates significant investment, requiring a strategy that enhances public funding while effectively attracting private investment.

CURRENT SCENARIO OF INFRASTRUCTURAL FACILITIES STATUS OF DRY AND SEA PORTS IN INDIA

Infrastructure is crucial for the economic growth of any country, with international trade—primarily conducted via sea—playing a significant role in contributing to GDP. In India, ports are classified as Major and Minor based on ownership, with 13 major ports and 187 minor ports along the 7,517 km coastline as of 2010-11. Major ports, owned by the government, are governed by the Major Port Trusts Act of 1963, except for Ennore port, which operates under the Companies Act. Collectively, these major ports handle over 90% of the nation's foreign trade, accounting for approximately 560 million tonnes of the total 911.69 million tonnes of traffic in 2011-12. Despite their importance, traffic at major ports has seen a 1.7% decline compared to the previous year, indicating stagnant performance over recent years. Minor ports, regulated by State Maritime Boards, continue to grow in number across various states and Union territories.

MAJOR PORTS- Mumbai Port, Kolkata Port (Haldia), Chennai Port, Visakhapatnam Port, Jawaharlal Nehru Port (Nhava Sheva), Cochin Port, Kandla Port, Marmagao Port, Paradip Port, Tuticorin Port.

MINOR PORTS- West Coast, Mandvi, Porbandar, Diu, Mangalore, Malpe, Karwar, East Coast, Vishakhapatnam, Kakinada, Nagapattinam, Cuddalore, Puri, Dry Ports.

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INLAND CONTAINER DEPOTS (ICDS

Inland Container Depots (ICDs) such as Tughlakabad (Delhi), Sanand (Gujarat), Jaipur (Rajasthan), Ludhiana (Punjab), and Bangalore (Karnataka), along with Container Freight Stations (CFS), play a crucial role in India's logistics landscape by facilitating the handling and temporary storage of containers and various cargo types transported via road, rail, inland waterways, or airports. These dry ports help drive economic development from coastal regions to the hinterland by bridging transport infrastructure and supply chain management, ultimately reducing transportation costs. India's maritime trade includes the export-import of bulk commodities like crude oil, iron ore, and coal, often hampered by inadequate infrastructure. However, economic liberalization has spurred growth in the handling of value-added goods through containers, enhancing cargo transport efficiency between Indian ports and international destinations.

INFRASTRUCTURAL FACILITIES STATUS OF DRY PORT AND SEA PORT IN TAMILNADU

KEY ISSUES IN INDIAN PORT REFORMS			
POLICY ISSUES	**ORGANISATIONAL ISSUES**	**CAPACIATY ISSUES**	**REGULATORY ISSUES**
PRIVATE SECTOR PARTICIPATION. CORPORATIZATION. COMPETITION. CONNECTIVITY.	LABOUR. EQUIPMENT UTILISATION AND MANAGEMENT. COORDINATION IN AMONG PORT AGENCIES.	CONTAINER CAPACITY ENHANCEMENT. NEW FACILITIES. NEW PORT. HUB PORT FEASIBILITY.	CONSERVANCY AND SAFETY. ENVIORNMENTAL REGULATIONS. TARIFF AND ENTRY REGULATIONS.

Source: Source: Kr Nishant on Sep 25, 2012, Major Ports of India - A detailed study and ranking model.

The term "infrastructure" encompasses various meanings, but in this context, it specifically refers to the facilities associated with dry and sea ports, including both physical and non-physical aspects such as personnel, equipment, and land. Key components include the total area of the ports, road connectivity, warehouse space, equipment capacity, container terminals, stuffing and de-stuffing areas, EDI counters, administrative buildings, and other essential resources. Currently, there are three major ports in this context: Tuticorin, Chennai, and Ennore.

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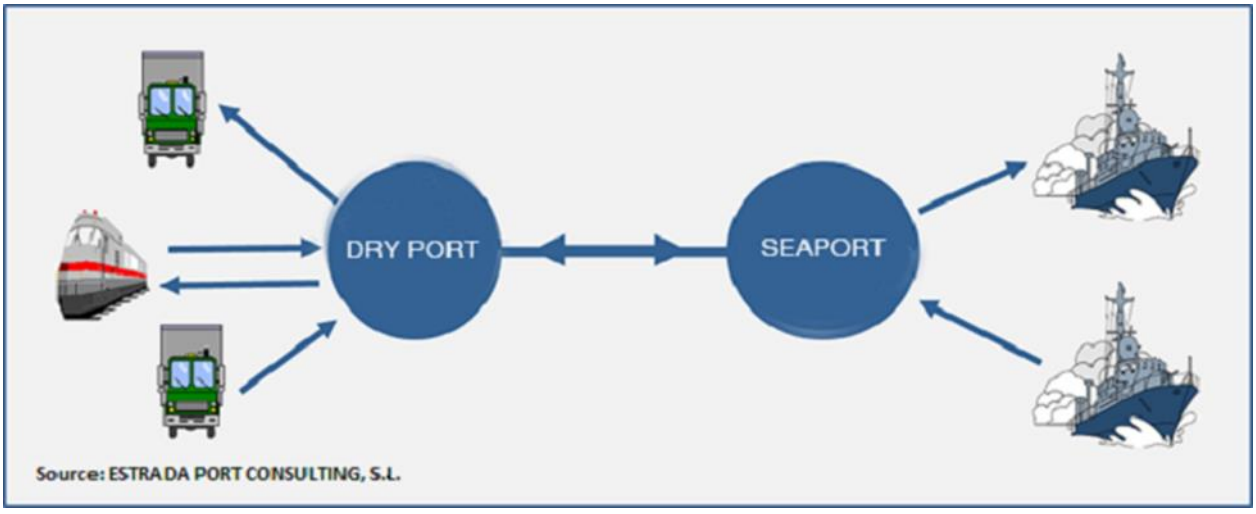
THE CHANGING LOGISTICS INFRASTRUCTURE FACILITIES

With rising consumer demand and the growth of global trade, infrastructure support—particularly in terms of roads, rails, ports, and warehouses—is crucial for economic success. In India, goods are primarily transported by road and rail, with road transport predominantly managed by private players and rail transport overseen by the central government. India boasts the world's second-largest road network, contributing 65% of freight transport due to its cost-effectiveness and flexibility. Rail transport is favored for its containerization capabilities, facilitating the movement of ship containers and wooden crates. Sea transport complements these modes, with 95% of India's foreign trade conducted through maritime routes. The country has 12 major ports and 185 minor ports, highlighting the critical role of road transport in the economy. Between 2001 and 2005, freight traffic across all modes showed significant growth, with increases in road (5% to 14%), rail (4% to 7.5%), air (6% to 20%), and sea cargo (3.5% to 11%), reflecting an overall rise in logistics activity. The United Nations Conference on Trade and Development (UNCTAD) defines seaports as vital interfaces between various modes of transport, serving as centers for combined transport. These ports function as multi-functional markets and industrial zones where goods are not only in transit but also sorted, manufactured, and distributed. Essentially, seaports operate as multi-dimensional systems that need to be integrated into logistic chains to effectively fulfill their roles.



Source: DGFT.com

KEY ISSUES IN SEA PORT AND DRY PORT IN INDIA

Seaports in India face significant inefficiencies, including high turnaround times for vessels, delays in coordination with Customs authorities, and inadequate hinterland connectivity, compounded by poor port and land-side infrastructure. Additionally, modern equipment and warehouse space are limited. Similarly, dry ports suffer from poor road quality and network connectivity, with vehicle stoppages at state border check posts causing major delays, particularly affecting shipments from Coimbatore to Cochin port. As a result, many marine traders in Coimbatore rely on the Coimbatore-Irugur ICD and Tuticorin sea port for cargo handling. It is estimated that these stoppages account for 40% of lost time. The trucking industry is characterized by a lack of stringent regulations, leading to many small, unorganized players in marine trade. To

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enhance operational efficiency at both dry and sea ports, it is essential to improve infrastructure, superstructure, equipment, transport connections, management motivation, and employee qualifications.

RESEARCH GAP

There exists a significant research gap regarding the actual status of infrastructural facilities and operational efficiency at sea and dry ports in marine trade. While some studies have examined aspects like port finance and safety, few focus on the infrastructural conditions from the perspective of intermediaries such as customs house agents, logistics providers, freight forwarders, consolidators, and marine traders. This study aims to investigate the true status of infrastructural facilities at dry and sea ports in marine trade, exploring various attributes including the availability of facilities, current service quality, user satisfaction, documentation processes, operational efficiency and its influencing factors, as well as issues related to export-import processing, transportation delays, and cargo movement speed.

STATEMENT OF THE PROBLEM

Infrastructure is crucial for the growth of developing nations like India, where inadequate facilities pose a significant barrier to achieving sustained GDP growth. Without improvements to the infrastructure of dry and sea ports, the projected growth rate of 9% or more may remain unattainable. The Planning Commission of India estimates that approximately ₹45 lakh crores (US$1.4 trillion) will be needed for infrastructure development—including transportation, power, telecommunications, and water supply—during the 12th Five-Year Plan. In the modern business landscape, effective dry and sea port infrastructure facilitates international trade, enabling exporters, importers, and intermediaries such as customs house agents and logistics providers to efficiently move cargo from production to consumption points. However, research indicates that Indian ports lag behind their global counterparts due to poor berth utilization, high human resource intensity, and minimal equipment use, leading to high turnaround times and elevated cargo handling costs. Studies suggest that significant investment is required to enhance port infrastructure to handle growing traffic and containerization demands. Therefore, the Government of India must focus on developing these ports to improve operational efficiency, increase cargo volume, and bolster foreign exchange reserves. This study aims to examine the status of infrastructural facilities at dry and sea ports in maritime trade, particularly from the perspectives of exporters, importers, and intermediaries.

RESEARCH QUESTIONS

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The present research work is carried out to answer the question given below:

1. What is the opinion of intermediaries, exporters and importers towards available infrastructural facilities status of dry and sea port in marine trade?
2. What is the present service quality of infrastructural facilities offered by dry and sea port in marine trade?
3. What is the level of satisfaction towards available infrastructural facilities of dry and sea port in marine trade?
4. What are the factors affecting operational efficiency of dry and sea port in marine trade?
5. What are the reasons for delaying cargo transportation in marine trade?

OBJECTIVES OF THE STUDY

Evaluate traffic volume at major and non-major ports and forecast future trends.

Provide an overview of the theoretical framework for dry and sea port infrastructure in marine trade.

Assess the current status of infrastructural facilities at dry and sea ports in the study area.

Evaluate the service quality of infrastructural facilities provided by dry and sea ports.

Measure user satisfaction regarding dry and sea ports in the study area.

Analyze the documentation procedures and operational efficiency, along with their influencing factors.

Examine cargo volumes, delays in transportation, shipment issues, and cargo movement speed from dry ports to sea ports.

SCOPE OF THE STUDY

This present study is only portrait towards infrastructural facilities status of dry and sea port in maritime trade as a primary task. Meanwhile, this study is attempted to find out the existing infrastructural facilities, present service quality, users satisfaction, documentation procedure and cargo movement speed from dry to sea port. In future, any researcher may study related to problems and prospects, supply chain model, transit time of cargo, vessel routing, documentation formalities and terminal handling operation of ocean carriers, exporter and importers challenges, freight forwarders, liner, consolidators and customs house agent role in dry and sea port in marine trade.

RESEARCH METHODOLOGY

PRE-TESTING AND PILOT STUDY

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The questionnaire is given to field research experts for a critical review. The questionnaire was distributed to 20 respondents in among the Tamilnadu dry port for conducting pre-testing and pilot study. The pre-testing was done to ensure reliability and validity of the questionnaire. It was done to check whether the instrument was correctly framed in an understandable manner. Taking in to consideration the opinion of the selected sample respondents, necessary modifications and changes were incorporated in the questionnaire after the pilot study. The respondents included in the pilot study are not included in the final study i.e. (data analysis).

SOURCES OF DATA

The study relies on both primary and secondary sources. The primary data is collected through questionnaire method with the total respondents of 519 intermediaries like C&F agent, CHA, Freight Forwarders, Logistics, shipping agents and Consolidators located in Coimbatore area those people are using Irugur-ICD (dry port) and Tuticorin-sea port and 197 exporters and importers of marine trade The ports of loading and unloading are based on the consignee or consignor option during the export or import contract. The Coimbatore area exporter and importer as well as intermediaries prefer the Coimbatore dry port and Tuticorin sea port based on the demand of the overseas market. The Coimbatore area marine trade communities have the sound experience and knowledge in both dry and sea port area. So the researcher are collecting the data from the Coimbatore area maritime traders for find out the infrastructural status of dry and sea port in marine trade with the out of 519 intermediaries respondents and 197 exporter and importer based on the 30%(194 respondents) of the total definite population except consolidators because the population of consolidators are 14 out of this population 74% of the respondents are covered. The desk research (secondary) data are collected through Ministry of shipping, Basic Port Statistics of India 2012-13, chamber of commerce, DGFT, Economic survey 2013-14, shipping times, EXIM times, The Hindu, Business line, Business Magazine, journal, port of economics, website, books and other dailies etc.

SAMPLE DESIGN AND SIZE

The researcher are adopting the convenient sampling technique in out 719, the 194 sample are selected based on the 30% of total population.

Serial number	**Nature of the respondents concern**	**Total respondents**	**Sample respondents are 30% of total respondents**
1.	Exporter	98	30

2.	Importer	99	30
3.	Logistics	227	68
4.	Customs house agent	92	28
5.	Clearing and Forwarding agent	70	21
6.	Freight Forwarders	29	09
7.	Shipping agent	87	26
8.	Consolidators	14	10 (74% of respondents)
	Total	**716**	**194**

Source: Chamber of commerce, CHA association, logistics association, freight forwarders association, C&F agent, Consolidators list in Coimbatore.

LIMITATIONS OF THE STUDY

As the study made with primary and secondary research, there are certain limitation in the study to be noticed. It is difficult to know if all the respondents gave accurate information; some respondents tend to give misleading information. This present study is entitled as infrastructural facilities status/satisfaction of dry and sea port in Tamilnadu, even after a careful investigation is inseparable from the limitations. The study is subject to suffer the following limitations. They are as follows. This study is confined only to the sea trade. It is not considered about the air cargo. This study portrait/focused only the CHA, liners, Freight Forwarders, consolidators, exporters and importers in Coimbatore area. This study is not included the ICD officials, CFS officials, sea port authorities, documentation developers, service providers, public in this study due to time constraint. CHA and logistics players are located in different part of Coimbatore area. It is hurdled the researcher to fetch the relevant data. If there is any bias of respondents, it may affect the real findings of the present study.

DATA EVALUATION

The collected data were not simply accepted as it is contained and over or emphasized facts. Therefore only relevant data are included in the report, which is helping to achieving the objective of this present study.

Area of the study: Researcher has been selected Tamilnadu dry ports and sea ports as study area, since Tamilnadu region is considered as industrial hub in India.

Period of the study: As an essential part of the study, the primary data were collected by the researcher for a period of 7 months from January 2024 To July 2024.

Framework of Analysis: The ultimate object of the study was to examine the infrastructural facilities status of dry and sea port in marine trade. The data collected for the purpose of study were quantified, categorized and tabulated.

HYPOTHESIS OF THE STUDY:

1. HO: Infrastructural facilities of Dry and Sea port in the study area are above the average level.
2. HO: Quality of infrastructural facilities in the study area is above the average level.
3. HO: Shipping intermediaries and Maritime traders' level of satisfaction are above the average level.
4. HO: There is no relationship between Dry and sea port available infrastructural facilities and the level of satisfaction of maritime traders.
5. HO: There is no relationship between the operational efficiency and opinion about the infrastructural facilities in Dry and Sea port.

DATA ANALYSIS OF RESPONDENT CONCERNS IN MARINE TRADE

The survey captured the concerns of various stakeholders in marine trade, including exporters, importers, logistics providers, and agents. A total of 716 respondents were surveyed, with 30% of each category sampled for analysis, resulting in 194 sample respondents. Respondent Distribution, Total Respondents: 716, Sample Respondents: 194 (30% of total).

OBSERVATIONS OF THE STUDY

This study provides a comprehensive evaluation of the infrastructural facilities and operational efficiency of dry and sea ports in India, focusing on several critical aspects of marine trade. The findings reveal significant insights that can guide policymakers, intermediaries, and users in enhancing port operations and service quality.

Traffic Volume and Future Trends: The analysis of traffic volumes at major and non-major ports indicates a growing trend in cargo movement, emphasizing the need for strategic planning to accommodate future demand. Forecasting these trends will help in optimizing resource allocation and infrastructure development.

Infrastructural Framework: The theoretical framework regarding the infrastructure of dry and sea ports highlights the essential components that contribute to effective marine trade. Understanding this framework is vital for identifying gaps and areas for improvement.

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Existing Infrastructure Status: The current status of infrastructural facilities reveals various strengths and weaknesses. Key areas for enhancement include modernization and expansion to support growing trade volumes, ensuring that facilities meet international standards.

Service Quality Evaluation: The evaluation of service quality indicates that while some facilities perform well, there are significant opportunities for improvement. Focused initiatives to enhance service delivery will directly impact user satisfaction and operational efficiency.

User Satisfaction Levels: Observations regarding user satisfaction suggest that while many users appreciate the services provided, there are concerns regarding delays and inefficiencies. Addressing these issues will be critical in fostering trust and reliability in marine trade operations.

Documentation and Operational Efficiency: The analysis of documentation procedures and their impact on operational efficiency reveals that streamlining processes can significantly reduce delays in cargo movement. Simplifying documentation will enhance overall efficiency and user experience.

Cargo Movement Dynamics: The study of cargo volume, delays in transportation, and shipment speed from dry ports to sea ports underscores the need for improved logistics and coordination between various stakeholders. Efficient cargo movement is essential for maintaining competitiveness in the global market.

Recommendations for Stakeholders: The findings offer actionable recommendations for policymakers and stakeholders, emphasizing the importance of collaborative efforts to enhance infrastructure, streamline operations, and improve service quality. By focusing on user needs and operational efficiency, stakeholders can significantly enhance the effectiveness of India's marine trade.

Logistics Providers: The largest representation in the sample with 68 respondents, indicating a significant interest in the logistics sector's concerns.

Exporters and Importers: Both categories have equal sample sizes (30 each), reflecting a balanced concern among these critical stakeholders in trade.

Customs House Agents: With 28 sample respondents, this group indicates a moderate level of engagement with the issues at hand.

Clearing and Forwarding Agents: The smallest representation among major groups, with only 21 respondents, suggesting they may have less concern or representation in the survey.

Freight Forwarders: This group has the least total respondents (29) and a sample of 9, indicating a potentially smaller role or lower engagement in the issues surveyed.

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Shipping Agents: With 26 sample respondents, this group shows a moderate level of concern, similar to Customs House Agents.

Consolidators: Although only 14 total respondents, 10 were sampled, indicating a higher percentage representation (74%) among this smaller group.

Dominance of Logistics: The logistics sector's high representation suggests that issues related to transportation and infrastructures are of primary concern in marine trade.

Balanced Representation: Exporters and importers are equally represented, highlighting their critical roles in the trade ecosystem.

Need for Focus on Smaller Groups: The low numbers for freight forwarders and clearing and forwarding agents may warrant further investigation to understand their concerns better.

RECOMMENDATIONS OF THE STUDY

Enhancement of Infrastructural Facilities: Investment in Upgrades: Allocate resources for modernizing dry and sea port infrastructure to ensure that facilities meet or exceed average levels. Regular Assessments: Conduct periodic evaluations of infrastructure to identify areas needing improvement. Quality Improvement Initiatives: Quality Standards Development: Establish and enforce quality standards for infrastructural facilities to elevate overall service levels. Training Programs: Implement training programs for staff to enhance service delivery and maintenance of facilities. Satisfaction Surveys and Feedback Mechanisms: Regular Satisfaction Surveys: Conduct surveys among shipping intermediaries and maritime traders to gather feedback on service quality and satisfaction levels. Feedback Implementation: Create a structured approach to implement changes based on feedback to improve overall satisfaction. Relationship Analysis Studies: Conduct Correlation Studies: Regularly analyze the relationship between infrastructural facilities and trader satisfaction to inform strategic decisions. Focus Groups: Organize focus groups with maritime traders to discuss their experiences and perceptions of current facilities. Operational Efficiency Programs: Efficiency Benchmarking: Establish benchmarks for operational efficiency related to infrastructural performance and trader satisfaction. Continuous Improvement Processes: Implement continuous improvement processes to enhance operational efficiency based on trader feedback and infrastructural assessments. Collaboration with Stakeholders: Public-Private Partnerships: Encourage collaboration between government and private sector stakeholders to invest in and maintain port facilities. Stakeholder Engagement: Regularly engage with maritime traders and shipping intermediaries to align infrastructure developments with their needs. Policy Recommendations: Develop Comprehensive Policies:

Formulate policies that prioritize the development and maintenance of infrastructural facilities in both dry and sea ports. Regulatory Framework: Ensure a regulatory framework that supports infrastructure improvement initiatives while fostering transparency and accountability.

CONCLUSION OF THE STUDY

This study provides a comprehensive evaluation of the infrastructural facilities and operational efficiency of dry and sea ports in India, highlighting significant insights into the concerns of various stakeholders in marine trade. The emphasis on logistics, along with a balanced representation of exporters and importers, underscores the need for targeted interventions to enhance the overall efficiency and effectiveness of marine trade operations. Engaging a broader range of stakeholders, including smaller groups, is essential to ensure that diverse perspectives are incorporated into decision-making processes. The findings indicate that improving infrastructural facilities is crucial; investing in modernization and expansion will enable ports to better accommodate rising trade volumes and enhance their operational capabilities. Additionally, the importance of service quality cannot be overstated, as it directly impacts user satisfaction. Implementing measures to enhance service delivery will foster greater trust and reliability among maritime traders. Furthermore, strengthening operational efficiency through streamlined documentation procedures and the adoption of technology-driven solutions is vital for reducing delays and improving cargo handling. By focusing on these key areas, the study aims to guide policymakers, intermediaries, and users in optimizing port operations and service quality. Ultimately, this research not only sheds light on the current status of India's dry and sea port infrastructure but also outlines actionable strategies to address existing challenges, ensuring that the marine trade sector remains competitive and responsive to the evolving global landscape.

BIBILIOGRAPHY

Books:

- Coyle, J. J., & Novack, R. A. (2017). Transportation: A Supply Chain Perspective. Cengage Learning.
- Murphy, P. R., & Hall, D. (2015). Introduction to Logistics Systems: Design and Control. Springer.

Journal Articles:

- Banomyong, R., & Sopadang, A. (2018). "The Role of Ports in the Supply Chain: An Empirical Study of Port Efficiency." Maritime Policy & Management, 45(2), 189-203.
- Notteboom, T., & Rodrigue, J. P. (2012). "The Future of Containerization: Strategies for Ports." Journal of Transport Geography, 24, 56-65. DOI: 10.1016/j.jtrangeo.2012.03.001.

Conference Papers:

- Gonzalez, A., & Ocampo, L. (2019). "Innovations in Port Management and Logistics." In Proceedings of the International Conference on Maritime Logistics (pp. 45-52). Lisbon, Portugal.

News Articles:

- Sharma, V. (2023). "India's Port Infrastructure: Challenges and Opportunities." The Economic Times. Retrieved from https://economictimes.indiatimes.com
- Rai, A. (2023). "Future of Dry Ports in India: Trends and Developments." The Hindu. Retrieved from https://www.thehindu.com

Reports:

- Ministry of Shipping, Government of India. (2022). Annual Report on Port Development. New Delhi: Government of India.
- World Bank. (2021). Logistics Performance Index. Washington, DC: World Bank Publications.

Online Resources:

- International Maritime Organization. (2023). "Maritime Trade and Port Operations." Retrieved from https://www.imo.org

NITI Aayog. (2023). "National Ports Development Policy." Retrieved from https://www.niti.gov.in

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