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A STUDY ON OPERATIONAL ASPECTS OF FREIGHT FORWARDING

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Abstract: Freight forwarding plays a crucial role in international trade by coordinating cargo booking, documentation, customs clearance, warehousing, and multimodal transport. This study examines operational aspects of freight forwarding and its role in improving supply chain efficiency and risk management. It evaluates the impact of digital tools like real-time tracking, automated documentation, and freight platforms. Data from interviews, surveys, and case studies highlight major challenges, including regulatory hurdles and rate fluctuations. However, technology adoption and strong partnerships improve performance. The study concludes that innovation, standardization, and regulatory compliance are essential for competitiveness. These insights benefit logistics professionals, businesses, and policymakers aiming to enhance global supply chain operations.

Keywords: Freight Forwarding, Logistics, Supply Chain Management, International Trade.

I. INTRODUCTION

Freight forwarding involves third-party agencies (freight forwarders) managing cargo movement from origin to destination via air, sea, road, or rail. Acting as intermediaries—not carriers—they handle both direct and consolidated shipments, aiming for cost-effective and timely delivery. As part of 3PL services, they oversee warehousing, inventory, customs clearance, documentation, and tracking. Key tasks include managing logistics documents, ensuring regulatory compliance, and building strong networks with carriers, customs, and logistics partners. Their role simplifies global shipping, allowing businesses to focus on core activities.

II. STATEMENT OF THE PROBLEM

Freight forwarding plays a critical role in global logistics by managing the movement of goods across multiple transport modes. However, despite its importance, there is limited clarity and comprehensive understanding regarding the detailed operations, core functions, and responsibilities freight forwarders undertake. Additionally, freight forwarders face numerous operational challenges in coordinating shipments, handling documentation, complying with regulations, and ensuring timely delivery. These challenges can negatively impact the efficiency of freight forwarding services and the broader supply chain. Therefore, there is a need to analyse and understand these core operations and identify key obstacles to improve logistics performance and client satisfaction.

III. REVIEW OF LITERATURE

Deepa Rajesh (2023): The study explores challenges faced by Freight and Multimodal Logistics in Chennai, focusing on coordination issues between carriers and clients. It aims to improve operational efficiency and strengthen market presence.

Ram R. Ratnakar (2021): This paper reviews liquid hydrogen (LH2) storage and transport technologies, emphasizing the need for safe, cost-effective solutions. It highlights infrastructure gaps and technical challenges due to extreme temperature requirements.

Shuyun Ren (2020): A deep learning model (S2SCL) is proposed to optimize demand forecasting and logistics capacity for cross-border e-commerce forwarding. The model outperforms traditional methods by integrating CNN and LSTM networks.

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Rabiya Hanif and Edward Kaluwa (2020): Malawi's transport logistics suffer from poor infrastructure, inefficient port operations, and border delays, leading to high costs. These challenges constrain reliable and cost-effective transport services.

Nguyen Hoang Tien (2020): Vietnam's logistics sector faces a shortage of skilled human resources and inadequate training programs. The study recommends enhancing professional development to support industry growth.

Omar Faye et al. (2022): This review discusses advances and challenges in hydrogen production, storage, and transport technologies. It calls for further research to overcome material and scalability limitations.

Pankaj Dutta et al. (2020): Blockchain technology offers improved transparency, security, and efficiency in supply chains across various industries. The study identifies challenges and sets a research agenda for broader blockchain adoption.

IV. OBJECTIVE OF THE STUDY

- To analyze and understand key operations in freight forwarding.
- To understand the core functions and processes involved in freight forwarding operations.
- To understand about the various duties and responsibilities along with the range of services.
- To identify the key challenges faced by freight forwarders in daily logistics activities.

V. RESEARCH METHODOLOGY

This research will take a systematic approach to examine the operational aspects of freight forwarding. It incorporates survey data collected from freight forwarding professionals along with a review of existing literature to identify key functions, processes, challenges, and opportunities for improving efficiency in freight forwarding operations.

RESEARCH DESIGN

This study adopts a descriptive research design to analyse the operational aspects of freight forwarding. The study aims to provide detailed insights into key functions, core processes, services offered, and responsibilities handled by freight forwarders. It also explores the daily challenges faced in logistics operations.

DATA COLLECTION METHOD

The research employed both primary and secondary data collection methods to review the operational aspects of freight forwarding. Primary data was collected using a structured questionnaire, distributed via Google Forms, to individuals involved in the freight forwarding and logistics industry. The survey focused specifically on key operational functions, documentation procedures, coordination with carriers and customs, service efficiency, and the day-to-day challenges faced by freight forwarders. Secondary data collection involved the review of journals, industry reports, company websites, and government publications to support the primary findings and provide a broader understanding of industry practices and performance trends.

DATA ANALYSIS TOOLS

The collected data was processed and analysed using SPSS (Statistical Package for the Social Sciences) software. The analysis involved the use of various statistical tools and techniques, including the following:

- **Correlation Analysis:** Used to assess the strength and direction of the relationship between two or more variables.
- **Percentage Analysis:** Applied to interpret the demographic profile of respondents and to evaluate key operational practices in freight forwarding.

VI. SIGNIFICANCE OF THE STUDY

This study emphasizes the critical role of freight forwarding operations in ensuring the smooth functioning of logistics and supply chain systems. It explores core activities, responsibilities, and services offered by freight forwarders, while also identifying the common operational challenges they encounter. The research examines the involvement of key stakeholders in freight forwarding and evaluates how these interactions influence overall service effectiveness. The insights gained from the study aim to support logistics providers and supply chain professionals in streamlining operations, reducing delays, and enhancing the reliability of freight movement.

FINDINGS

This study determined that most respondents are young adults, with a higher number of males than females. Freight rates are typically managed through specialized software or long-term contracts. Surcharges are viewed as unpredictable,

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which requires continuous communication between parties. Pricing changes occur frequently, often multiple times within a week. Fluctuations in exchange rates have a significant impact on overall costs. Common causes of delays include documentation errors such as incorrect consignee or shipper information. Capacity constraints primarily relate to truck availability and customs processing times. The choice of transport mode depends on balancing cargo size, transit time, and customer requirements. Costs related to meeting deadlines are handled through intermodal shipping options and flexible scheduling. Only a small number of companies operate warehouses, usually catering to smaller shipment volumes.

PERCENTAGE ANALYSIS

- Rate management software/tools are considered most important by 43.6%, while only 5.1% prioritize pass-through pricing and customer communication.
- An equal share of 38.5% believe surcharges cause unpredictability or require constant updates, whereas 5.4% feel they have minimal impact.
- Exchange rate fluctuations impact costs by 5–10% for 38.5%, while 8.1% report no impact.
- Documentation delays affect over 15% or 5–15% of shipments for 28.2%, with incorrect consignee/shipper details reported by 38.5%.
- Regulatory delays affect 10–20% or 5–10% of shipments for 30.8%, while only 15.4% face delays in more than 20% of shipments.
- Pre-booking and advanced planning is preferred by 35.9%, while only 5.4% use technology for dynamic tracking.
- Truck availability and scheduling conflicts limit 30.8%, whereas vessel/container availability and flight restrictions limit 20.5% each.
- Cargo size, weight, and volume influence mode selection for 35.9%, with cost and carrier availability least considered by 16.2%.
- Digital documentation is the top improvement area for 30.8%, while warehouse space utilization is least emphasized by 7.7%.

CORRELATION ANALYSIS

<table>
<tr><td colspan="4">CORRELATION</td></tr>
<tr><td></td><td></td><td>What strategies or tools do you currently use to manage or hedge against volatility in freight rates?</td><td>How do you manage the challenge of capacity constraints during peak seasons or in high-demand markets, and what strategies do you employ to ensure timely shipments for your clients?</td></tr>
<tr><td rowspan="3">What strategies or tools do you currently use to manage or hedge against volatility in freight rates?</td><td>Pearson Correlation</td><td rowspan="2">1</td><td>0.099</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0.55</td></tr>
<tr><td>N</td><td>39</td><td>39</td></tr>
<tr><td rowspan="3">How do you manage the challenge of capacity constraints during peak seasons or in high-demand markets, and what strategies do you employ to ensure timely shipments for your clients?</td><td>Pearson Correlation</td><td>0.099</td><td>1</td></tr>
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INFERENCE

The correlation analysis between the strategies used to manage or hedge against volatility in freight rates and the methods employed to handle capacity constraints during peak seasons or high-demand markets reveals a very weak positive relationship, with a Pearson correlation coefficient of 0.099. However, the significance value ($p = 0.55$) is well above the conventional threshold of 0.05, indicating that this relationship is not statistically significant. With a sample size of 39 respondents, the results suggest that there is no meaningful or reliable linear connection between how companies manage freight rate volatility and how they ensure timely shipments during periods of capacity stress. In other words, how companies handle freight rate volatility is largely independent of how they address capacity challenges during peak seasons.

VII. DISCUSSION

The study recommends enhancing freight forwarding operations through full digitalization to reduce manual errors and improve documentation and cargo tracking. Strengthening coordination among stakeholders via centralized communication, regular staff training, forming a compliance team for customs documentation, and investing in real-time tracking technologies like GPS and IoT are crucial steps. Long-term partnerships with reliable carriers, proactive risk management, and the use of data analytics for continuous improvement are also advised. The correlation analysis revealed a very weak and statistically insignificant relationship between strategies used for managing freight rate volatility and those for handling capacity constraints ($r = 0.099$, $p = 0.55$). This suggests that companies manage these two aspects independently, indicating a need for a more integrated approach.

VIII. CONCLUSION

This study provides valuable insights into the operational challenges and strategies adopted by freight forwarding companies, especially concerning freight rate volatility, capacity constraints, and documentation efficiency. The findings highlight that while digital tools and structured processes are gaining importance, issues such as documentation errors, regulatory delays, and unpredictable surcharges continue to disrupt operations. Despite efforts to manage freight rate fluctuations and peak-season capacities, the correlation analysis indicates that these strategies are applied independently rather than as part of an integrated framework. Therefore, to improve overall performance, companies must adopt a more cohesive approach—integrating digitalization, stakeholder coordination, and data-driven decision-making. By doing so, the freight forwarding industry can enhance reliability, minimize disruptions, and meet the evolving demands of international trade more effectively.

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