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A Study on Freight Rate Volatility in Liner Shipping and Its Impact on Freight Forwarders

Soundarya. M

Assistant Professor

School of Management Studies

Sathyabama Institute of Science and Technology Chennai- 600 119 soundaryamuthu90@gmail.com

Varun. N

MBA Final year student School of Management Studies
Sathyabama Institute of Science and Technology Chennai- 600 119 varun.n2603@gmail.com

ABSTRACT

Freight rate volatility has emerged as a major challenge in the global shipping and logistics industry, particularly in the liner shipping segment. Freight rates in liner shipping are subject to frequent fluctuations due to several factors such as fuel price variations, changes in global trade demand, port congestion, geopolitical disturbances, and broader economic conditions. These fluctuations create uncertainty in the logistics sector and have a direct impact on freight forwarders, who play a crucial role in coordinating the movement of cargo in international trade. The present study aims to examine the impact of freight rate volatility on freight forwarders and to understand how fluctuating freight charges influence their operational and business performance. The study specifically focuses on areas such as pricing decisions, shipment planning, customer relationships, cost management, and profitability. Data for the study is collected through structured questionnaires from respondents associated with freight forwarding activities and is analyzed using appropriate statistical tools. The findings of the study are expected to provide valuable insights into the challenges faced by freight forwarders due to unstable freight rates and the strategies adopted to manage such fluctuations. The study also contributes to a better understanding of how freight forwarding firms can improve operational efficiency, decision-making, and adaptability in a highly dynamic shipping environment.

INTRODUCTION

Liner shipping plays a major role in international trade by transporting goods through regular and scheduled maritime services. In recent years, freight rate volatility has become a significant issue in the shipping industry due to factors such as fuel price changes, demand fluctuations, port congestion, and global disruptions. These frequent changes in freight rates directly affect freight forwarders, who depend on stable shipping costs for pricing and customer service Sudden increases or decreases in freight charges create challenges in operational planning, profit margins, and customer satisfaction. Freight forwarders must constantly adapt to these market uncertainties while maintaining efficient logistics services. Therefore, this study aims to examine freight rate volatility in liner shipping and analyze its impact on freight forwarders and their business operations.

OBJECTIVES OF THE STUDY

Primary Objective

- To examine freight rate volatility in liner shipping and analyze its impact on freight forwarders.

Secondary Objectives

- To identify the major factors responsible for freight rate fluctuations in liner shipping.
- To analyse the effect of freight rate volatility on the operational activities of freight forwarding companies.
- To examine the key challenges faced by freight forwarders due to frequent changes in freight rates.
- To understand the strategies adopted by freight forwarders to manage and respond to freight rate volatility.

REVIEW OF LITERATURE

Notteboom, T. and Pallis, A. (2021) examined the structural changes in the container shipping industry and observed that freight rates in liner shipping are highly influenced by global trade imbalances, port congestion, and shipping capacity shortages. Their study highlighted that sudden freight rate changes create instability in logistics planning and increase uncertainty for intermediaries such as freight forwarders.

Sarkar, Das, and Kumar (2022) studied the operational performance of Indian container terminals and found that infrastructure quality, system efficiency, logistics support, and terminal coordination play an important role in freight movement. The study emphasized that inefficiencies in container handling and logistics operations can directly affect freight flow, service reliability, and overall shipping performance.

Sahu, Pani, and Santos (2022) studied freight transport inefficiencies and logistics-related challenges in India. The study highlighted that freight transportation in India is affected by infrastructure bottlenecks, congestion, cost inefficiencies, and operational uncertainties. It emphasized that such inefficiencies increase logistics costs and create difficulties in freight movement and supply chain coordination. The findings are relevant to the present study as they show how freight-related uncertainties can affect logistics planning and operational performance in the Indian context

UNCTAD (2022), in its report on maritime transport, emphasized that freight rate volatility became more severe after global supply chain disruptions and economic uncertainty. The report pointed out that liner shipping charges directly affect the cost structure of global trade and place additional pressure on logistics service providers, especially those involved in booking, coordination, and customer pricing.

Haralambides, H. (2023) studied the economic behaviour of freight rates in liner shipping and found that demand fluctuations, bunker fuel prices, geopolitical disturbances, and market concentration among shipping lines significantly contribute to freight rate instability. The study also suggested that freight forwarders face operational and financial difficulties when freight charges change unpredictably within short periods.

Drewry Shipping Consultants (2024) reported that volatility in container freight rates continues to affect shipping stakeholders across the supply chain. Their analysis showed that freight forwarders are often required to adjust quotations, renegotiate customer commitments, and manage booking uncertainties due to unstable liner shipping rates. This indicates that freight rate fluctuations have both strategic and operational consequences for freight forwarding firms

Akyildirim and Corbet (2025) found that maritime freight costs are highly influenced by market uncertainty and external economic factors. Their study showed that freight rate volatility creates instability in shipping and logistics operations. It also affects financial planning and decision-making in transport-related businesses. This study is relevant as it explains the operational impact of freight rate fluctuations on freight forwarders.

RESEARCH METHODOLOGY

Research Design

The present study is based on a descriptive research design. This design is used to describe the current situation of freight rate volatility in liner shipping and to analyze its impact on freight forwarders. It helps in understanding the opinions, experiences, and challenges faced by respondents regarding fluctuations in freight rates and their effect on freight forwarding operations.

Sources of Data

- **Primary Data** – Primary data was collected through a structured questionnaire from 100 respondents.
- **Secondary Data** – Secondary data was collected from websites, online journals, published reports, books, and review of literature from published articles related to liner shipping and freight rate volatility.

Sampling Technique

The study adopted a convenience sampling method for selecting the respondents.

Sample Size

The total sample size for the study consists of 100 respondents.

Area of Study

The study focuses on freight forwarders and their views regarding freight rate volatility in liner shipping.

Statistical Tools Used

The collected data was analyzed using the following statistical tools:

- Percentage Analysis
- Chi-Square Test

Hypothesis

- H0: There is no significant association between freight rate volatility in liner shipping and freight forwarding operations.
- H1: There is a significant association between freight rate volatility in liner shipping and freight forwarding

operations.

Table Showing Respondents' Opinion on Freight Rate Volatility and Its Impact

STATEMENTS	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Freight rate volatility affects pricing strategies in freight forwarding companies.	4	8	14	38	36	**100**
Freight rates in liner shipping frequently fluctuate in the market.	2	6	10	34	48	**100**
Freight rate fluctuations increase operational challenges for freight forwarders.	3	7	12	41	37	**100**
Freight rate volatility affects profit margins of logistics companies.	2	5	11	39	43	**100**
Digital freight platforms help companies monitor freight rate changes effectively.	5	9	16	40	30	**100**

INTERPRETATION

- 74% of the respondents (38% agree and 36% strongly agree) stated that freight rate volatility affects pricing strategies in freight forwarding companies. This indicates that pricing decisions are highly influenced by freight rate changes.
- 82% of the respondents (34% agree and 48% strongly agree) agreed that freight rates in liner shipping frequently fluctuate in the market. This shows that freight rate instability is widely experienced in the shipping industry.
- 78% of the respondents (41% agree and 37% strongly agree) stated that freight rate fluctuations increase operational challenges for freight forwarders. This suggests that such changes create difficulties in logistics planning and operations.
- 82% of the respondents (39% agree and 43% strongly agree) agreed that freight rate volatility affects the profit margins of logistics companies. This indicates that unstable freight charges have a direct impact on profitability.
- 70% of the respondents (40% agree and 30% strongly agree) stated that digital freight platforms help in monitoring freight rate changes effectively. This shows that technology is useful in managing freight rate volatility.

STATISTICAL ANALYSIS

Chi-Square

To analyse the relationship between selected variables related to freight rate volatility, Chi- Square tests were applied. The following hypothesis were tested based on the objectives of the study.

Hypothesis

Null Hypothesis (H_0):

There is **no significant association** between the selected variables related to freight rate volatility and liner shipping operations.

Alternative Hypothesis (H_1):

There is a **significant association** between the selected variables related to freight rate volatility and liner shipping operations.

Chi-Square Test Table

S. No	Variables Tested	Chi-Square Value	p-value	Decision
1	Direct Involvement in Liner Shipping Operations × Impact of Freight Rate Volatility on Daily Operations.	**20.467**	**0.001**	**Significant**
2	Use of Digital Tools × Need for Better Strategies to Manage Freight Rate Volatility.	**4.497**	**0.034**	**Significant**

INTERPRETATION

1. The **first Chi-Square test** shows that there is a significant association between direct involvement in liner shipping operations and the impact of freight rate volatility on daily operations, since the **p-value (0.001)** is less than **0.05**. This indicates that employees who are directly involved in liner shipping are more likely to experience the operational impact of freight rate changes.

2. The **second Chi-Square test** shows that there is a significant association between the use of digital tools and the need for better strategies to manage freight rate volatility, since the **p-value (0.034)** is less than **0.05**. This indicates that even though digital tools are used to track freight rates, respondents still believe that better management strategies are required.

FINDINGS

- 62% of the respondents were male, indicating that male employees formed the majority of the study.
- 46% of the respondents belonged to the 21–30 years age group, showing that most respondents were young professionals.
- 30% of the respondents were from the Operations department, followed by 25% from Documentation.
- 42% of the respondents had 2–5 years of work experience, indicating moderate industry exposure.
- 52% of the respondents handled freight rate quotations daily, showing regular involvement in quotation activities.
- 60% of the respondents stated that the company handles both import and export cargo, reflecting a broad freight forwarding scope.
- 58% of the respondents indicated sea freight as the commonly used mode of transport, which is relevant to liner shipping operations.

- 76% of the respondents stated that they are directly involved in liner shipping operations, making the responses highly relevant to the study.
- 84% of the respondents stated that freight rate volatility affects daily operations, indicating a strong operational impact.
- 78% of the respondents stated that freight rate changes cause delays in shipment booking, showing an effect on operational efficiency.
- 81% of the respondents stated that customers complain about sudden freight rate increases, indicating the effect on customer satisfaction.
- 88% of the respondents stated that the company revises quotations when freight rates change, showing that quotation revision is a common practice.
- 72% of the respondents stated that the company uses digital tools to track freight rates, highlighting the role of technology in freight monitoring.
- 90% of the respondents felt that better strategies are needed to manage freight rate volatility, indicating a strong need for improvement.
- 38% of the respondents rated the current strategy as effective, showing that the present freight rate management strategy is moderately effective.

SUGGESTIONS & RECOMMENDATIONS

- Freight forwarding companies should adopt flexible pricing strategies to handle frequent rate changes.
- Companies should maintain strong relationships with multiple shipping lines to secure competitive rates.
- Advanced logistics technology should be used to track market trends and freight rate changes.
- Long-term contracts with shipping carriers may help reduce uncertainty in freight costs.
- Freight forwarders should improve communication with customers regarding rate changes.
- Market research and forecasting tools should be used to predict freight rate trends.

LIMITATIONS OF THE STUDY

- The study is often restricted to a specific area (e.g., one city like Chennai), so findings may not apply universally.
- Limited access to tools, funding, or advanced software can impact the depth of analysis.
- As a student researcher, limited industry experience may affect interpretation and analysis
- Companies may restrict access to internal processes, limiting a complete understanding of operations.
- Business environments (like logistics or freight rates) change rapidly, so findings may become outdated quickly.

CONCLUSION

Freight rate volatility is one of the major challenges in the liner shipping industry and has a significant impact on freight forwarders. Fluctuations in freight rates are influenced by several factors such as global trade demand, fuel prices, port congestion, and changing economic conditions. These frequent changes create difficulties in pricing decisions, operational planning, profit margins, and customer management.

Freight forwarders play a vital role in ensuring the smooth movement of goods in global trade, and therefore they are highly affected by unstable freight charges. The study shows that freight rate volatility not only affects business operations but also increases uncertainty in logistics management.

Overall, understanding freight rate volatility is essential for freight forwarders to respond effectively to market

changes. Adopting flexible pricing strategies, better market monitoring, and proper risk management practices can help freight forwarding companies improve operational efficiency and maintain financial stability in a competitive shipping environment.

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