

A Comparative Study Of Air And Sea Freight From Chennai To Hamburg Based On Cost, Transit Time, And Seasonal Demand

Kishore Kumar J¹, Dr. Senthil Kumar R²

¹MBA Student; Mba (Logistics & Supply Chain Management), School Of Management Studies, Vels Institute Of Science, Technology & Advanced Studies, Chennai-117.

²Assistant Professor, Department Of Management Studies, School Of Management Studies, Vels Institute Of Science, Technology & Advanced Studies (Vistas), Chennai -117

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ABSTRACT

Freight transportation plays a vital role in global trade by enabling the smooth movement of goods between countries. One of the key challenges faced by businesses is selecting the most suitable mode of transport that balances cost, transit time, and reliability. This study focuses on a comparative analysis of air freight and sea freight between Chennai and Hamburg, with special reference to Orbis Enterprises.

The research adopts a quantitative approach, where primary data was collected from 52 employees using structured questionnaires. Secondary data was gathered from journals, books, and industry reports to support the study. Various statistical tools such as percentage analysis, descriptive statistics, reliability analysis, and ANOVA were used to analyse the data effectively.

The findings reveal that cost is the most important factor influencing transport decisions, leading to a strong preference for sea freight under normal conditions. However, when shipments are urgent or time-sensitive, businesses shift to air freight despite its higher cost due to its speed and reliability. Seasonal demand also plays a significant role by affecting freight rates, cargo space availability, and transport planning.

The study concludes that both air and sea freight have their own advantages and limitations. Therefore, businesses must carefully evaluate their requirements and adopt a balanced approach when selecting transport modes. Even small improvements in decision-making can enhance operational efficiency, reduce costs, and improve overall customer satisfaction. These insights can help logistics companies improve planning accuracy strengthen coordination reduce delays manage risk better and achieve more consistent performance in international trade operations.

KEY WORDS

Air Freight, Sea Freight, Freight Forwarding, Logistics, Cost Efficiency, Transit Time, Seasonal Demand, Supply Chain

INTRODUCTION

In today's globalized world, logistics plays a very important role in connecting businesses across countries. Freight transportation helps move goods from one place to another efficiently and supports international trade. Among the different transport modes, air freight and sea freight are the most used.

Air freight is known for its speed and reliability, making it suitable for urgent and high-value goods. On the other hand, sea freight is more economical and widely used for transporting bulk cargo where delivery time is flexible. The Chennai to Hamburg route is an important trade link between India and Europe. Businesses often face confusion in choosing between air and sea freight because they need to balance cost, time, and customer expectations. This study aims to compare both modes and understand their advantages and limitations.

OBJECTIVES OF THE STUDY

Primary Objective

- To compare air freight and sea freight based on cost, transit time, and seasonal demand

Secondary Objectives

- To analyse factors influencing transport mode selection
- To study the cost differences between air and sea freight
- To evaluate transit time and delivery performance
- To understand the impact of seasonal demand on logistics decisions
- To assess overall efficiency in freight transportation

REVIEW OF LITERATURE

Several researchers have studied logistics and freight transportation. Christopher (2016) explained that transport mode selection depends on cost, speed, and reliability. Rodrigue (2017) highlighted that sea freight dominates global trade due to its cost advantage, while air freight is used for urgent shipments.

Noteboom (2020) discussed how port congestion and seasonal demand affect sea freight operations. Tseng et al. (2020) found that air freight demand increases during peak seasons due to urgent delivery needs. UNCTAD (2022) reported that sea freight accounts for a major share of global trade due to its ability to handle large volumes.

Overall, previous studies show that businesses must balance cost and time while selecting transport modes. However, limited studies focus on comparing both modes on a specific route like Chennai to Hamburg, which this study addresses.

DATA ANALYSIS

The data collected from 52 employees provides practical insights into freight operations.

Most respondents are young professionals with moderate experience, indicating strong operational knowledge.

Sea freight is preferred for bulk shipments by the majority due to its cost advantage.

Air freight is considered expensive, with most respondents rating its cost as high. However, around 65% of respondents agree that air transport is used during urgent situations. This shows that urgency plays a major role in decision-making.

Cost is identified as the most important factor, but customer demand and transit time also influence decisions.

Seasonal demand leads to frequent switching between transport modes.

The analysis also highlights challenges such as limited capacity in air freight and longer transit time in sea freight.

Overall, companies try to maintain a balance between cost and speed.

INDUSTRIAL PROFILE

The logistics and freight forwarding industry is a backbone of global trade. It includes transportation, warehousing, customs clearance, and documentation. This industry ensures that goods move efficiently from producers to consumers across the world.

Orbis Enterprises is a logistics service provider that offers end-to-end freight forwarding solutions. The company handles both air and sea freight operations and provides services such as transportation, warehousing, and customs support. It focuses on reliability, efficiency, and customer satisfaction.

The industry is growing rapidly due to globalization and increased trade activities. However, it also faces challenges like high costs, infrastructure issues, and demand fluctuations. Companies like Orbis Enterprises play a key role in managing these challenges and ensuring smooth logistics operations.

CONCLUSION

This study shows that both air and sea freight are important for international trade, but they serve different purposes. Sea freight is preferred for cost-saving and bulk shipments, while air freight is used for urgent and time-sensitive deliveries.

Cost remains the main deciding factor, but transit time and customer demand also play significant roles. Seasonal demand further affects pricing and availability, making decision-making more complex.

The study suggests that businesses should focus on balancing cost, speed, and reliability when selecting transport modes. Even small improvements in planning and coordination can lead to better efficiency and customer satisfaction.

In conclusion, choosing the right transport mode is not about selecting one option but about making the right decision based on the situation.

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