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AIR CUSTOMS CLEARANCE PROCESSING OF TIME ANALYSIS

Mr. BUVANESH R[1], Dr. D ANITHA KUMARI[2]

II MBA Shipping & Logistics Management, Department of Management Studies, VISTAS[1]

Corresponding Author, Associate Professor and Programme Coordinator, MBA Shipping & Logistics Management,

Vels Institute of Science Technology and Advanced Studies (VISTAS) Pallavaram, Chennai-117[2]

Abstract: This study analyses the processing time of air customs clearance, focusing on the Bill of Entry. Efficient customs clearance is critical for international trade, influencing operational costs and delivery schedules. The research identifies time delays and bottlenecks in the clearance process by evaluating stages such as document submission, assessment, examination, and release. It also examines the impact of digitalization and customs automation systems like ICEGATE and SWIFT in reducing processing times. Key factors contributing to delays include procedural inefficiencies, documentation errors, and manual interventions. The study offers recommendations for streamlining documentation, improving system integration, and building stakeholder capacity to enhance air cargo clearance efficiency and support smoother international trade.

Keywords: Air Customs Clearance, Processing Time, Bill of Entry, ICEGATE, SWIFT, Cargo delay.

I. INTRODUCTION

Air customs clearance is a critical regulatory procedure governing the legal and seamless movement of goods across international borders through air cargo. It ensures that cargo complies with the laws of both the exporting and importing countries, secures national revenue through taxes and duties, and maintains safety and security by verifying the legality of traded goods. This process takes place at airport cargo terminals under the supervision of customs authorities, with active coordination between importers, exporters, customs brokers, freight forwarders, and government agencies. Every shipment arriving or departing by air must pass through this system to legally enter or exit a country.

Customs clearance is a compulsory process which goods must pass every time they enter or leave a country. Custom clearance procedures are designed to keep global trade flowing smoothly by ensuring that the correct taxes and duties are paid, and regulations are complied with. There are four key stages to the customs clearance processing: When entering/leaving a country, the goods are declared to the relevant customs authority, including details of their value, origin and destination.

II. NEED OF STUDY

In the current globalized trade environment, the efficiency of air customs clearance plays a critical role in facilitating international commerce, ensuring timely delivery of goods, and enhancing a country's trade competitiveness. Delays in customs clearance can result in increased logistics costs, operational inefficiencies, and customer dissatisfaction, impacting both importers and exporters. Given the growing volume of air cargo and the complexity of regulatory requirements, it is essential to analyse and optimize the time taken for various stages of customs clearance, with particular focus on the processing of the Bill of Entry. This study aims to identify bottlenecks, evaluate the existing processing timelines, and recommend actionable measures for improving overall clearance efficiency, thereby contributing to smoother trade facilitation and economic growth.

III. REVIEW OF LITERATURE

1.Wilson, Mann, and Otsuki (2005) conducted a pioneering study on trade facilitation and its impact on international trade flows. They argued that efficient customs procedures, including reduced clearance times, are essential to improving trade competitiveness, especially for time-sensitive industries. Their quantitative model demonstrated that a one-day reduction in customs clearance could lead to a significant increase in trade volumes.

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2.Grainger (2007) analysed the complexities of border procedures and highlighted the bureaucratic bottlenecks affecting customs processing times. His qualitative research emphasized the need for inter-agency coordination and recommended the implementation of risk management frameworks to expedite the release of low-risk consignments.

3.Their **Hummels and Schaur (2013**) investigated the economic costs associated with customs delays in international supply chains. empirical study revealed that each additional day a shipment is delayed reduces trade by more than 1%. They particularly emphasized the adverse effects on high-value and perishable goods moved via air cargo.

4.Portugal-Perez and Wilson (2012) examined trade facilitation performance indicators, including customs clearance efficiency. Their econometric analysis suggested that improved customs processing could enhance trade by lowering transaction costs and increasing the competitiveness of developing economies.

5.Djankov, Freund, and Pham (2010) conducted a global study on the time-cost relationship in international trade. They found a strong inverse correlation between customs clearance delays and trade volumes, with each additional day reducing trade by 1.5%. Their work underlined the importance of customs reforms in stimulating economic growth.

6.Arvis et al. (2013) introduced the Logistics Performance Index (LPI), which measures the efficiency of international logistics systems, including customs. They reported that economies with faster and more predictable customs processes enjoy better trade performance, highlighting customs clearance time as a critical competitiveness factor.

7.Hausman, Lee, and Subramanian (2005) focused on the supply chain implications of customs clearance delays. They found that long processing times increase inventory costs and reduce supply chain agility, making air cargo less attractive for time-sensitive industries like pharmaceuticals and electronics.

IV. OBJECTIVES OF STUDIES

Primary objective

- To analyse the time taken for air customs clearance processes with special reference to the processing of the Bill of Entry.

Secondary objective

- To identify the factors contributing to delays in air customs clearance procedures.
- To study the existing workflow and documentation requirements in air cargo customs clearance.
- To assess the impact of customs clearance time on overall supply chain and trade performance.
- To evaluate the effectiveness of digital systems and risk management practices in reducing processing time.

V. RESEARCH METHODOLOGY

Research methodology refers to the systematic process followed by researchers to conduct a study or investigation. It outlines the steps, procedures, and techniques used to gather, analyse, and interpret data in order to answer research questions or achieve research objectives. The choice of research methodology depends on the nature of the research, the research questions, and the goals of the study. It encompasses the overall framework for planning, executing, and evaluating research projects, guiding researchers in their pursuit of answering research questions or achieving research objectives. Research methodology involves decisions regarding research design, data collection methods, sampling techniques, data analysis procedures, and ethical considerations, all aimed at ensuring the validity, reliability, and ethical integrity of the research process and outcomes.

DATA COLLECTION METHOD

The purpose of this study titled *"Air Customs Clearance Processing Time Analysis,"* both primary and secondary data collection methods were adopted to ensure a comprehensive understanding of the clearance process and its time-related challenges. Primary data was collected through structured questionnaire surveys and semi-structured interviews conducted with key stakeholders such as Customs House Agents (CHAs), importers, freight forwarders, airline cargo officials, and customs officers. The questionnaire was designed to gather information on various aspects of the customs clearance process, including the time taken at each stage, factors causing delays, and the impact of digital systems like ICEGATE and EDI. In addition, personal interviews provided in-depth insights into practical issues faced during the clearance process and stakeholder suggestions for improvement. Wherever possible, direct observation at air cargo terminals was also undertaken to record real-time processing activities and identify operational bottlenecks. Secondary data was collected from official sources such as CBIC reports, ICEGATE transaction records, Ministry of Commerce publications, and relevant research articles to support and validate the primary data findings.

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DATA ANALYSIS TOOLS

This study used tools like SPSS and Excel for analyzing both descriptive and inferential data. SPSS was essential for running Anova, Chi square, regression and correlation analyses to explore variable relationships. Microsoft Excel assisted with data organization, summaries, and graphical presentation.

VI. SIGNIFICANCE OF THE STUDY

The study on *"Air Customs Clearance Processing Time Analysis"* holds significant importance in the context of international trade and logistics efficiency. In today's fast-paced global market, timely clearance of air cargo is critical for maintaining smooth supply chain operations, meeting market demands, and minimizing additional costs incurred due to delays. By analyzing the time taken at various stages of the air customs clearance process and identifying the key factors causing delays, this study aims to provide valuable insights for stakeholders such as customs authorities, Customs House Agents, importers, freight forwarders, and airline operators. The findings of this research can help in highlighting procedural inefficiencies, operational bottlenecks, and areas requiring policy intervention or system upgrades. Moreover, the study will contribute to assessing the effectiveness of digital initiatives like ICEGATE and EDI in streamlining customs processes.

FINDINGS

The study identified key factors affecting the timeliness of air customs clearance processes. A majority of 61.8% of respondents stated that late submission of shipping documents by airlines is the primary cause of IGM filing delays. Additionally, 65.6% indicated that incorrect or incomplete IGM data results in penalties and further delays. Around 56.3% agreed that all types of cargo, including perishable, electronics, and high-value items, are prone to such delays. External issues like system failures, labour strikes, and changing regulations were cited by 56.3% of participants as common causes of IGM delays, while 56.3% confirmed that penalties and fines are the most frequent consequences. Further, 54.5% highlighted the importance of the Bill of Lading or Airway Bill for accurate IGM filing. Digitalization has reduced errors and delays according to 56.3%, with 62.5% identifying ICEGATE as the preferred electronic platform. Monetary fines were the most common penalty for IGM delays, reported by 71.9%. In BoE processing, 68.8% of respondents highlighted demurrage and storage charges as the main problem caused by delays. Importers were identified as the most affected stakeholders by 51.5%, while 69.7% indicated supply chain disruptions. Additionally, 71.9% cited frequent downtime of customs portals as a technological issue contributing to BoE delays.

PERCENTAGE ANALYSIS

- The major cause of IGM filing delays is the late submission of shipping documents by the airline, reported by 61.8% of respondents.
- Incorrect or incomplete IGM data results in penalties and further delays according to 65.6% of participants.
- A majority of 56.3% indicated that all types of cargo — perishable, electronics, and high-value cargo — are prone to IGM filing delays.
- 56.3% of respondents identified multiple external factors like system failures, labour issues, and new regulations as reasons for IGM filing delays.
- More than half (56.3%) agreed that penalties or fines are the most common consequence of failing to file the IGM on time.
- The Bill of Lading or Airway Bill is considered the most crucial document for IGM filing by 54.5% of respondents.
- Digitalization has effectively reduced filing errors and delays in IGM processing, according to 56.3% of respondents.
- ICEGATE was confirmed as the most commonly used electronic platform for IGM filing by 62.5% of participants.
- 71.9% indicated that monetary fines are the usual penalties for IGM filing delays.
- A combined approach of timely document submission, system updates, and training is considered the best way to avoid IGM delays by 62.5% of respondents.
- The accumulation of demurrage and storage charges due to BoE delays was cited as a key issue by 68.8% of respondents.
- Importers are the stakeholder group most affected by BoE delays, with 51.5% selecting this option.
- BoE delays lead to stockouts and production stoppages according to 69.7% of respondents, severely disrupting supply chains.
- Repeated BoE delays typically result in penalties and increased scrutiny by customs, as stated by 60.6% of participants.

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- 62.5% of respondents noted idle container movement as a direct operational consequence of BoE time delays.
- The leading technological issue causing BoE delays is frequent downtime of customs filing portals, reported by 71.9%.
- 56.3% stated that BoE delays increase inventory holding and penalty costs, negatively affecting cost management.
- Missed delivery deadlines and order cancellations were identified by 57.6% as the primary impact of BoE delays on customer satisfaction.
- 54.5% highlighted the loss of importer licenses as the major regulatory issue caused by delayed BoE filing.
- 59.4% confirmed that delayed BoE filings disrupt production scheduling in Just-in-Time (JIT) inventory systems.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.067[a]	12	.049
Likelihood Ratio	Interpretation	Interpretation	.054
N of Valid Cases	32		

a. 19 cells (95.0%) have expected count less than 5. The minimum expected count is .13.

INTERPRETATION:

- The Pearson Chi-Square test yields a p-value of 0.049, which is just below the common significance threshold of 0.05.
- This means we reject the null hypothesis at the 5% significance level.
- Conclusion: There is a statistically significant association between the cause of IGM filing delays and the operational issue linked to BoE time delays.

VII. CONCLUSION

This study comprehensively examined the factors affecting air customs clearance processing time, with a particular focus on Import General Manifest (IGM) filing and Bill of Entry (BoE) procedures. The findings highlight significant operational challenges, predominantly stemming from late submission of shipping documents by airlines, system downtimes, data entry errors, and procedural inefficiencies. A young, dynamic workforce largely dominates the sector, though it remains male-dominated. The active participation of employees and students reflects both current operational engagement and growing academic interest in the field. Digital platforms like ICEGATE have improved efficiency, but issues such as increased compliance paperwork and technical glitches persist. The repercussions of delays including monetary penalties, demurrage costs, supply chain disruptions, and customer dissatisfaction were widely reported. Importers emerged as the most affected stakeholders, followed by transporters and logistics partners. The study recommends implementing a centralized real-time coordination system, mandating pre-arrival electronic documentation, AI-powered data validation, IT infrastructure upgrades, and capacity-building programs for stakeholders. Encouraging collaborative forums to address operational bottlenecks was also emphasized. Overall, the study underlines the need for integrated, technology-driven, and collaborative solutions to enhance procedural efficiency, reduce delays, and improve stakeholder satisfaction in India's air customs clearance ecosystem.

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