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DIFFERENTIAL ASSESSMENT OF CARGO LOGISTICS CHALLENGES: A STUDY UTILISING INDEPENDENT T – TEST ANALYSIS

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Abstract
This study investigates the perceived severity of logistics problems in the area of air freight logistics, a crucial link in the global supply chain, and evaluates whether there are substantial variances depending on the type of organisation. The main hypothesis asserts that there are no appreciable differences in how serious freight logistics difficulties are viewed by different business types. Participants from a variety of industries, including manufacturing, retail, pharmaceuticals, and technology, were asked to answer surveys, conduct interviews, and analyse data as part of a thorough research approach to gauge how they perceived the difficulties with air cargo logistics. The findings provide useful information for stakeholders and decision-makers in the air freight logistics industry, underscoring the need of tailoring logistics solutions to the particular demands of various business types.

Introduction

Air cargo logistics industry plays a pivotal role in the global movement of goods, serving as a critical link in supply chain across various sectors. With the increasing globalisation of trade and the demand to the swift ,reliable and efficient transportation ,the air cargo logistics has witnessed remarkable growth and transformation. The industries significance lies in its ability to provide expedited delivery of goods, enabling business to meet tight production schedules, respond to market fluctuations and fulfil customer expectations for rapid order fulfilment. The introduction of advanced technologies, such as automate cargo handling system, real time tracking and data analytics has further enhanced the efficiency and transparency of air cargo operations.

Shippers in the air cargo industry grapple with a spectrum of challenges that impact their operational efficacy and business performance. Fluctuating costs due to factors like fuel prices and demand fluctuations, coupled with capacity constraints during peak seasons, often disrupt seamless logistics planning. Adhering to stringent regulatory compliance standard for security measures and customs procedures presents a continuous hurdle, leading to a potential delay and increased paper work complexities. The industries susceptibility to weather related issues ,technical glitches and operational bottlenecks results unpredictable transit times, potentially affecting supply chain reliability. While tracking technologies have advanced, maintaining real time visibility remains a concern for some shippers ,impacting decision making and potentially causing lost shipments.Customes procedures can be time consuming and errors can lead to prolonged lead times. Striking a balance between efficient operations and environmental sustainability while managing competition further compounds these challenges. Dressing these issues necessitates collaborations among stakeholders to ensure the resilience and efficiency of air cargo logistics sector.

The efficient movement of goods through the logistics network is crucial for businesses and economies worldwide. Cargo logistics plays a pivotal role in ensuring timely deliveries, cost-effective transportation, and overall supply chain performance. This research aims to delve into the issues faced within cargo logistics and employs the independent t-test analysis to ascertain significant differences among variables of interest.

Review of Literature

Emilio-Larrode (2018); this paper studied the growth of opportunities of an airport in terms cargo operations .A model has been created by using the AHP methodology.it has been identified by the elements that to the lesser or greater extend ,have an impact on the potential of a cargo airport to attract

air-freight activity .AHP model has one goal that is growth opportunity of air cargo logistics, four criteria namely economic factors, operative logistics, technological factors ,social legal and environmental factors and fourteen sub criteria and twenty-two attributes. The opinion of experts throughout the model construction process is crucial for the validity of the result. The findings of the study is the factor s related to airport charges and handling costs are the most influential, as well as the existence of a balance between the cargo demand between the destinations. Sridhar (2016) ; studied aspects of cargo handling in Chennai and Bengaluru airports .the author analysed the functions performed by the stake holders in these two international airports. The study also examined the operations involved in imports and exports of cargo handling. The researcher identified and compared the Chennai and Bengaluru airports in terms of availability of resources, manpower, equipment, infrastructure, capacity planning, slot allocation and screen. The study includes the current cargo problems faced by all the airlines in the cargo handling process. And attempts to minimize the deficiencies in cargo handling and makes certain recommendations to maximize operational efficiency and satisfy customers need in cost effective manner.it recommends minimizes damages and pilferages and brought certain ideas to safeguard the interest the interest of all these take holders so as to give result. Show hui-huang (2016) evaluates the service requirement of combination cargo carriers (CACCS).a gap index based fuzzy AHP was then proposed to evaluate the perceived difference toward those service requirement attributes between CACC users and CACC operators. Finally as an empirical study, the CACC in Taiwan and their users pay much attention to service requirement attributes (SRA);the perfect cargo delivery, adequate shipping space, accurate cargo delivery, and staff professional knowledge. Finally the author suggested that improving ground operations, adopting policies of strategic alliances and enhances operating staff professional capabilities. Rong-Tsu-wang (2007) the author describes service quality of air cargo sector of china airlines .this paper employs quality function deployment to integrate inside quality technology and voice of outside consumers and using “House of quality” charts, illustrates the companies performance in terms of service and offer suggestions for improvement. The conclusion shows that three main factors demanding improvement namely professionalism, physical services and correctness and positive M.N.Anitha (2013) studied the logistics management of international airports in Kerala. The author evaluated the performance of international air cargo handled through the different airports and the services rendered by the freight forwarders were also being the preview of the study. The study concluded that Trivandrum and Kannur airports all the firms always handle perishable cargo but in Cochin it is found to be lesser. And the conclusion states that majority of the freight forwarders never performed packaging, order processing, reverse logistics functions. M .Janet (2014) Analysed the problem towards the handling of containerized cargo and examined various facilities provided by CHA‘s to customers. Study concluded that CHA need to improve all kinds of their information gathering capabilities like EDI system. The study also suggested that adequate care must be taken to protect the cargo from any kind of damage or pilferage and they should provide adequate number of equipment and needs of the customers demand from time to time. Mohd afaq khan (2000) the study revolves around the overseas marketing of floriculture products and problems, prospects and strategies for the Indian floriculture industry. The study found out that among the problems of floriculture costly air freight ranked first, followed by non-availability air cargo space during peak season, high cost of capital, high cost of technology, weak domestic market, bad domestic road, non-availability of planting material.

The main objectives of this study are as follows:

- To identify and categorize prevalent cargo logistics issues.
- To determine if significant differences exist among identified issues based on relevant variables.

Methodology

A quantitative research approach has been adopted to systematically gather and analyse data. The independent Test is choosing as the statistical tool to asses difference in mean values of cargo logistics

issues across distinct groups. The respondents for this study consist of 42 individuals directly involved in cargo logistics operations, including logistics managers, warehouse supervisors, and transportation coordinators. The sample size was determined to provide a reasonable representation of the population while adhering to practical constraints.th respondents for this study consist of 42 individuals directly involved in cargo logistics operation including logistics managers, warehouse superiors, and transportation coordinators.

Data collection: Primary data was collected using a structured questionnaire comprising sections related to demographic information and list of potential cargo logistics issues.th respondents were asked to rate the severity of each issue on Likert scale.

Data analysis: The independent t test was chosen due to its effectiveness in comparing means between two independent groups.in this study the T test will be used to evaluate whether statistically differences exist among cargo logistics issues based on categorical variables of interest.

Hypothesis
H0:There are no significant differences in the perceived severity of cargo logistics issues based on type of business
H1:There are no significant differences in the perceived severity of cargo logistics issues based on type of business
.Table 2:T test for significant difference between sole proprietorship and partnership firm with respect to cargo logistics related issues

Cargo related problems	Type of Business				T Value	P value	Significance
	Sole proprietorship		Partnership				
	Mean	Standard Deviation	Mean	Standard Deviation			
Infrastructure	3.27	.556	3.42	.321	.76	.443	Insignificant
Air Cargo operation	2.72	.417	2.73	.443	.03	.970	Insignificant
Packaging	3.20	1.87	2.67	.333	.895	.376	Insignificant
Customs Clearance	1.94	.410	1.82	.332	.826	.414	Insignificant
Spill over	2.64	1.27	2.30	.658	.764	.484	Insignificant

Source: Author's Calculation

In order to know if there is any significant difference in the perception of shippers with regards to air cargo logistics related issues an Independent T test has conducted. As per the test result the P value for infrastructural related issue is .443,there fore the hypothesis is accepted ,meaning there is no significant difference in the perception according to the shippers charecteristics.Similarly in the case of air cargo operation the P value is below the threshold value(.05),the null hypothesis again accepted. An insignificant relationship also found in the angle of packaging where the P value is .376.and finally regarding customs clearance and the spill over the significance value is .414 and .484 respectively this case also the null hypothesis is accepted.

Conclusion

This research seeks to contribute to the understanding of cargo logistics issues and how they might differ based on variables such as type of business.by utilising the independent t test ,the study aims to provide insights that could help to mitigate these problems. The study results shows that irrespective of type of businesses the exporters perceive the problems in similar manner.

References:

Esmaeili, A., & Pourebrahim, F. (2011). Assessing trade potential in agricultural sector of Iran: Application of gravity model. *Journal of Food Products Marketing*, *17*(5), 459–469. https://doi.org/10.1080/10454446.2011.583534

Huang, S. H. S., Tseng, W. J., & Hsu, W. K. K. (2016). An assessment of knowledge gap in service quality for air freight carriers. *Transport Policy*, *50*, 87–94. https://doi.org/10.1016/j.tranpol.2016.06.006

Larrodé, E., Muerza, V., & Villagrasa, V. (2018). Analysis model to quantify potential factors in the growth of air cargo logistics in airports. *Transportation Research Procedia*, *33*, 339–346. https://doi.org/10.1016/j.trpro.2018.10.111

Madhavika, W. D. N., S.J.A.N.S., J., Ehalapitiya, K. H. S. M., Wickramage, T. U., Fernando, W. M. D., & Jayasinghe, A. V. T. A. (2021). An Exploration on Supply Chain Resilience Capabilities of Tea Exporting Companies: Special Reference to Pre COVID-19 and During COVID-19 Pandemic. *SSRN Electronic Journal*. https://doi.org/10.2139/SSRN.4116157

Milanović, M., & Stamenković, M. (2016). CHAID Decision Tree: Methodological Frame and Application. *Economic Themes*, *54*(4), 563–586. https://doi.org/10.1515/ethemes-2016-0029

Rabinovich, E., & Cheon, S. H. (2011). Expanding horizons and deepening understanding via the use of secondary data sources. *Journal of Business Logistics*, *32*(4), 303–316. https://doi.org/10.1111/j.0000-0000.2011.01026.x

Wang, R. T. (2007). Improving service quality using quality function deployment: The air cargo sector of China airlines. *Journal of Air Transport Management*, *13*(4), 221–228. https://doi.org/10.1016/j.jairtraman.2007.03.005

Zailani, S., Shaharudin, M. R., Razmi, K., & Iranmanesh, M. (2017). Influential factors and performance of logistics outsourcing practices: an evidence of malaysian companies. *Review of Managerial Science*, *11*(1), 53–93. https://doi.org/10.1007/s11846-015-0180-x