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Biological Specimen Transportation: Managing Risks and Ensuring Safety in Freight Forwarding

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ABSTRACT:

Freight forwarding plays a crucial role in facilitating the cross-border movement of goods within today's interconnected global economy. However, this intricate process is accompanied by numerous risks that can significantly impact corporate operations and lead to disruptions in supply chains. The current study aims to delve into the various challenges faced by freight forwarding companies in effectively managing these risks. Through a comprehensive analysis of industry dynamics, regulatory frameworks, and real-life case studies, the research seeks to explore innovative solutions to address these challenges. By identifying key strategies and best practices for enhancing risk management capabilities in the freight forwarding industry, from navigating geopolitical risks to minimizing supply chain disruptions, this study aims to empower industry stakeholders with actionable insights and practical guidance. By fostering collaboration and fostering innovation, freight forwarders can navigate the complexities of today's business environment and ensure seamless logistical operations.

Keywords: Freight forwarding, risk management, challenges, solutions, supply chain disruptions, regulatory frameworks, logistical operations.

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1. Introduction

In today's interconnected global marketplace, the role of freight forwarding cannot be overstated. By facilitating the seamless movement of goods across borders, it serves as a cornerstone of international trade and commerce. Yet, amidst the vast opportunities it presents, freight forwarding operations are fraught with a myriad of risks. These risks, ranging from

geopolitical uncertainties to regulatory compliance issues and disruptions in the supply chain, pose significant challenges to businesses engaged in logistics operations.

Against this backdrop, this study embarks on a journey to delve into the critical realm of risk management within the context of freight forwarding operations. As outlined in the abstract, the primary objective is to dissect the various challenges encountered by freight forwarding companies in effectively mitigating these risks and to unearth innovative solutions to address them. Through a meticulous examination of industry dynamics, legal frameworks, and real-world case studies, the research endeavors to unearth key strategies and best practices for bolstering risk management capabilities within the freight forwarding industry.

Anticipated outcomes from this study include the provision of invaluable insights and actionable recommendations for a diverse array of industry stakeholders. From logistics practitioners and policymakers to academics, the findings of this research are poised to illuminate pathways towards navigating the dynamic landscape of freight forwarding operations with greater resilience and efficacy. By shining a spotlight on effective solutions and fostering a culture of collaboration and innovation, freight forwarders stand poised to enhance their ability to manage risks and uphold the integrity of global supply chains.

Literature Review

The logistics industry, particularly freight forwarding, serves as the backbone of global trade and supply chain management. In recent years, there has been a growing emphasis on understanding the challenges faced by freight forwarding companies and enhancing risk management practices to ensure operational efficiency and supply chain resilience.

The end of the composition is to identify and determine the contemporary part of a ocean freight forwarder in the face of changing global force chains. To this end, the composition refers to the results of literature studies as well as to former disquisition and obedience derived from business practice in the area of integrated reporting. design/ methodology/ approach The composition presents a statistical analysis of reported demand figures for freight services in Poland. In addition, a geek analysis was performed to determine the changing part of freight forwarders. The methodology is supplemented by a case study of the global logistic driver A.P. Moller- Marske active in the freight forwarding request. findings The adding demand for transport services has prompted the freight forwarding sector to evolve. presently, the freight forwarder is no longer a contractor of just one service, but is involved across a comprehensive force chain, while the sedulity is formerly seeing dynamic changes in how it brings together guests and suppliers. The current changeovers pose a trouble to freight forwarders, as leading shipping motorists analogous as Maersk are expanding the compass of their exertion to include freight forwarding.

(Skiba, Sławomir, Karaś, Adrianna (2022) University of Piraeus. . The changing role of a freight forwarder in modern supply.)

Digital transformation has a significant impact on the development of such an important sector of the economy as logistics. All major profitable trends are traced in logistics, and introductory digital technologies are formerly being used. At the same time, there are certain obstacles to the effective development of digital logistics. For illustration, there is a lack of educational integration of force chains. This composition systematizes information about the state of digital transformation in logistics, about the main trends, applied technologies, analyses it, simulates the digital logistics ecosystem, identifies stakeholders, drivers of digital logistics

transformation, conditions for the development of the sedulity. Predicated on this, the main lines of action to meliorate the effectiveness of logistics conditioning in the terrain of digital transformation are formulated. The performance of the proposed conduct requires the integrated use of technology and a specialized fine outfit. The integrated conduct of actors in the digital logistics ecosystem will ensure the demanded part of logistics in integrated profitable development. (The Challenges of the Logistics Industry in the Era of Digital Transformation Conference paper First Online: 11 December 2020)

Transport and logistics operations are vulnerable to numerous types of pitfalls due to an adding dynamic and structural complexity of moment's force chain networks. Global distributed sourcing and product leads to further transported goods in general but also to further high value loadings being packed around the world. still, detailed information about the transport condition and integrity aren't available in the end- to- end chain ase.g. a sealed vessel can be considered as" black box". In this paper we originally dissect claims data from one of the largest transportation insurance providers in Europe. The sample comported of 7,284 claims made in the recent four times (2005 – 2008) as a result of incidents in transportation. Through a friction analysis, we demonstrate differences among diligence in terms of average losses, transportation mode and decoration content. Secondly, grounded on these findings an active threat operation frame will be developed using detector- telematics and localization technologies to increase visibility and translucency in force chain operations befitting diligence' current requirements. Findings from this paper give data on how forestallment can be enforced in logistics. The results give interpreters in the force chain operation and marine weight insurance assiduity a deeper understanding of current transportation pitfalls and how to address them by creating innovative value added services to separate logistics and insurance results effectively from challengers. (Risk and loss prevention within the transport chain Alexander C H. Skorna 10-14 April 2011, Florida)

The current issues and challenges related to the large- scale perpetration of intermodal freight transportation systems in the United States and Europe are addressed, and open exploration issues and challenges are linked. As traffic and environmental impacts continue to worsen, intermodal transportation will continue to increase in significance. thus, it's necessary to establish a exploration docket for an in- depth study of intermodal freight and logistics issues in the European Union and the United States. (Current Challenges for Intermodal Freight Transport and Logistics in Europe the United State Konstantinos G. Zografos and Amelia C. ReganView all authors an affiliations Volume 1873, Issue 1)

Factors Influencing Freight Forwarding Business

Several factors influence the efficiency and competitiveness of freight forwarding businesses, including the type of goods transported, customer delivery requirements, and the mode of transportation utilized. Additionally, the size and specialization of freight forwarding companies play a significant role in shaping their operational strategies and market positioning. Larger companies may leverage economies of scale to invest in advanced technology, infrastructure, and talent, enabling them to offer a wider range of services and cater to diverse customer needs. Specialized firms may focus on niche markets or specific industry verticals, providing tailored solutions to meet unique requirements.

Statement of the Problem:

Freight forwarding companies play a pivotal role in the global economy by facilitating the movement of goods across borders. However, they encounter various challenges in effectively managing risks inherent in their operations. These challenges include delays in transportation, cargo damage during transit, customs clearance issues, and high transportation costs. Despite the importance of risk management, there is a lack of comprehensive understanding of the most significant challenges faced by freight forwarding companies and how they prioritize risk management strategies.

Objective of Study

The objective of this study is to investigate the challenges faced by freight forwarding companies in managing risks and to identify effective risk management strategies. Specifically, the study aims to:

- Identify the most significant challenges encountered by freight forwarding companies in managing risks.
- Explore how freight forwarding companies prioritize risk management strategies in their operations.
- Examine the primary factors contributing to delays in freight forwarding operations and assess effective risk mitigation measures.
- Investigate strategies for ensuring compliance with regulatory requirements in freight forwarding.
- Explore the role of technology in mitigating risks and enhancing risk management capabilities in freight forwarding operations.
- Determine key success factors for effectively managing risks in freight forwarding operations.

Scope of the Study:

This study focuses on freight forwarding companies operating in the global logistics industry. The scope includes an examination of challenges related to transportation delays, cargo damage, customs clearance, high transportation costs, and compliance with regulatory requirements.

Additionally, the study explores the role of technology in risk management and identifies key success factors for effective risk mitigation in freight forwarding operations.

Research Methodology:

The methodology employed in this study is designed to systematically investigate the challenges and solutions pertaining to risk management in freight forwarding. It encompasses a multifaceted approach involving meticulous planning, precise data collection methods, and robust statistical analyses. By adopting a structured research methodology, the study aims to unravel the complexities of risk management within the freight forwarding industry, providing valuable insights for stakeholders.

Research Design:

The research design chosen for this study is descriptive in nature, aiming to provide a comprehensive understanding of the challenges faced by freight forwarding companies and their risk management practices. This design allows for the exploration of both qualitative and quantitative aspects of risk management, facilitating a holistic examination of the research topic. By employing a descriptive research design, the study endeavors to gather nuanced insights into the dynamics of risk management in the context of freight forwarding operations.

Data Collection:

Data collection for this study is conducted through a combination of surveys and literature review. Surveys are distributed to freight forwarding companies to gather quantitative data on the challenges they encounter and the risk management strategies they employ. Additionally, interviews are conducted with industry experts to obtain qualitative insights and validate survey findings. A comprehensive review of existing literature complements primary data collection efforts, providing a robust foundation for analysis and interpretation.

Research Instrument:

The research instrument utilized in this study is a structured questionnaire comprising questions related to the challenges faced by freight forwarding companies, their risk management strategies, and the role of technology in mitigating risks. This questionnaire is carefully designed to elicit specific information pertinent to the research objectives, ensuring the collection of relevant and actionable data. By employing a structured research instrument, the study aims to gather comprehensive insights into risk management practices within the freight forwarding industry.

Sample Size

In this study Non-Probability sampling method was used and the researcher were collected 224 samples for this study. Responses are from different firms, sectors, departments and organizations. The confidence levels were occupied as 95% and the margin of error was 5% in this study.

Data Analysis

Percentage Analysis

Table 1: The most significant challenges faced by freight forwarding companies in managing risks.

S.No	Particular	Frequency	Percent
1	Cargo damage during transit	36	16.1
2	Customs clearance issues	56	25
3	Delays in transportation	59	26.3
4	High transportation costs	72	32.1
	Total	224	100

(Source: Primary Data)

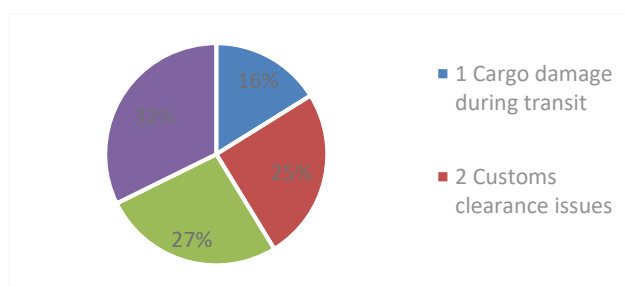


Chart 1: significant challenges faced by freight forwarding companies in managing risks

Table2: The prioritize risk management strategies in freight forwarding operations

S.No	Particular	Frequency	Percent
1	All of the above	69	30.8
2	Enhancing supply chain visibility	48	21.4
3	Implementing contingency plans for unforeseen disruptions	61	27.2
4	Proactive identification of potential risks	45	20.1
	Total	224	100

(Source: Primary Data)

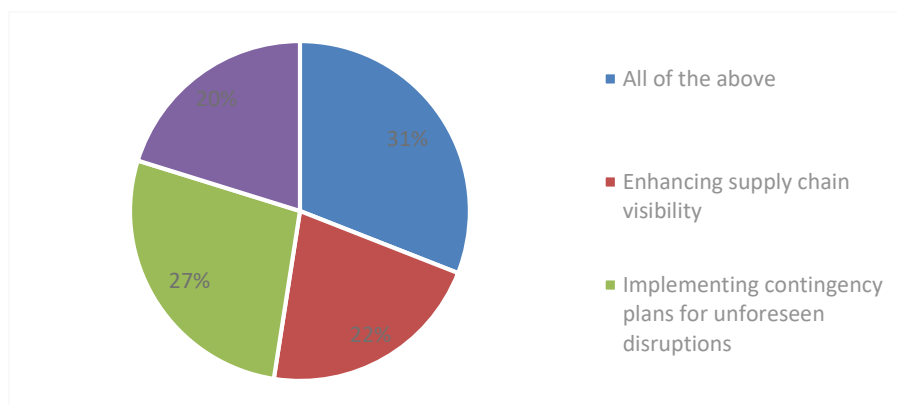


Chart 2: Prioritize risk management strategies in freight forwarding operations

Table 3: The primary factors contributing to delays in freight forwarding operations.

S.No	Particular	Frequency	Percent
1	All of the above	73	32.6
2	Congestion at ports and terminals	42	18.8
3	Inefficient route planning	51	22.8
4	Weather-related disruptions	57	25.4
	Total	224	100

(Source: Primary Data)

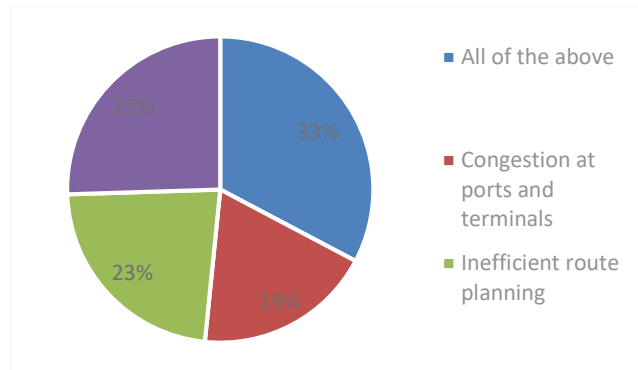


Chart 3: The primary factors contributing to delays in freight forwarding operations

Table 4: Risk mitigation measure is most effective in reducing cargo damage during transportation.

S.No	Particular	Frequency	Percent
1	All of the above	80	35.7
2	Collaborating with carriers with a track record of safe handling	47	21
3	Implementing quality control measures for packaging	42	18.8
4	Utilizing specialized handling equipment	54	24.1
	Total	224	100

(Source: Primary Data)

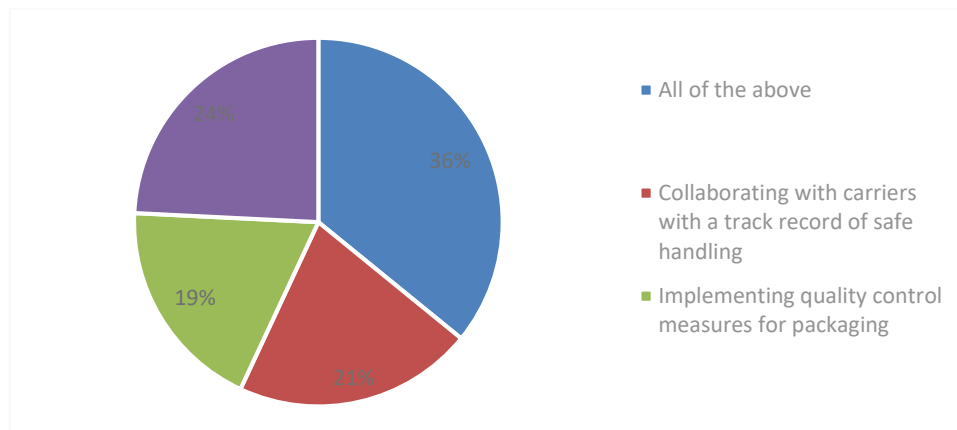


Chart 4: Risk mitigation measure is most effective in reducing cargo damage during transportation

Table 5: The compliance with regulatory requirements in freight forwarding.

S.No	Particular	Frequency	Percent
1	All of the above	75	33.5
2	Implementing robust documentation processes	43	19.2

3	Partnering with experienced customs brokers	50	22.3
4	Regular training for staff on regulatory changes	55	24.6
	Total	224	100

(Source: Primary Data)

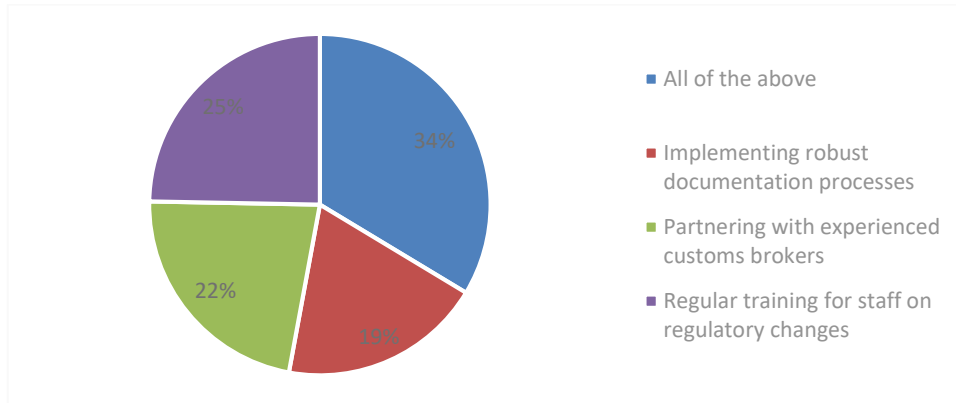


Chart 5: Risk mitigation measure is most effective in reducing cargo damage during transportation

Table 6: The strategies can be adopted to minimize the impact of fluctuating fuel prices on transportation costs.

S.No	Particular	Frequency	Percent
1	All of the above	79	35.3
2	Implementing fuel surcharge mechanisms	57	25.4
3	Investing in fuel-efficient transportation modes	39	17.4
4	Negotiating long-term contracts with fuel suppliers	48	21.4
	Total	224	100

(Source: Primary Data)

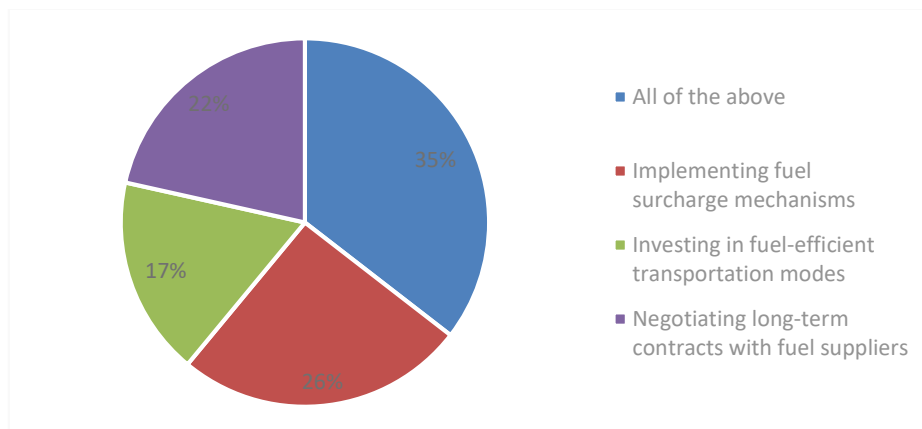


Chart 6: The strategies can be adopted to minimize the impact of fluctuating fuel prices on transportation costs.

Table 7: Freight forwarding companies effectively manage risks associated with capacity constraints during peak seasons

S.No	Particular	Frequency	Percent
1	All of the above	81	36.2
2	Establishing partnerships with alternative carriers	43	19.2
3	Implementing flexible scheduling and booking processes	55	24.6
4	Optimizing warehouse space utilization	44	19.6
	Total	224	100

(Source: Primary Data)

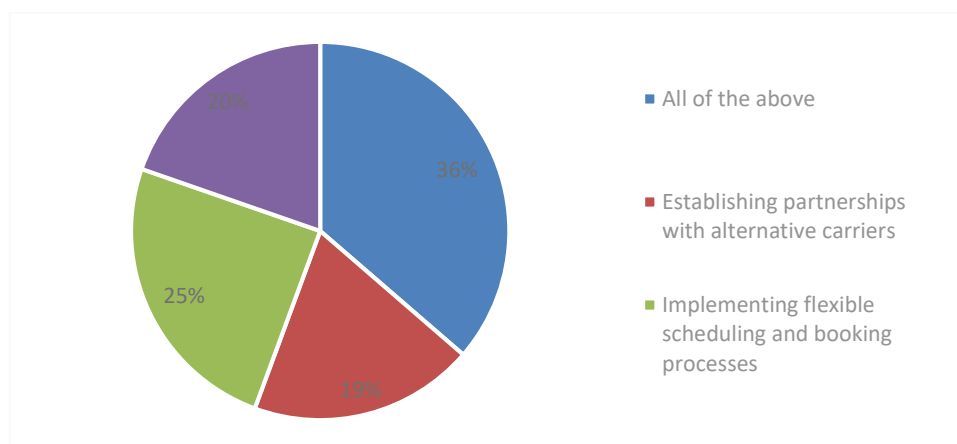
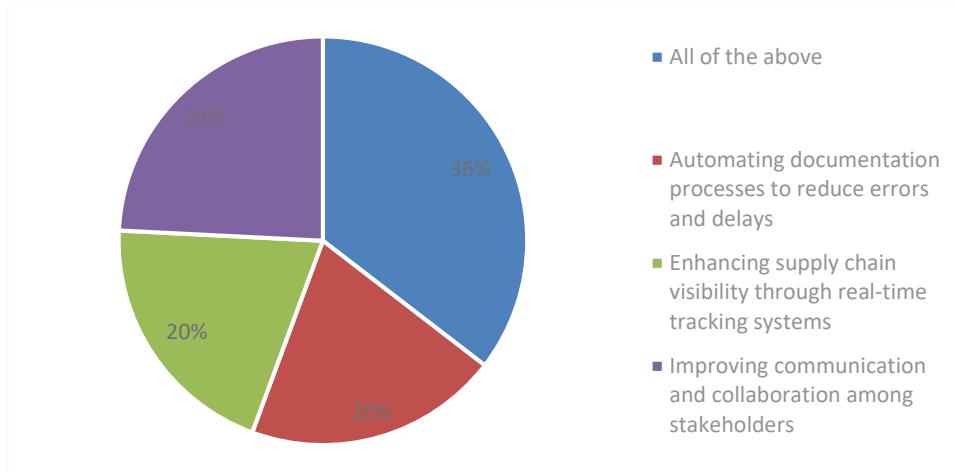


Chart 7: Freight forwarding companies effectively manage risks associated with capacity constraints during peak seasons

Table 8: The role of technology play in mitigating risks in freight forwarding operations.

S.No	Particular	Frequency	Percent
1	All of the above	79	35.3
2	Automating documentation processes to reduce errors and delays	45	20.1
3	Enhancing supply chain visibility through real-time tracking systems	45	20.1
4	Improving communication and collaboration among stakeholders	54	24.1
	Total	224	100

(Source: Primary Data)



Chare 8: Freight forwarding companies effectively manage risks associated with capacity constraints during peak seasons

Table 10: The key success factors in effectively managing risks in freight forwarding operations

S.No	Particular	Frequency	Percent
1	All of the above	73	32.6
2	Collaboration and communication with all stakeholders	49	21.9
3	Continuous improvement and adaptation to changing circumstances	61	27.2
4	Strong leadership and commitment to risk management	40	17.9
	Total	224	100

(Source: Primary Data)

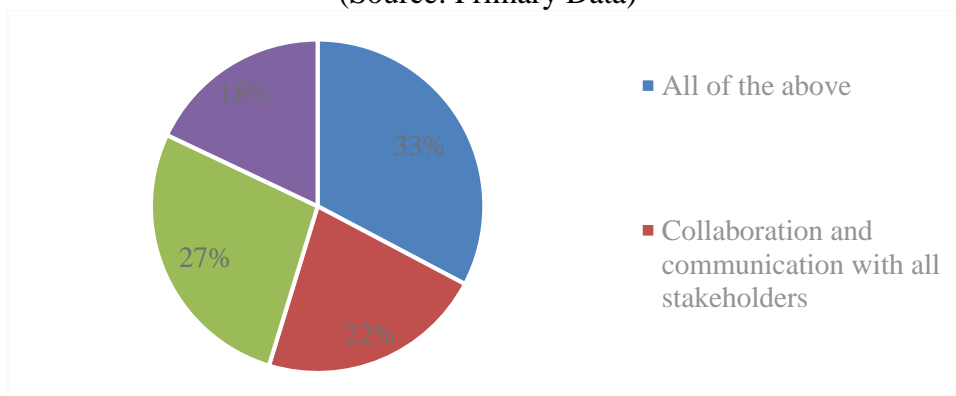


Chart 10: The key success factors in effectively managing risks in freight forwarding operations

Chi - Square Test of Independence

Null Hypothesis (H0)

There is no relationship between “significant challenges faced by freight forwarding companies in managing risks” and “the key success factors in effectively managing risks in freight forwarding operations”. if go value of aysmp.sig > 0.05

Alternative Hypothesis (H1)

There is relationship between “significant challenges faced by freight forwarding companies in managing risks” and “the key success factors in effectively managing risks in freight forwarding operations”. if go value of aysmp.sig < 0.05

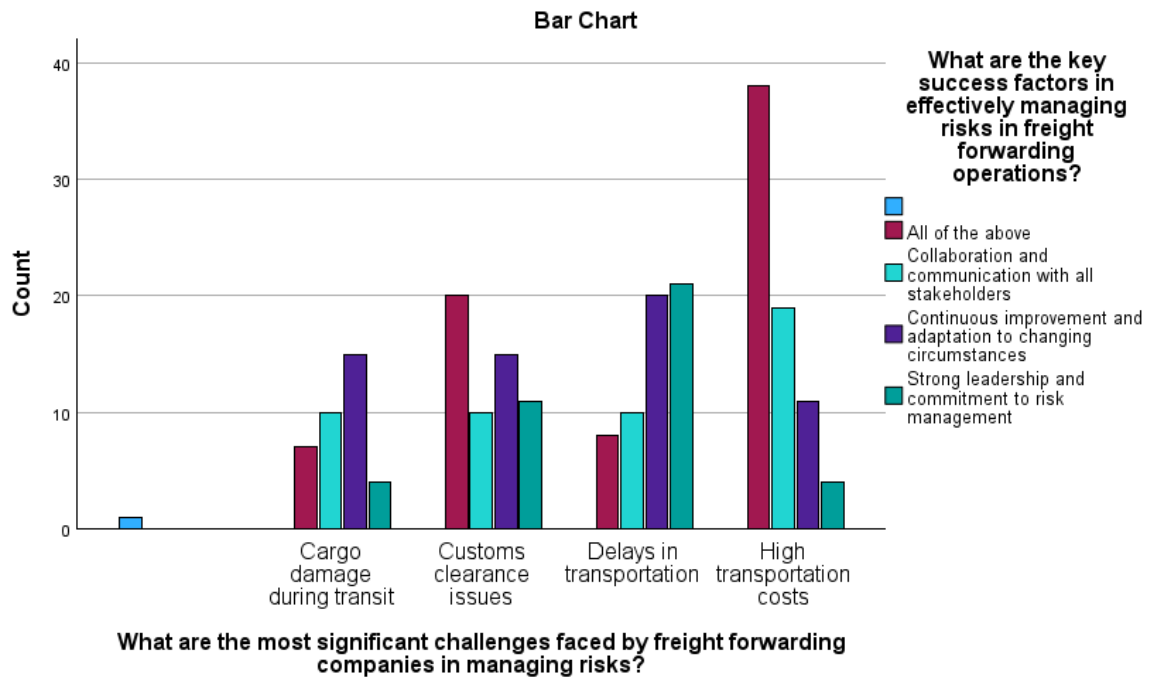
Table 11:

		What are the key success factors in effectively managing risks in freight forwarding operations?				Total
		All of the above	Collaboration and communication with all stakeholders	Continuous improvement and adaptation to changing circumstances	Strong leadership and commitment to risk management	
What are the most significant challenges faced by freight forwarding companies in managing risks?	Cargo damage during transit	7	10	15	4	36
	Customs clearance issues	20	10	15	11	56
	Delays in transportation	8	10	20	21	59
	High transportation costs	38	19	11	4	72
Total		73	49	61	40	224

Table 12: Chi-Square Test

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)

Pearson Chi-Square	268.957a	16	<.001
Likelihood Ratio	58.847	16	<.001
N of Valid Cases	224		



Interpretation

Since the value obtained is less than 0.05, H0 is rejected and H1 is accepted. Can say that there is a relationship between “significant challenges faced by freight forwarding companies in managing risks” and “the key success factors in effectively managing risks in freight forwarding operations.

Findings

- Most significant challenges - High transportation costs: 32.1% respondents
- Priority in risk management strategies - Majority (30.8%) chose all options provided.
- Factors contributing to delays - All options selected by 32.6% respondents
- Most effective risk mitigation measure - Cargo damage reduction: 35.7% respondents
- Compliance with regulatory requirement - All options selected by 33.5% respondents
- Minimizing impact of fuel price fluctuations - Majority (35.3%) opted for all strategies
- Managing risks during peak seasons - Majority (36.2%) chose all options
- Technology's role in risk mitigation - Significant, with 35.3% selecting all options
- Addressing cybersecurity risks - Crucial, with 37.1% respondents choosing all options
- Key success factors - Comprehensive approach chosen by 32.6% respondents

- Relationship between challenges and key success factors - Identified a significant correlation between challenges faced in risk management and key success factors in freight forwarding operations.

Suggestion

- The survey findings and accompanying data underscore the myriad challenges confronting goods forwarding enterprises in risk management, spanning from transit delays to regulatory compliance hurdles so organization can take necessary measure to control.
- Organizations can consider about the transportation cost so that they can get more business.
- They can adopt good risk management strategy so that they can avoid the forth coming risks in nearer future.
- The organization can consider about the role of implementation of technology and its advancement has to be in a continues improvement process and also need to consider about the cybersecurity risks so this organization can develop in technological growth.

Conclusion

In summary, this study illuminates the intricate terrain of risk management within the freight forwarding sector. The diverse array of challenges unveiled, spanning from exorbitant transportation costs to regulatory adherence hurdles, underscores the multifaceted nature of risks inherent in logistical undertakings. The survey outcomes unveil a myriad of strategies embraced by freight forwarding entities to tackle these risks, with a notable portion of respondents advocating for holistic approaches encompassing all available risk mitigation avenues.

Furthermore, the correlation observed between encountered challenges and identified key success factors underscores the imperative of embracing a comprehensive risk management paradigm. By preemptively addressing challenges and harnessing innovative solutions, freight forwarding enterprises can fortify their resilience and competitive edge in the global arena. Moreover, the pivotal role played by technology in risk alleviation and supply chain transparency accentuates the necessity of sustained investment in digitalization and automation.

In essence, this research yields invaluable insights into the intricacies and possibilities within the freight forwarding realm, furnishing pragmatic recommendations for industry stakeholders to navigate the intricacies of risk management adeptly. Through the cultivation of collaboration, innovation, and continuous enhancement, freight forwarding entities can bolster their risk management prowess and ensure the uninterrupted flow of goods amidst the dynamic business milieu of today.

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