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Complexity Faced by Consumers in Pricing Ocean Freight During War Times

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Abstract

The global freight forwarding sector is responsible for facilitating global trade via internationally coordinated logistics, paperwork, and carrier (shipper) management employed in cross-border movement of products worldwide. The complexities of pricing for ocean freight become significantly more problematic during times of war and geopolitical instability due to factors such as significant rate fluctuations, unpredictable pricing, limited availability of information, and disruption to normal shipping operations. This report is based on an empirical study that was conducted to define and quantify the complexity of freight forwarders' pricing challenges, in support of a systematic analysis, of these pricing challenges experienced by individuals involved in freight forwarding operations based in India, with being used as a representative company.

Keywords: Ocean Freight Pricing, Freight Forwarders, Geopolitical Risk, War-Time Logistics, Supply Chain Disruption, Rate Volatility

1. Introduction

An importer or exporter quotes the cost of shipping with multiple suppliers compared to the original quote provided by their freight forwarder, they will generally need to consider each supplier's quotation using their own unique schedule of fare transmittals, which will result in differences of cost based upon the various factors within each of the supplier's quotes. If one freight forwarder provides a quote that does not match another freight forwarder's quote based upon the rate of a common variable component such as carrier rates or customs duties, the differences can sometimes be substantial. Such variations can impact an importer's or exporter's overall cost of purchasing from other countries as well as the total amount of freight they pay to domestic suppliers. Although many of the variables that affect the price of freight forwarding services are well understood, several variables remain baffling to many freight forwarders; this is exemplified by the fact that freight forwarders must request that their customers verify the rate quotes they receive from multiple suppliers against the rates they were provided in the past by using traditional

historical methods for tracking quotation rates. Ultimately, as the costs of goods rise globally due to increased demand, reduced supply and the expansion of business globally, these types of discrepancies are anticipated to continue to be problematic until all freight forwarders follow a standardized method of establishing their quotation rates based on an established set of variable components.

2. Review of Literature

A significant number of academic publications have explored how geopolitical conflict has affected maritime freight. This review synthesizes the most pertinent studies.

Georgiou (2023) analysed how the Russia–Ukraine War will affect shipping freight markets via indices from the Baltic Exchange. Following Russia’s invasion of Ukraine, freight rates saw dramatic volatility, especially on lanes between and connected to Russia—indicating that while freight prices are determined primarily by demand/supply equations, external geopolitical events can significantly disrupt these equations and lead to unstable pricing structures that are difficult to forecast and manage.

The researchers in "The Effect of the Russia–Ukraine War on Shipping Companies and Financial Market Volatility" (2023) identified significant volatility in global shipping due to rapidly increasing fuel costs and economic sanctions against Russia. They compared the stock performance of Maersk versus the STOXX50 index to identify the volatility present in the global freight markets, as they found elevated levels of market volatility, indicating the elevated levels of uncertainty that exist in the marketplace. Based on their work, the Value-at- Risk calculation of 27.66% served as an indicator of the financial uncertainty faced by those in the shipping industry because of the war.

Shymchenko (2024) developed an adaptive pricing algorithm that uses the mathematical risk coefficient to incorporate geopolitical risk into an international logistics pricing model. He argued that traditional 'Just In Time' (JIT) logistics models were becoming obsolete; however, due to evolving consumer purchasing trends, new JIT models will be developed to accommodate these trends.

3. Research Gap

A review of the literature suggests a pattern: most studies on the macro and finance impact of wars on shipping markets are based on aggregate data (Baltic Exchange indexes, corporate stock performance, oil price indexes); however, there is a major void in empirical research to help freight forwarders overcome operational pricing issues from a practitioner point of view.

Most current research studies on the issue have a macro and/or financial model orientation and employ market-level indicators, rather than reflecting the real- world day-to-day operations of logistics companies engaged in freight forwarder services. For example, there are very few articles that address the questions of how freight forwarders build and modify quotes when carriers adjust their rates every day, how they manage client expectations with shifts in cost components faster than the issuance of invoices, and how miscommunication between carriers and freight forwarders can occur in the pricing decision-making process.

4. Research Questions

The purpose of this study is to investigate the following research questions:

- Q1: How do external factors from war — such as fuel cost fluctuation, disruption of routes, reduced capacity, rise in insurance costs and trade embargoes — impact ocean freight pricing decisions made by forwarding companies?

- Q2: What are the unique operational issues encountered regarding quoting rates, calculating costs, and providing consistent prices during times of war?
- Q3: How does a lack of real-time data along with communication problems between carriers and freight forwarders compound the challenges associated with pricing during a war?
- Q4: To what extent do professionals have different perspectives on war-related pricing issues based on their level of professional experience?
- Q5: Is there an association between level of professional designation and level of perception regarding pricing complexity because of wartime events?
- Q6: What kind of modifications can forward companies implement technologically, contractually or organizationally to improve pricing accuracy and business viability due to disruptions caused by geopolitics?

5. Objectives of the Study

5.1 Primary Objective

- To examine how war-time external factors influence ocean freight pricing outcomes for freight forwarders, considering the role of pricing mechanisms and organizational characteristics.

5.2 Secondary Objectives

1. To analyse the impact of war-related external factors (such as geopolitical instability, fuel price volatility, port congestion, and sanctions) on freight pricing decisions.
2. To evaluate the role of mediating variables (cost adjustments, risk assessment, surcharge application, and rate forecasting) in shaping pricing strategies during crises.
3. To assess the effect of pricing strategies on key outcomes such as freight rate volatility, pricing accuracy, profit margins, and customer satisfaction.
4. To examine how moderating variables (company size, experience, technology adoption, and financial stability) influence pricing effectiveness under war conditions.
5. To identify the interrelationship between external disruptions, pricing mechanisms, and final pricing outcomes in the ocean freight industry.

6. Hypothesis of the Study

- H1 - One-Way ANOVA: Insurance and War Risk Premiums Compared to Experience
 - H0: There is no statistically different experience-based perception of insurance and war risk premiums across different professional experience classifications.
 - H1: There is a statistically different experience-based perception of insurance and war risk premiums across different professional experience classifications.
- H2 - One-Way ANOVA: Carrier Rate Changes Compared to Experience
 - H0: There is no statistically different experience-based perception of carrier rates

changing during times of crisis across various classifications of professional experience.

- H1: There is a statistically different experience-based perception of carrier rates changing during times of crisis amongst varying classifications of professional experience.
- H3 - Chi-Square: Insurance and War Risk Premiums Compared to Designation
 - H0: There is not a statistically significant association between the professional designation of individuals and the perception of the increase of insurance and war risk premiums during times of armed conflict.
 - H1: There is a statistically significant association between the professional designation of individuals and the perception of the increase of insurance and war risk premiums during times of armed conflict.
- H4 - Chi-Square: Carrier Rate Changes Compared to Designation
 - H0: There is not a statistically significant association between the professional designation of individuals and their perception of the frequency of the change in carrier rates during time of crisis.
 - H1: There is a statistically significant association between the professional designation of individuals and the frequency rate of the change of carrier rates experienced during a time of crisis.

7. Research Methodology

7.1 Research Design

The study will use a descriptive research design by the research which will be appropriate for studies that have an objective of accurately describing phenomena/group characteristics at the point in time that they exist by their use as they are currently found in society. Descriptive research includes surveys and fact-finding inquiries (the primary objective being to provide an accurate actual account of what the current state of affairs is, with no variables manipulated). The selected design type for use in this research is descriptive design because the researcher seeks only to describe the pricing challenges of freight forwarders operating in wartime environments.

7.2 Data collection instrument

Primary data will be collected using a structured 40-item, five-point Like scale questionnaire from 1 (strongly disagree) to 5 (strongly agree). The structured questionnaire will provide an evaluation of four areas of perception across: (i) the disruption factors (external) due to the current global conflict; (ii) the challenges in the operations and pricing mechanisms; and (iii) communications and data interruptions caused.

7.3 Descriptive Analysis — External Disruption Factors

The following table presents the combined percentage of respondents selecting 'Agree' or 'Strongly Agree' for key external disruption variables.

8. One-Way ANOVA Analysis

A One-Way ANOVA was conducted to test whether mean scores on selected variables differed significantly across three professional experience groups:

Below 1 Year (n=16), 2-5 Years (n=23), and 5-10 Years (n=5). Two dependent variables were selected: perceptions of insurance and war risk premiums (Q10) and carrier rate changes during crises (Q11).

8.1 ANOVA Test 1 — Q10: Insurance and War Risk Premiums Increase Significantly

H_0 : There is no significant difference in the perception of insurance and war risk premiums across different experience groups.

Experience Group	N	Mean Score	Std. Deviation
Below 1 Year	16	4.312	1.014
2-5 Years	23	4.217	0.736
5-10 Years	5	4.400	0.548

Source of Variation	df	F-Statistic	Sig. (p-value)	Decision
Between Groups	2	0.127	0.881	Not Significant
Within Groups	41	—	—	—

Total	43	—	—	H_0 Accepted
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Inference: The One-Way ANOVA returns $F(2,41) = 0.127$, $p = 0.881$, which exceeds the significance threshold of 0.05. H_0 is therefore accepted. Mean scores across all three groups are nearly identical (4.312, 4.217, and 4.400 respectively), confirming that the perception of insurance and war risk premium escalation is uniformly high regardless of years of professional experience.

9. Chi-Square Analysis

Chi-Square tests of independence were conducted to determine whether professional designation — Customer Broker/CHA, Freight Forwarder, Logistics Manager, or Other — is associated with the perception of selected pricing challenges. Responses were categorized as Agree (score ≥ 4), Neutral (score = 3), or Disagree (score ≤ 2) for cross-tabulation. Valid cases: $N = 44$.

9.1 Chi-Square Test 1 — Q10: Insurance and War Risk Premiums

H_0 : There is no significant association between professional designation and the perception of insurance and war risk premiums increasing during war situations.

Designation	Agree	Neutral	Disagree	Total
Customer Broker/CHA	8	1	0	9

Freight Forwarder	22	0	2	24
Logistics Manager	10	0	0	10
Other	1	0	0	1
Total	41	1	2	44

Chi-Square Value	df	Asymp. Sig. (2-sided)	N of Valid Cases	Decision
5.634	6	0.465	44	H₀ Accepted — Not Significant

Inference: $\chi^2 = 5.634$, $df = 6$, $p = 0.465 > 0.05$. H_0 is accepted. No significant association exists between professional designation and perception of war risk premium escalation. The cross-tabulation confirms near-universal agreement: Freight Forwarders (22/24), Logistics Managers (10/10), and Customer Brokers (8/9) all agreed, reflecting a profession-wide acknowledgment of this risk factor.

10. Findings of the Study

The findings that result from the analysis of the data are:

- Significant fluctuations occur to freight rates in wartime conditions due to an average of 71% of respondents agreeing to this point, and 45% of those responding indicated they 'strongly agree', thus confirming the volatility of ocean freight rates is characteristic of war-torn ocean freight markets.
- Fuel prices rise dramatically during wartime (81.6%), and emergency fuel surcharges are routinely added to the overall costs of ocean freight service (76.7%), which creates an inflated cost basis that may be used to establish quotations.
- Ocean freight capacity becomes increasingly limited during times of war (83.3%), while there is also an interruption in container availability (73.4%), which produces two separate supply-side shocks that lead to substantially increased freight rates and difficulty booking space physically.
- Transit times produced by ocean freight increase as a result of geopolitical conflict (85%) and the agreement percentage with the option of 'strongly disagree' is the highest for any operational variable (51.7%); indicating the significant severity and extent of route disruption.
- Port congestion caused by wartime scenarios increases (81.7%), which result in unpredictable demurrage and detention fees that cannot be incorporated in advance quotations.
- The impact of government regulation and/or sanction on pricing is the most broad-reaching; with

90% of respondents indicating an agreement level with this item, which is the highest level of agreement among the entire data set; thus supporting the fact that the government regulatory response to military conflict has a broad effect in the marketplace.

- There is substantial increase in both insurance rates and war-risk premiums during periods of military conflict due to an average of 87% of respondents agreeing, while the average percentage of 'strongly agreed' with this item was 55%; thus, indicating the perception that all three of these risk factors were throughout the profession.
- The negative effect of the lack of real-time data on freight pricing decisions is significant, as 88.4% of all respondents indicated they have been negatively affected; while a high number (86.7%) indicated that there are frequent delays in providing carrier freight rates; thus creating a serious issue.

11. Practical Implications

The findings of this study carry specific and actionable implications for freight forwarding organizations, logistics managers, technology developers, and policymakers.

12. Conclusion

The research conducted has been methodologically structured and has performed appropriate analysis to determine how war-related and geopolitical conflicts produce point-of-origin environments for freight forwarders working with respect to ocean freight rates that are exceedingly complex and unstable. Additionally, the number of disruption variables that converge to create this unprecedented pricing environment for freight forwarders is significant (six total). These disruption variables are (1) volatility of fuel prices, (2) escalating cost of war-risk premium, (3) shortages of equipment and container capacity, (4) diversion of transportation routes and/or extensions of transport transit time, (5) port congestion, and (6) trade restrictions (sanctions). The qualitative data results, based on the responses from a sample of 60 logistics professionals, confirms two-dimensional factor analysis with more than 80% agreement on most major analyzed variables, leaving no doubt that wartime pricing complexity is real, widespread, and significantly impeding the way freight forwarders price. The four most supported variables were (1) Government Regulations/Sanctions (90% agreement); (2) Real-Time Data Availability (88.4% agreement); (3) Insurance and War Risk Premiums (87% agreement); and (4) Directly Impacting Profit

Margins (86.6% agreement). These four variables indicate that these issues represent the most critical aspects to the pricing process for Freight Forwarders.

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