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**THE IMPACT OF INCOTERMS ON SUPPLY CHAIN FINANCIAL
PERFORMANCE**

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MASTER OF SCIENCE (SUPPLY CHAIN MANAGEMENT)



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**THE IMPACT OF INCOTERMS ON FINANCIAL SUPPLY CHAIN
PERFORMANCE**

By

ASHWINEE MANIMARAN

**A Research Paper Submitted to Universiti Utara Malaysia in partial of the
fulfillment of the requirements for the Master of Science
(Supply Chain Management)**



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ABSTRACT

The impact of International Commercial Terms (Incoterms) on the performance of the financial supply chain is examined in this qualitative study, which focuses on three often used terms: Free on Board (FOB), CIF (Cost, Insurance, and Freight), and EXW (Ex Works). In international trade, Incoterms which are standardized by the International Chamber of Commerce's (ICC) Incoterms 2020 framework are crucial for outlining the obligations, expenses, and risk allocation between buyers and sellers. This study's main goal is to investigate the financial results and cost implications of using EXW, FOB, and CIF terms. Specifically, it aims to understand how these Incoterms affect the transaction costs. The study focuses on companies located in Johor, Malaysia, a key industrial and trading region, to gather contextual insights from professionals actively engaged in import and export operations. Data was collected through interviews session with logistics managers, supply chain officers, and directors. The findings indicate that improper or uninformed selection of Incoterms often leads to financial inefficiencies, including longer payment cycles, higher costs, and misallocated responsibilities. This research offers valuable recommendations to help organizations make informed Incoterms choices, strengthen collaboration between logistics and finance departments, and enhance financial performance through better risk and cost management in the supply chain.

Keywords: Incoterms, Free on Board (FOB), EX WORKS (EXW), Cost Insurance Freight (CIF), and Supply Chain Performance.

ABSTRAK

Kajian kualitatif ini menyiasat kesan Terma Perdagangan Antarabangsa (Incoterms) terhadap prestasi rantaian bekalan kewangan, dengan memberi tumpuan kepada tiga terma yang sering digunakan: EXW (Ex Works), Free on Board (FOB), dan CIF (Cost, Insurance, and Freight). Incoterms yang telah diselaraskan melalui rangka kerja Incoterms 2020 oleh International Chamber of Commerce (ICC) adalah penting dalam menentukan tanggungjawab, kos, dan pengagihan risiko antara pembeli dan penjual dalam perdagangan antarabangsa. Walau bagaimanapun, banyak perniagaan rantaian bekalan menghadapi kesukaran untuk menyelaraskan pemilihan Incoterms dengan objektif kewangan mereka disebabkan oleh kekurangan kepakaran atau jurang komunikasi antara fungsi dalaman organisasi. Objektif utama kajian ini ialah untuk meneroka kesan kos dan hasil kewangan yang dikaitkan dengan penggunaan terma EXW, FOB, dan CIF. Secara khususnya, ia bertujuan untuk memahami bagaimana terma-terma ini mempengaruhi kos transaksi. Kajian ini memberi tumpuan kepada syarikat-syarikat yang terletak di Johor, Malaysia, iaitu sebuah kawasan perindustrian dan perdagangan yang penting, bagi mendapatkan pandangan kontekstual daripada profesional yang terlibat secara aktif dalam operasi import dan eksport. Data dikumpulkan melalui temubual separa berstruktur bersama pengurus logistik, pegawai rantaian bekalan, dan pengarah, kemudian dianalisis secara tematik.

Dapatan kajian menunjukkan bahawa pemilihan Incoterms yang tidak tepat atau tidak difahami dengan baik sering menyebabkan ketidakcekapan kewangan seperti kitaran pembayaran yang lebih panjang, kos yang lebih tinggi, dan tanggungjawab yang tidak diagihkan dengan betul. Kajian ini menawarkan cadangan yang berguna untuk membantu organisasi membuat pilihan Incoterms secara lebih bijak, mengukuhkan rantaian bekalan.

Kata kunci: Terma Perdagangan Antarabangsa, Prestasi Rantaian Bekalan, Free on Board (FOB), Ex Works (EXW), Cost, Insurance and Freight (CIF)



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LIST OF ABBREVIATIONS

CIF	Cost, Insurance, and Freight
FOB	Free on Board
CFR	Cost and Freight
FAS	Free Alongside Ship
DDP	Delivered Duty Paid
DPU	Delivered at a Place, Unloaded
DAP	Delivered at a Place
CIP	Carriage and Insurance Paid
CPT	Carriage Paid To
FCA	Free Carrier
EXW	Ex Works



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CHAPTER 1

INTRODUCTION

The background of the study, problem statements, research objectives, research questions, significant of study and scope of the study are all discussed in this chapter.

1.1 Background of Study

The International Commercial Terms (Incoterms) standards are a group of delivery rules that are applicable worldwide and have been maintained by the International Chamber of Commerce (ICC) since 1936. These Incoterms, which outline what seller and buyers must do in global trade, are composed of eleven distinct regulations. Each rule outlines the costs, responsibilities, and risks that each of the participants in these operations must deal with. The Incoterms 2020 regulations are separated into two groups according to the transportation modes: four rules are exclusive to inland and maritime waterway transportation, and seven regulations apply to all modes of transportation. According to Bergami, (2013), Incoterms describe in detail the rights, obligations, and responsibilities of both the buyer and the seller in carrying out their contractual duties about the delivery of goods and delivery-related services, like transport movements and customs clearance. Incoterms as a universal standard for interpreting the terminology used in international trade. According to Lazar (2011), it offers generally accepted guidelines outlining definitions and performance requirements for the most popular trading terms. Determining which party, the seller or the buyer takes on tasks, risks, and expenses related to moving goods from buyer to seller is the underlying basis of these contracts. Over time, revisions were made to reflect changes in transportation practices, legal frameworks, and global logistics trends.

Major updates occurred in 1953, 1967, 1980, 1990, 2000, 2010, and most recently in 2020, each adding or removing terms to better align with modern trade operations (ICC, 2020). For instance, DAT (Delivered at Terminal) and DAP (Delivered at Place) were used in place of words like DAF, DES, DEQ, and DDU in the 2010 edition to accommodate containerized shipping. According to Gardner (2012), the specific point when the customer bears the good's risk in the supply chain damage or loss as well as the related costs such as shipping and customs, are established by Incoterms. Incoterms rules are expressed as a three-letter abbreviation, such as "CIP (Loading port terminal address, Country) 2020," followed by a "named place" and the year of the relevant ruleset. According to Davis and Vogt (2021), Incoterms are complex and often chosen by individuals without the expertise to strategically minimize risk and cost. According to Anon (2020b), Incoterms signify the point when the buyer bears the risk instead of the seller, and the respective obligations related to insurance transportation, customs clearance, and delivery. Incoterms significantly affect the performance and efficiency of the supply chain by precisely outlining the functions and responsibilities of buyers and sellers. These definitions establish who oversees what during the whole supply chain performance, from the starting point to the destination. Incoterms determine insurance needs and coverage by describing the point at which risk and costs transfer. The comprehensive explanations of each Incoterms as of 2020 are listed in order from the term indicating the least responsibility for the seller and buyer to the term indicating the most accountability. It has been classified into two categories: inland waterway transportation and maritime transportation.

Ex Works (EXW), Free carrier (FCA), Carrier & Insurance paid to (CIP), Delivery at Place (DAP), Delivery at Place Unloaded (DPU), and Delivered Duty Paid (DDP) terms are used to define modes of transportation. Free Alongside Ship (FAS), Cost and Freight (CFR), Free on Board (FOB), and Cost, Insurance, and Freight (CIF) are the classifications for sea and inland waterway transit.

Table 1: Handoff, Modes, and Description of Incoterms® Rules.

Rule	Description	Handoff	Mode
EXW	Ex Works	Seller's locations	All
FCA	Free Carrier	Domestically to the seller	All
CPT	Carriage Paid To	A location where the buyer and seller	All
CIP	Carriage and Insurance Paid	A location where the buyer and seller	All
DAP	Delivered at a Place	Domestically towards the customer	All
DPU	Delivered at a Place, Unloaded	Domestically to the customer	All
DDP	Delivered Duty Paid	Domestic to the buyer	All
FAS	Free Alongside Ship	Quayside for export	Sea
FOB	Free on Board	Loaded for board export a ship	Sea
CFR	Cost and Freight	Between the buyer and seller	Sea
CIF	Cost, Insurance, and Freight	Between the seller and buyer	Sea

International commercial terms, or Incoterms, are a standardized collection of regulations that outline the obligations of buyers and sellers in cross-border transactions. The International Chamber of Commerce (ICC) developed these terms, which outline crucial aspects of commerce such as the delivery location, cost sharing, and risk transfer between trading parties (ICC, 2020). As global supply chains grow more complex, efficient implementation of Incoterms is becoming increasingly important for both financial performance and logistics coordination. According to Hofmann & Kotzab (2010), financial supply chain performance is the management of financial flows throughout the supply chain, such as working capital, cash conversion cycles, and terms of payment. According to Mangan (2021), the different interpretations or uses of Incoterms often lead to disputes, revenue losses, and bottlenecks in the financial supply chain.

This study examines the impact of cost, insurance and freight, free on board, and Ex Works on the functioning of financial supply chains, with a focus on how different term choices impact cost allocation, payment cycles, and risk exposure. This study provides information on how to use Incoterms to improve financial performance by analyzing data from supply chain specialists, trade finance officers, and logistics managers.

1.2 Problem Statement

According to Jonathan Davis & John Vogt (2022), Incoterms were defined and widely used in international trade, many businesses continue to experience inefficiencies in their financial supply chain due to misunderstandings or poor selection. This lack of cross-functional coordination between finance and supply chain leads to settlement delays, poor working capital management, and less financial adaptability. Next, according to Hien et al., (2009) & Yaakub et al., (2018), Previous studies have shown that different Incoterms, including Cost, Insurance, and Freight (CIF), Free on Board (FOB), and Ex Works (EXW), have distinct impacts on the financial outcomes and efficiency of the supply chain. For example, by transferring the risk and financial responsibility to the seller until the goods reach the destination port, Cost, Insurance, and Freight (CIF) offers the buyer greater predictability but may result in higher upfront the costs. According to Mangan (2021), free on board (FOB), although commonly used, often leads to misconceptions regarding the transfer of duty now of shipment, which can lead to disputes and complicated insurance concerns. According to Ayers & Odegaard (2017), Ex Works which are commonly used in supplier-driven contracts, might negatively impact the buyer's control over logistics and create complications with customs clearance, which would eventually slow down the cash conversion cycle. According to Hofmann & Kotzab (2010), issues highlight a persistent problem in the research on supply chain misalignment. The use of Incoterms leads to a reduction in supply chain performance, especially when it comes to financial metrics. Thus, this study's primary focus is on how Incoterms selection and financial performance goals are not aligned, which impairs supply chain performance overall and reduces competitiveness in international markets.

1.3 Research Objective

The objective of the research is to exam Ex Works (EXW), Cost, Insurance and Freight (CIF) and Free on board (FOB) on supply chain performance. Despite several changes made to the Incoterms by the International Chamber of Commerce (ICC) in 2020 to facilitate compliance, sellers and buyers still had trouble making judgments with the existing framework. Consequently, the following are the study's objectives.

1. To examine the cost link of the Ex Works of Incoterms on Supply Chain Performance.
2. To examine the cost link of Cost, Insurance and Freight, on Supply Chain Performance.
3. To examine the cost link of the Free on board of Incoterms on Supply Chain Performance.

1.4 Research Questions

International Commercial Terms significantly influence continuing deals, smooth transport, cash flow, and risk-free trading. The research questions explored in this article were

1. How do the cost impact Ex Works (EXW) terms in Supply Chain Performance?
2. How do cost impact Cost, Insurance and Freight (CIF) terms in Supply Chain Performance?
3. How does the cost impact Free on board (FOB) terms in Supply Chain Performance?

1.5 Significant for Study

This study is significant as it directly investigates how the specific Incoterms EXW, FOB, and CIF affect financial supply chain performance by businesses involved in international trade. Aligning with the research objectives and questions, the study provides empirical insights into how each term influences cost within the supply chain. By focusing on these three widely used Incoterms, the research offers targeted guidance to exporters and importers, especially in Johor, Malaysia, to match Incoterms selection with financial performance goals. Furthermore, this study enhances the existing body of knowledge by addressing the financial impact rather than just the supply chain performance implications of Incoterms usage. It contributes to the understanding of cost balance in cross-border trade and proposes suggestions to strengthen the resilience of financial efficiency and the supply chain, particularly regarding the Incoterms 2020 framework.

1.6 Scope of Study

This study focuses on investigating the impact of specific Incoterms Ex Works (EXW), Free on board (FOB) and Cost, Insurance, and Freight (CIF) on financial supply chain performance. The core areas explored include how these terms influence cost allocation, and overall financial efficiency within the context of international trade. According to Hofmann & Kotzab, (2010), the financial performance dimensions considered in this study are cost as these are directly affected by Incoterms choices. Geographically, this study is specifically centered on Johor, Malaysia. Johor was chosen due to its strategic role as one of Malaysia's key industrial and logistics hubs, especially given its proximity to Singapore and its access to major seaports such as Port of Tanjung Pelepas and Johor Port.

These ports are involved in international trade, making Johor a suitable and relevant location for exploring how Incoterms are applied in real-world supply chain scenarios. The participants include logistics managers, supply chain executives, directors, deputy sales manager and trade professionals within Johor-based companies engaged in import and export activities. Data was gathered using qualitative interviews to better understand stakeholder knowledge of Incoterms and their financial implications.

1.7 Key Terms Definitions

1.7.1 Cost

Cost-effective Incoterms are appropriate. Since the price of the product may need to decrease to sustain competitiveness when the consumer is responsible for paying for delivery, charging customers for delivery isn't always the greatest option to save money. Even if shipping expenses are covered by the customer, the company still needs to turn a profit. According to Mangan et al., (2021), this study focuses on EXW, FOB, and CIF, which are among the most frequently applied in the Malaysian context according to both industry practice and literature.

1.7.2 Incoterms

Incoterms are now well-established in 1936 by the International Commerce Chamber, and it is a set of guidelines implemented in global trade. The primary objective of the Incoterms regulations is to outline the relevant roles, functions, obligations, and risks of transmission. According to Stojanović and Ivetić, (2020), savings for those involved, as well as essentially opening and streamlining the connection between trade and logistics.

1.7.3 Ex Works (EXW)

EXW is an Incoterms in wherein a seller offers the products for pickup at their location. All risks and costs connected with transportation are then borne by the buyer. The buyer assumes all responsibilities, costs, and risks from that point onward, including transportation, insurance, customs clearance, and delivery (Ayers & Odegaard, 2017).

1.7.4 Cost, Insurance and Freight (CIF)

CIF is an Incoterms, signifying that the seller bears the insurance, transportation, and other costs related to getting the cargo to the destination port. The customer bears the risk when the goods are placed onto the ship. This term is commonly used in maritime transport and is preferred when the seller is better positioned to manage international shipping arrangements (ICC, 2020).

1.7.5 Free on Board (FOB)

Under the Incoterms FOB, a seller arranges transportation up until the ports of departure, where the goods are loaded. When the cargo is loaded into the vessel at the port of departure, the buyer's responsibilities start. According to Mangan (2021), FOB is one of the most used Incoterms in sea freight transactions and requires clear coordination between buyer and seller at the point of loading.

1.7.6 Supply Chain Performance

Supply chain performance analyzes the involvement in planning and managing all aspects such as coordinating and collaborating with various partners such as customers, suppliers, the intermediaries, and third-party service providers. According to Hofmann & Kotzab (2010), it encompasses financial metrics such as cost savings.

1.8 Chapter Summary

An overview of the research, Incoterms, and the cost impact on supply chain performance are provided in this chapter. The key main objective of the paper and the sub-objectives related to the general research theme have also been pointed out. The significance of this investigation, as well as the preliminary study plan, are also discussed. In the next chapter, the literature on the cost impact in supply chain performance is explored.



CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

International Commercial Terms (Incoterms) is currently a widely accepted set of guidelines applied in global trade. Regulation of Incoterms main objective is to specify the respective costs, risks, responsibilities, and roles that are transferred. Additionally, Incoterms 2020 proposes users with explanations to help them use these company conditions as effectively as is practical and to make dealing with clauses as simple as possible. According to Debattista (2020), 11 commercial clauses are classified for each method of transportation (DAP, DPU, DDP, FCA, EXW, CPT, CIP,) and inland waterway and sea transport (FOB, FAS, CIF, CFR).

2.2 Supply Chain Performance

According to Brandenburg, M., Govindan, K., Sarkis, J. & Seung, S. (2014), raw material storage and transportation from the starting point to the destination are included in supply chain performance. The collaboration of linked networks, pathways, and modes of transportation is required for this reliant variable supply chain to function. According to Tseng, M. L & Geng, Y. (2012), a successful supply chain performance is when a company needs to adapt to the terms applied for all shipments. Supply chain performance focuses on companies. Besides that, one of the most significant in supply chain performance are International Commercial Terms. Eleven delivery regulations are included in international and domestic trade terms, or Incoterms, which are used in supply chain. Furthermore, in supply chain, every trade agreement incorporates the movement of goods, associated risks, and financial aspects.

2.3 Ex Works (EXW)

Ex Works (EXW) is an Incoterms in which the buyer bears the cost and risk associated with transporting the goods from the seller's location to the end destination, with the seller having a minimal obligation. According to Jimenez (2012), under EXW the buyer is responsible for export duties, insurance, freight charges, and customs clearance, making this term favorable to sellers. The seller just places the goods at a designated spot, typically the factory, warehouse, or another premises without loading them onto a vehicle. According to the International Chamber of Commerce (ICC, 2020), although sellers are not obliged to assist with export procedures, they should provide necessary documents or information to facilitate export clearance upon the buyer's request. This Incoterms is often used when the buyer has better access to shipping arrangements or when the goods are collected from locations lacking loading infrastructure. The seller is merely required to make the goods available at their location under Ex Works (EXW) Incoterms, which imposes the least amount of duty on them, while the buyer assumes all transportation costs and risks. According to Yuan & Jin (2019), it is revealed that small and medium-sized people prefer EXW terms when they lack logistical capabilities, as it minimizes the seller's liabilities and administrative burden. However, Karaman et al. (2020) pointed out that this Incoterms often leads to logistical inefficiencies and confusion, especially for international buyers unfamiliar with local regulations and transport arrangements. This aligns with the problem identified in our study the misunderstandings and misapplications of EXW leading to increased costs and delays for inexperienced importers.

2.4 Cost, Insurance and Freight (CIF)

The C-group Incoterms "cost, insurance, and freight" (CIF) refers only to maritime transportation, where the seller bears the responsibility for the cost of shipping the products to the destination port, including freight and the required level of insurance coverage. According to Railas (2019), under CIF, the seller arranges and pays for the shipping and insurance from the port of origin to the port of destination. The insurance must cover the risk borne by the customer as soon as the goods are placed aboard the vessel. In addition to transportation, the seller handles export documentation, export taxes, and charges, while import customs clearance, tariffs, and local delivery are the buyer's responsibility. The International Chamber of Commerce (2020) adds that the customer bears all risk once the goods are on board the ship even when the seller arranges for insurance and carriage. Cost, Insurance, and Freight (CIF) determines that the seller bears the responsibility for paying for the freight and insurance until the goods arrive at the port of destination. According to Lim & Goh, (2020), given its simplicity and seller control over freight and insurance arrangements, CIF is widely used in bulk shipping, especially in the goods industry. According to Tang & Said (2021), buyers usually have minimal control and visibility over the shipping process under CIF, which could result in reduced cost transparency and negotiation leverage. The results align with the study's goal of examining its impact of CIF on parties' costs, specifically supply chain performance.

2.5 Free on Board

The term "free on board" (FOB) refers to the point when ownership and risk pass from the buyer to the seller once the item is loaded into the cargo vessel. FOB, as defined by the International Chamber of Commerce (2020), means that the buyer assumes all risks and the seller pays for domestic freight, export customs clearance, and ship loading. This includes maritime insurance, freight charges, and destination-specific customs fees. Bulk shipping or large volumes transported by sea freight are the ideal applications for free on board (FOB). According to Zhang and Lee (2021), As soon as the items transmit the ship's rail is when the risk is transferred. With sellers managing pre-shipment activities and buyers handling post-shipment tasks, this clause ensures shared accountability. When it comes to international trade, free on board (FOB) is regarded as a reasonable agreement in which the seller handles the procedure of getting the goods to the port and onto the ship while the buyer covers all costs. According to Nguyen & Tan (2018), demonstrated that FOB is widely employed because of its balanced approach, which provides shared duties between the buyer and seller. According to Rahman et al. (2022), by letting customers choose their preferred shipping lines, FOB increases cost-effectiveness and delivery dependability. This aligns with the objective of our research, which is to find Incoterms that encourage equitable risk-sharing and cost transparency.

2.6 The Relationship of Ex Works, Free on Board and Cost, Insurance and Freight, and between Supply Chain Performance.

The use of Incoterms such as Ex Works (EXW), Free on Board (FOB), and Cost, Insurance, and Freight (CIF) is vital when examining the cost structure and overall performance of a supply chain. These Incoterms regulate how buyers and sellers share costs, obligations, and risks in international trade, and they have a direct impact on efficiency, responsiveness, and overall logistics costs. EXW is cost-effective for the seller because the buyer bears minimal risk or expense, but it can be expensive and confusing for the buyer, especially if the buyer is unfamiliar with freight and customs procedures. According to Mentzer et al., (2011), delays, a lack of insight, and extra expenses might all impact the supply chain's performance. However, Free on board (FOB) offers a reasonable cost-sharing agreement where the seller pays costs up until the products are loaded onto the cargo ship, after which the buyer is assumed to be liable.

According to Hummels et al., (2020), this framework in place allows buyers to control logistics and bargain less costly freight rates, increasing supply chain flexibility and cost effectiveness. The total cost of freight and insurance to the destination is known as Cost, Insurance, and Freight (CIF), it places more financial responsibility on the seller. The whole cost may go up if the seller charges more than market rates for their logistical services, even while it speeds up the buyer's procedure and improves service reliability. According to Marchet et al., (2018), Cost, Insurance, and Freight (CIF) can improve supply chain responsiveness and accuracy, particularly when sellers possess demonstrated logistical expertise. The choice of Incoterms must align with the strategic objectives and logistical competencies of the trading partners to optimize supply chain performance.

2.6.1 Comparative Table: Cost & Supply Chain Performance of Incoterms

Incoterms	Cost of Burden	Buyer cost risk	Seller cost risk	Supply Chain Efficiency
CIF	High (on seller)	Low	High	Moderate to high
FOB	Shared	Moderate	Moderate	High
EXW	Low (on seller)	High	Low	Low to moderate

The study examines how supply chain performance and cost burden distribution are affected by Incoterms Free on Board (FOB), Cost, Insurance, and Freight (CIF), and Ex Works (EXW). CIF involves a significant seller risk but a low buyer cost risk, particularly in unstable markets, as the seller is responsible for paying the freight and insurance costs up to the buyer's port. According to Marchet et al. (2018), this structure provides moderate to high supply chain efficiency, especially when sellers have strong logistical networks. Conversely, FOB is a reasonable arrangement whereby the buyer and seller divide the cost of transportation up to the delivery point.

According to Hummels et al., (2020), to profit from pricing or logistical advantages, buyers usually decide to handle their own freight; this division allows for significant cost efficiency and entails a low level of risk for both parties. However, because the buyer must handle all shipping, paperwork, and customs processes from the seller's location, EXW primarily lays the responsibility on the buyer, who incurs more risk and costs. According to Mentzer et al. (2011), although this lessens the seller's involvement, it usually leads to low to average supply chain performance, particularly when the buyer lacks logistical competence.

2.7 Underpinning Theory

The most significant theoretical underpinning of this research is the Transaction Cost Economics (TCE) theory, which was created by Oliver E. Williamson in 1985. TCE describes how businesses set up their business processes and contractual arrangements to reduce the costs of conducting business, including contract negotiations, supervision, and compliance. Incoterms (EXW, CIF, and FOB) serve as standardized contractual terms that aid in defining the costs, risks, and responsibilities that sellers and buyers confront when shipping goods with regard with international trade and supply chain performance.

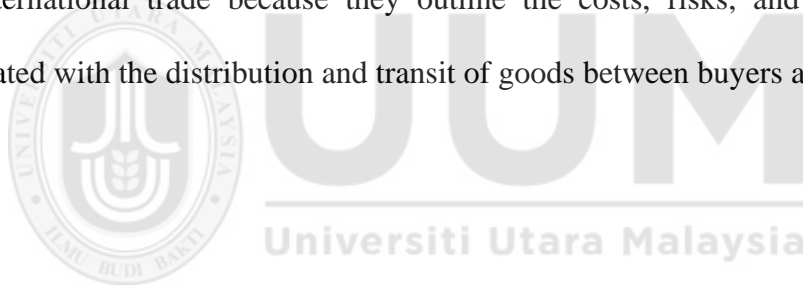
This study aims to figure out how various terms affect transaction costs and supply chain performance by examining Incoterms from the perspective of TCE. For instance, selecting EXW may increase the buyer's risk and coordination expenses, while selecting CIF may make the supply chain easier for the buyer but increase the seller's responsibilities and control. By providing a framework for assessing the economic justification for Incoterms selection and its consequences for supply chain performance outcomes, the theory aids in achieving the goal of the study. According to Lumineau & Oliveira (2018), TCE is relevant in contemporary supply chain contexts, emphasizing how businesses implement governance frameworks that strike a compromise between transactional complexity and cost control in international trade contexts.

2.8 Gaps in literature

The general use of Incoterms in international trade has been the subject of many studies, but remarkably little study has been done on the direct effects of Incoterms like FOB, CIF, and EXW on supply chain performance and transaction costs. According to Ramberg (2011), most of the literature currently in publication focuses more on the legal interpretations, contractual obligations, and theoretical implications of Incoterms than it does on providing empirical data or qualitative insights from supply chain experts who use them in their day-to-day logistics and procurement decisions. According to Hassan, R. et al. (2018,) in a study on Malaysian exporters found that Incoterms choices are often influenced by informal practices or client pressure rather than cost-benefit analysis, and that research in trade zones like Johor Bahru is limited. Previous studies have not sufficiently addressed how these terms influence decision-making in specific trade regions, such as Johor Bahru a strategic trade zone near Singapore with unique logistics dynamics. According to Lucian Cernat (2014), emphasized in his paper on trade facilitation that trade costs and decision-making greatly affect. According to Mangan & Lalwani (2016), state in their logistics management textbook that although Incoterms are a core part of logistics contracts, real-world data connecting term selection to cost savings or performance metrics is underdeveloped in the literature. This creates a knowledge gap concerning practical challenges and cost implications that supply chain professionals encounter when choosing among different Incoterms. By focusing on firsthand accounts from logistics professionals in Johor Bahru, this study addresses the lack of contextualized, experience-based research and contributes to a deeper understanding of Incoterms selections of cost impact on supply chain performance.

2.9 Chapter Summary

An overview of how Incoterms impact supply chain performance in terms of cost is given in this chapter. It significantly affects the functioning of the global supply chain, and continuing transactions, safe commerce, and cash flow management are all essential components. Successful application of Incoterms legislation necessitates knowledgeable people with extensive knowledge of global logistics and trade. It is emphasized that Incoterms must be applied to define the terms of shipping, including the financial, hazardous, and transportation components. These examples show how important it is to choose Incoterms wisely to achieve smooth logistical operations and satisfied customers and the cost impact. International Commercial Terms are necessary for international trade because they outline the costs, risks, and responsibilities associated with the distribution and transit of goods between buyers and sellers.



CHAPTER 3

METHODOLOGY

3.1 Introduction

The research methodology used to examine how Incoterms (EXW, CIF, and FOB) impact costs and supply chain performance is highlighted in Chapter 3. The study is guided by qualitative how Incoterms choices and cost impact. The research was conducted in Johor Bahru, chosen for its strategic position as a major logistics and trade hub. Data was collected from five purposively selected supply chain professionals using focus group discussions and in-depth interviews with the sample size justified by the principle of data saturation. This chapter details the research design, sampling technique, participant criteria, data collection tools, and analysis procedures to ensure the study's reliability and relevance.

3.2 Research Design

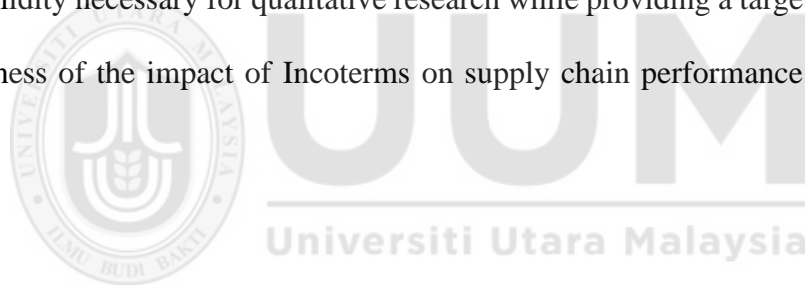
Research design is the methods and techniques a researcher chooses to use to conduct a study. According to Adi Bhat (2024), the design allows researchers to refine the research methods appropriate to the topic and to set up their studies to succeed. Next, the open-ended questions in the interview protocol, a semi-structured interview was taken into view. The participants felt free to give out their opinions based on their knowledge and experiences. According to Tegan George (2023), semi-structured interviews also allow both the interviewer and respondents to ask additional questions at the end of the interview due to the unfixed number of questions in the interview. Data was obtained by carrying out an interview session with the participants who were selected.

3.3 Population of Study

The population of this study comprises professional experts from multinational companies actively involved in international trade and supply chain management, particularly those who utilize Incoterms in their daily operations. This includes Chief Executive Officers (CEOs), international trade experts, logistics coordinators, supply chain managers, and procurement officers. These individuals play a crucial role in managing the movement of goods across borders and are typically responsible for selecting appropriate Incoterms to minimize costs and enhance operational efficiency. Given their expertise and responsibilities, they possess in-depth knowledge of the practical implications of Incoterms such as EXW, CIF, and FOB, making them a relevant and valuable population for this study. Johor Bahru (JB), Malaysia, is strategically situated as a significant logistics and commercial hub close to the Singapore border, therefore professionals working there are the specific focus of the study. A great location to collect relevant data is Johor Bahru, which is home to many manufacturing facilities, export-import businesses, and logistics service providers. Because of its geographical proximity to international shipping lanes and its strong participation in cross-border commerce, the city provides an ideal setting for investigating how Incoterms are applied and how they affect supply chain performance.

3.4 Sample Size

The study's sample comprises business executives from large multinational companies involved in international logistics and trade. Professionals with expertise in international trade, supply chain managers, logistics coordinators, procurement specialists, and Incoterms applications are all part of this. Five experts in the field were selected as the sample size for this qualitative investigation. The theory of saturation, the point at which more data collection generates no new themes or insights, is commonly used to figure out sample size in qualitative research. Recurrent themes and reliable patterns emerged throughout data analysis. The researcher concluded that five participants were enough to achieve saturation. This sample size preserves the depth and validity necessary for qualitative research while providing a targeted yet thorough awareness of the impact of Incoterms on supply chain performance and transaction costs.



3.5 Sampling Strategy

For this study, purposeful sampling was used because it is a good way to find and include individuals who have extensive knowledge and experience related to the research issue. In qualitative research, this non-probability sampling technique is especially useful because it allows the researcher to specifically choose information-rich people, such as supply chain specialists, procurement specialists, and logistics managers who work directly with the implementation of Incoterms in global trade. These people are qualified to offer insightful explanations of how Incoterms impact cost control and supply chain performance. The selection method improves the findings' diversity and dependability by assuring a representative diversity of industry experience, including viewpoints from small to major companies.

The research's objective of collecting detailed, situated data rather than generalizing is supported by this methodology. Purposive sampling, which makes use of focus groups and in-depth interviews, assures that every participant can provide thorough, experience-based answers that directly contribute to the objective of the study. Purposive sampling is generally justified due to its capacity to gather appropriate, reliable, and perceptive qualitative data that is in line with the objectives of this investigation.

Table 3.1 Sampling Table Structure

<i>Participants</i>	<i>Role</i>	<i>Years of Experience</i>
P1	Deputy General Manager	35
P2	Assistant Manager	23
P3	Operation Manager	19
P4	Senior Logistician	25
P5	Director Supply Chain	10

3.6 Data Collection

3.6.1 Interview Protocol

- ***Section A: Demographic Information***

This section collects general background information about the respondent, such as job title, years of experience, industry sector, and frequency of using Incoterms. This helps categorize responses based on professional roles and industry experience.

- ***Section B: Knowledge and Usage of Incoterms***

This section assesses the respondent's familiarity with Incoterms (CIF, FOB, Ex Works) and how they are applied in their organization. It also explores the factors influencing the selection of specific Incoterms.

1. How does the Incoterms affect the cost between seller and buyer?
2. How do people interpret CIF, FOB & Ex Works Incoterms with the cost supply chain performance?
3. How do CIF, FOB, and Ex Works Incoterms influence customs clearance and import/export duties?

- ***Section C: Impact of Incoterms on Supply Chain Performance***

This section examines how different Incoterms affect transportation costs, risk management, decision-making, and overall supply chain efficiency. It includes scaled questions to measure the perceived impact of Incoterms.

1. How does the cost in CIF, FOB, and Ex Works Incoterms impact freight forwarding?
2. How does the cost of CIF, FOB, and Ex Works vary under these Incoterms? Why?
3. How are CIF, FOB, and Ex Works Incoterms being important for supply chain performance?

- ***Section D: Legal and Compliance Considerations***

This section explores the respondent's knowledge of legal and regulatory requirements related to Incoterms. It also looks at whether they have experienced legal disputes due to Incoterms misinterpretation and how such disputes were resolved.

1. How can challenges arise from misinterpreting Incoterms in a sales contract?
2. How can cost optimize and risk distribution? What are the best practices for incorporating CIF, FOB, and Ex Works Incoterms into trade agreements?
3. How does the choice of CIF, FOB, and Ex Works Incoterms impact logistics efficiency and supply chain performance?

3.7 Data Analysis

A data collection approach is essential for gathering reliable and valid data that accurately addresses research objectives. This study employs qualitative data collection techniques to provide an understanding of how Incoterms CIF, FOB, and Ex Works influence costs in supply chain performance. Qualitative data collection will involve structured interviews. Interviews will be conducted with the key decision makers, managers such as deputy general manager, supply chain managers, logistics coordinators, import and export managers, and financial analysts. The researcher contacted the participant and the participants responded by granting permission for interviews and were contacted privately via phone, Zoom meetings, or face-to-face sessions. Interviews were conducted during which each participant was asked to nominate other supply chain experts meeting the inclusion criteria. Researchers collected data through extensive interviews with casual discussions at the beginning and end. Interviewing continued until data collection saturation was reached after the 5th interview.

According to Halcomb & Given (2017), the qualitative of this research, thematic analysis was employed to analyze the data collected through in-depth interviews and focus group discussions. According to Andrew (2005), interviews are a core method in the naturalistic (qualitative) paradigm due to their capacity to explore and understand complex human experiences and perceptions in this case, those of professionals engaged in international trade and supply chain operations. The data was transcribed with verbatim, meaning that the interview recordings were converted word-for-word into written form to ensure accuracy of participant responses.

The thematic analysis enabled the researcher to code the data meaningfully, draw comparisons across participants, and uncover insights that reflect real-world practices and challenges in international trade logistics.

Table 3.2 Participant Interview Mode and Audio Recording Duration

Participant	Interview mode
P1	Online Google Meet
P2	Online Google Meet
P3	Online Google Meet
P4	Online Google Meet
P5	Online Google Meet

3.8 Limitation of Study

This research provides important information about how certain Incoterms, such as Ex Works (EXW), Cost, Insurance and Freight (CIF), and Free on Board (FOB), affect transaction costs and supply chain performance, several limitations should be acknowledged. The study's qualitative design and small sample size of five participants sufficient to achieve data saturation are its primary limitations. The second is the geographical emphasis on Malaysia's Johor Bahru (JB). The sole focus on just three Incoterms (EXW, CIF, and FOB) is a further limitation. According to Creswell & Poth (2018), the qualitative character of the study the results are interpretive rather than statistically generalizable, and they could be impacted by participant perception or research bias. Despite these limitations, the study offers insightful qualitative data that might direct further investigation and improve Incoterms selection processes in international trade.

CHAPTER 4

FINDING AND RESULTS

4.1 Introduction

In this chapter, the key insights gained from the interview, focusing on the role of Incoterms in cost allocation, and overall supply chain performance was reviewed. The findings highlight how different Incoterms, particularly CIF, FOB, and EXW influence cost responsibilities, customs clearance, and logistics efficiency. Additionally, the discussion emphasizes the challenges associated with misinterpreting Incoterms and the cost implications for international trade. This chapter's contents provide a comprehensive understanding of how businesses can strategically select and apply Incoterms to minimize costs in global supply chains performance.

Research Questions

1. How does the cost impact the Ex Works (EXW) terms in Supply Chain Performance?
2. How do cost impact Cost, Insurance and Freight (CIF) terms in Supply Chain Performance?
3. How does the cost impact Free on board (FOB) terms in Supply Chain Performance?

The participant's personal information is displayed on the table below:

Table 4.1: Participants Information

Respondent	Age (year old)	Gender	Job Position
R1	50	Female	Deputy General Manager
R2	40	Male	Senior Manager
R3	35	Female	Manager
R4	35	Female	Senior Executive
R5	36	Male	Director

4.2 Themes of Research

The study's findings emphasize how Incoterms are used in international logistics, risk management, and cost allocation. The study explicitly examines how several Incoterms, including CIF, FOB, and Ex Works, impact buyers' and sellers' obligations, which in turn impact the logistical and financial aspects of international trade. Another crucial issue is the importance of accurately understanding and interpreting Incoterms, as misinterpretations can lead to increased costs and risks as well as ineffective supply chain operations. The data collected from interviews will be systematically coded and categorized to support the development of key themes. This process allows researchers to review and interpret the study effectively. In this study's thematic analysis, the data analysis will generate several significant themes, as outlined below.

4.2.1 Cost Allocation and Financial Impact

The results of the interview with the responder reveals that:

Ex Works (EXW)

“Ex Works (EXW) is the opposite of CIF. The seller does almost nothing except make the goods available at their premises. The buyer must arrange transportation, insurance, and customs clearance. That means the total cost for the buyer depends on how well they can negotiate freight and handling charges.” (P1)

“EXW is the most cost-heavy option for buyers because they must handle everything from picking up the goods at the seller’s premises to arranging transportation, insurance, and customs clearance. The seller does almost nothing except provide the goods.” (P2)

“EXW shifts all costs to the buyer, including transportation, insurance, and customs clearance. It is the most expensive option for buyers but gives them full control over logistics.” (P3)

“EXW places the entire cost burden on the buyer. The buyer must handle transportation, customs clearance, and insurance, making it the most expensive option for buyers who lack logistics expertise.” (P4)

“EXW requires the buyer to cover all costs from the seller’s location to the destination. That means transportation, insurance, and customs clearance are all the buyer’s responsibility. This can increase costs significantly, but some buyers prefer it because they get full control over logistics.” (P5)

Free On Board (FOB)

“With FOB, the seller’s responsibility ends once the goods are loaded onto the vessel. That means the seller only pays for local handling and loading charges. After that, all costs, including freight, insurance, and port fees at the destination, are the buyer’s responsibility. This is why many sellers prefer FOB it minimizes their financial burden.
(P1)

Free on Board (FOB) means the seller only pays for loading the goods onto the vessel, while the buyer covers the freight and insurance costs. So, FOB is cheaper for sellers but shifts more financial responsibility to buyers.” (P2)

“Free on Board (FOB), costs are solely covered by the seller up until the items are loaded aboard the ship. The buyer then covers the cost of customs clearance, insurance, and freight. This lowers the seller's costs while raising the buyer's financial responsibility. (P3)

“Free on Board (FOB), the seller’s responsibility ends once the goods are loaded onto the vessel. The buyer then takes over all shipping, insurance, and customs costs, making it a cheaper option for the seller.” (P4)

“Free on Board (FOB), the buyer takes over all costs once the goods are loaded onto the vessel. This shifts financial responsibility to the buyer, making it a cheaper option for sellers. (P5)

Cost, Insurance and Freight (CIF)

CIF is different because the seller must cover freight and insurance costs until the goods reach the destination port. Naturally, the seller includes these costs in the selling price. So, if I sell you something under CIF terms, I will charge a higher price to recover my shipping and insurance expenses. The advantage for the buyer is that they don't have to handle logistics, but they pay more upfront.” (P1)

“Cost, Insurance, and Freight (CIF), means the seller pays for the total cost of shipping, including freight and insurance, up to the destination port. This makes it more expensive for the seller, but it reduces the buyer's responsibility. (P2)

“Cost, Insurance, and Freight (CIF), the seller pays for freight and insurance until the goods reach the buyer's port. This means higher costs for the seller, but the buyer gets a hassle-free delivery.” (P3)

“Cost, Insurance, and Freight (CIF), the seller is responsible for freight and insurance costs until the goods arrive at the buyer's port. This means higher costs for the seller but less risk for the buyer. (P4)

“Cost, Insurance, and Freight (CIF), the seller pays for freight and insurance until the goods reach the buyer's port. This means higher costs for the seller but reduces the buyer's logistical responsibility.” (P5)

According to responder's interview, 5 of the supply chain experts explained that the cost impact highly related Incoterms. Moreover, experts provided valuable insights into the impact of Incoterms on cost distribution between buyers and sellers in international trade. The selection of Incoterms, such as CIF (Cost, Insurance, and Freight), Free on Board (FOB), and Ex Works (EXW), plays a critical role in determining the financial responsibilities of each party.

Next, under FOB terms, sellers incur minimal costs as their responsibility ends after loading the goods onto the vessel. Buyers, on the other hand, assume all subsequent costs, including freight charges, insurance, and port handling fees. This makes FOB a preferred choice for sellers due to its lower cost burden.

Conversely, under CIF terms, sellers bear the costs of freight and insurance, which are then incorporated into the product's selling price. Experts emphasized that while this ensures a smoother transaction for buyers, it increases the seller's financial liability.

On the other hand, Ex Works (EXW), the cost responsibility is shifted entirely to the buyer, who must arrange transportation, insurance, and customs clearance from the seller's premises to the destination. Experts highlighted that this can significantly impact on total logistics expenses, depending on the buyer's ability to negotiate freight and handling costs. Additionally, that different transportation modes such as air, ocean, rail, or truck also influence total costs in EXW, as varying local handling fees and currency exchange rates can create fluctuations in supply chain expenses. Experts pointed out that customs clearance follows different financial structures depending on the Incoterms and with CIF being the standard for customs valuation.

4.2.2 Challenges arise from misinterpreting Incoterms

The results of the interview with the responder reveals that:

“If a contract states CIF but the seller only arranges transport to the port instead of the destination, the buyer might assume the goods will be delivered all the way. If nobody arranges the final transport, the shipment could get stranded, leading to demurrage, detention, and storage charges. Misinterpretation of Incoterms can result in significant unexpected costs.” (P1)

“If the Incoterms is not clearly defined, the wrong party may be charged for unexpected fees, leading to billing disputes. In extreme cases, buyers may reject shipments if they believe the costs are unfair, which leads to even higher expenses for storage, detention, and re-shipment.” (P2)

“Misinterpretation can lead to Billing disputes over freight and handling charges..... Customs clearance delays brought on by inaccurate documents. Unexpected financial penalties, such as demurrage and storage fees” (P3)

“Misinterpretation can lead to unexpected financial costs, such as higher duties and taxes..... Delays in shipments because of unclear roles. Port storage and demurrage fees have gone up. Liability uncertainty that results in legal disputes.” (P4)

“Higher customs fees may result from misinterpretation if the wrong Incoterms is chosen..... Delays in shipment clearance due to missing documents..... Unexpected port charges and demurrage fees.” (P5)

According to experts, both buyers and sellers may suffer serious financial and operational repercussions if Incoterms are misunderstood in international trade. The research findings and expert interviews indicate that unclear agreements on cost responsibilities often result in unexpected freight charges, customs penalties, storage fees, and shipment delays. One common issue is the incorrect assumption of liability buyers may believe that Cost, Insurance, and Freight (CIF) covers all expenses when additional charges may arise upon arrival at the destination port. Similarly, sellers using Free on Board (FOB) may not fully understand that their financial responsibility ends once the goods are loaded onto the vessel, leading to disputes over who bears the cost of damages during transit.

Additionally, Ex Works (EXW) requires buyers to handle all logistics, but inexperienced traders often fail to account for hidden costs like inland transport and export documentation fees, resulting in higher-than-expected expenses. Interviews also revealed that incomplete documentation or misunderstanding of customs regulations could lead to delays, increasing costs due to demurrage, detention, and warehousing fees. To prevent these issues, businesses must clearly define Incoterms in contracts, ensure proper communication with trading partners, and seek expert consultation to align expectations and avoid financial disputes.

4.2.3 Importance of Incoterms in Supply Chain Performance

The results of the interview with the responder reveals that:

“Incoterms define the financial and risk responsibilities between the buyer and seller. Freight, insurance, and other handling costs are paid for by the Incoterms selected.”
(P1)

Internationally accepted trade terms known as Incoterms outline the obligations of both buyers and sellers in cross-border transactions. They outline who bears the financial burden of insurance, customs clearance, transportation, and other logistical tasks. Each of the eleven standard Incoterms establishes the distribution of costs and risks between the two parties. (P2).

The financial and risk-sharing obligations between buyers and sellers are outlined in Incoterms. They guarantee a clear understanding of logistics obligations and identify who is responsible for paying for freight, insurance, and handling fees...” (P3)

“International commercial terms, or Incoterms, specify the obligations of buyers and sellers in cross-border transactions. At several points during the shipping, they make it obvious who oversees delivery, insurance, customs clearance, and transportation...”
(P4)

“International commercial terms, or Incoterms, offer rules for buyers and sellers in international commerce. They specify who bears the financial and logistical responsibility for each phase of the shipment. Incoterms are essential in freight forwarding to guarantee seamless transactions and prevent financial disputes...” (P5)

According to the respondents, a study of International Commercial Terms (Incoterms) is essential to international trade since it outlines the obligations, risks, and expenses that buyers and sellers have when shipping and receiving goods. Knowing Incoterms ensures contract clarity and lowers the possibility of disagreements and miscommunications about shipping responsibilities, insurance, customs clearance, and ownership transfer. It assists companies in complying with international trade laws, streamlining logistics, and effectively managing expenses. Businesses can optimize supply chain operations and reduce financial and legal risks by evaluating Incoterms to determine the best terms for their transactions.

4.2.4 Best practices to optimize cost and risk distribution of Incoterms into trade agreements

According to the respondent's interview results:

"It depends on the business model." I would choose FOB if I were a seller since it would reduce my financial liability. If I were a buyer, I might choose CIF if I wanted the seller to handle logistics. Ultimately, the best practice is to clearly define responsibilities in the contract to avoid disputes and unexpected expenses." (P1)

"Confirm the Incoterms early before the shipment is even arranged.....Clearly document cost responsibilities in trade agreements..... Ensure good communication between sellers, buyers, and freight forwarders..... Get written acceptance from all parties before issuing a quotation." (P2)

"Clarify responsibilities in the contract before shipping..... Use accurate documentation to avoid customs issues..... Ensure transparent communication between sellers, buyers, and freight forwarders." (P3)

“Ensure clear agreements between buyers and sellers.... Communicate cost responsibilities upfront to avoid disputes..... Stay updated on regulatory changes to avoid unexpected cost increases..... Maintain proper documentation to prevent customs issues.” (P4)

“Ensure Incoterms are clearly stated in contracts.... Confirm all necessary shipping documents before the goods leave the seller’s premises.... Choose the most cost-effective Incoterms based on logistics capabilities.” (P5)

Several suggestions for using Incoterms in international trade to minimize costs, reduce risks, and ensure smooth logistics operations are highlighted by the research findings and expert interviews. One of the primary suggestions is to accurately define Incoterms in contracts to avoid disagreements over liability and cost duties; unclear agreements regarding who is responsible for freight, insurance, and customs clearance could result in unforeseen expenses, it is also a good idea to make sure that all necessary shipping and customs documentation is accurate and complete in order to avoid delays, penalties, and storage costs. Businesses should also choose Incoterms based on their logistical capabilities and risk tolerance. In the end, companies may retain compliance and cost control in the operation of global supply chains by staying aware of trade laws, customs regulations, and Incoterms adjustments. For example, although Cost, Insurance, and Freight (CIF) gives buyers greater convenience at a higher cost, Free on Board (FOB) reduces financial risk for sellers. Furthermore, to fulfill expectations and avoid logistical inefficiencies, communication between customers, sellers, and freight forwarders is essential.

4.3 Chapter Summary

To investigate how Incoterms impact supply chain effectiveness, risk control, and cost shipping, this chapter offers a comprehensive examination of the information gathered from logistics experts' interviews. The findings suggest that

- While misinterpreting Incoterms can frequently result in unexpected charges like higher freight costs, customs fines, and storage fees, it is crucial to have accurate contractual agreements and the necessary documentation.
- Incoterms impact trade agreements and financial planning by giving buyers and sellers a fundamental framework for defining their financial obligations.
- Explore the variations between Ex Works (EXW), Free on Board (FOB) and Cost, Insurance, and Freight (CIF). Respondents pointed out that although EXW requires buyers to pay for all logistics from the seller's location, CIF creates a greater financial burden on sellers.
- The chapter lists suggested methods for reducing these risks, including maintaining transparency of communication, choosing Incoterms according to logistical capabilities, complying by the law, and keeping up with trade regulations.

According to this chapter, Incoterms are essential for efficient global supply chain operations because they expand trade channels, reduce financial disputes, and enhance cost predictability.

CHAPTER 5

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

Research suggests that costs have an immense impact on a supply chain's effectiveness. Logistics professionals claim that misinterpreting Incoterms commonly leads to unexpected costs like delays, storage fees, and increased customs fines. Experts highlighted that although CIF transfers most of the financial weight to the seller, EXW places the full logistics burden on the buyer. On the other hand, to reduce their cost risk, sellers frequently prefer FOB.

5.2 Summary of Study

- **Clear and Transparent Contractual Agreements**

To prevent misunderstandings or issues, businesses should take the initiative to clearly define expense responsibility in their contractual agreements. Additionally, every trade agreement must also specify precisely which side is responsible for paying all costs, including but not limited to freight, insurance, customs duties, and any other fees that may be paid throughout the transaction. By ensuring these contracts are transparent and clear, businesses can decrease disagreements, increase operational efficiency, and forge stronger bonds with their trading partners.

- **Integration of Digital Tools for Trade Management**

Therefore, companies should adopt a supply chain management platform that includes Incoterms compliance analyses to prevent breaches of trade agreements. Furthermore, in terms of the transparency of freight cost distribution, real-time tracking technologies can improve the performance of the supply chain.

- **Regular Review of Trade Policies**

Additionally, regarding developing international trade laws and regulations, firms should regularly assess and update their Incoterms usage. Next, monitoring port fees and customs duties can assist companies in choosing Incoterms with knowledge.



5.3 Future Research for Recommendation

5.3.1 Enhance the scope of the Incoterms study

Every term in Incoterms should be reviewed in quality research or study to differentiate the cost impact. The initial suggestion to "expand the study on Incoterms" focuses emphasis on an important subject that requires more investigation. Although previous research may discuss the financial effects of different Incoterms, there isn't a thorough and detailed examination of how each term affects supply chain expenses. Because Incoterms determine how buyers and sellers share risk and expenses, this is crucial. According to Wagner & Bode, (2008), a more systematic exploration of individual Incoterms would not only enhance transparency in international transactions but also empower decision-makers to select terms that align strategically with their logistics capabilities and financial goals.

5.3.2 Comprehensive review of Incoterms costs

Following studies attempts ought to focus on performing an in-depth cost study of Incoterms and examining their impact on risk management, insurance, transportation, and responsibilities across diverse industries. Studies should also look at the regional and industry-specific applications of Incoterms to identify a variety of cost and risk factors in different trade scenarios. Finally, future studies should focus on risk allocation and contract optimization, providing strategies to lower financial risk while ensuring smooth international trade operations. According to Rodrigue, (2020), businesses involved in cross-border transactions will gain from improved risk control, more predictable costs, and more efficient global trade by managing these problems.

5.4 Conclusion

Cost, Insurance and Freight (CIF), Free on Board (FOB), and Ex Works (EXW) are three important Incoterms whose implications on supply chain performance were thoroughly examined in this study. The results show how the selection of Incoterms impacts how buyers and sellers divide costs and obligations, which in turn impacts how well the supply chain can operate.

For instance, the study discovered that:

- EXW costs the buyer a substantial amount since they oversee managing all shipping and logistics from the seller's location. This could lead to more costly and intricate transactions for buyers, particularly those who do not have established logistics networks in the seller's area.
- On the other hand, CIF transfers a large percentage of the risk and expense to transport the goods to the designated port of destination, the seller is also in charge of freight and insurance. Customers may find this convenient and cost-predictable, but it may also give them less control over the shipping process.
- Under FOB, which achieves a balance between the buyer and seller's responsibilities, the seller is responsible for delivering the products on board the vessel at the specified port of shipping. This lessens some of the upfront costs related to EXW while giving customers more discretion over shipment arrangements.

To broaden the grasp of how costs affect supply chain performance, future research should examine Incoterms and thorough cost analysis in a variety of supply chain situations.

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APPENDIX A:

QUESTIONNAIRE

INTRODUCTION

My name is Ashwinee, and I am a postgraduate student at Universiti Utara Malaysia (UUM). Currently, I am working on my final year project (thesis). My research, titled *"To explore the cost impact of Incoterms in Supply Chain Performance"* is conducted under the supervision of Dr. Yuhainis Mohd Yusoff.

I would greatly appreciate your valuable time in cooperating with the enclosed questionnaire. Thank you.

SECTION	INTERVIEWEE'S ANSWERS
RESEARCH QUESTIONS 1 1. What is your understanding of Incoterms? 2. How does the Incoterms affect the cost between seller and buyer? 3. What are the key differences between CIF and FOB in terms of cost, risk, and responsibility? 4. How do people interpret CIF, FOB & Ex works with the cost supply chain performance?	

<p>5. How do CIF, FOB, and Ex Works Incoterms influence customs clearance and import/export duties?</p>	
<p>RESEARCH QUESTIONS 2</p> <ol style="list-style-type: none"> 1. How does the cost in CIF, FOB, and Ex Works Incoterms impact freight forwarding 2. How does the cost of CIF, FOB, and Ex Works vary under these Incoterms? Why? 3. Do you think CIF, FOB, and Ex Works Incoterms are important for supply chain performance? 	
<p>RESEARCH QUESTION 3</p> <ol style="list-style-type: none"> 1. What challenges can arise from misinterpreting Incoterms in a sales contract? 2. To optimize cost and risk distribution, what are the best practices for incorporating CIF, FOB, and Ex Works Incoterms into trade agreements? 	

<p>3. How does the choice of CIF, FOB, and Ex work Incoterms impact logistics efficiency and supply chain performance?</p>	
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