Thesis Report on

"An Analysis of Supply Chain Disruptions and Responses: A Case Study on Noapara Group."

Submitted by:

DURDANA BINTE MOSTAFA

ID: RMBA2401031012

Program: Regular Master of Business Administration (RMBA)

Major: Supply Chain Management

Department of Business Administration

Sonargaon University (SU)

Submitted to:

Department of Business Administration,

Faculty of Business

Sonargaon University (SU)

Submitted for the partial fulfillment of the degree of

Regular Master of Business Administration

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Date of Submission: January 03, 2026

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Supervised by:

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Letter of Transmittal

January 03, 2026,

Ummah Tafsirun
Lecturer
Department of Business Administration
Sonargaon University (SU)

Subject: Submission of thesis Report on "An Analysis of Supply Chain Disruptions and Responses: A Case Study on Noapara Group."

Dear Madam,

With most respectfully to state that I am pleased to submit my thesis report titled **"An Analysis of Supply Chain Disruptions and Responses: A Case Study on Noapara Group."** This report is an essential component of my RMBA degree requirements, and I had the privilege of completing my thesis on **"An Analysis of Supply Chain Disruptions and Responses: A Case Study on Noapara Group."**
This research was conducted under your valuable guidance and includes insights from relevant literature, data gathered through company records, and analyses of the industry-specific challenges faced in Supplier selection criteria. I hope this report meets your Expectations and contributes meaningfully to the field of supply chain management.

I would really be grateful if you could share your precious thoughts regarding the report. Also, if you wish to have further clarification about any aspect of my report, I would gladly answer your queries with further explanation. Thank you again for your support and patience.

Yours sincerely,

_____

Durdana Binte Mostafa
ID: RMBA2401031012
Program: Regular Master of Business Administration (RMBA)
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Declaration of Student

This is **Durdana Binte Mostafa**, a student of Business Administration, ID: RMBA2401031012 from Sonargaon University (SU) would like to solemnly declare here that this Report on **"An Analysis of Supply Chain Disruptions and Responses: A Case Study on Noapara Group"** has been authentically prepared by me under the supervision of **Ummah Tafsirun**, Lecturer, Department of Business Administration, Sonargaon University.
I didn't breach any copyright act internationally. I am further declaring that I did not submit this report anywhere for the awarding of any degree, diploma, or certificate.

Sincerely yours,

_____

Durdana Binte Mostafa
ID: RMBA2401031012
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Letter of Authorization

I hereby confirm that the project **"An Analysis of Supply Chain Disruptions and Responses: A Case Study on Noapara Group"** is a genuine effort by **Durdana Binte Mostafa.** The research was conducted under my guidance. I also affirm that, to the best of my knowledge, the content presented in this report has not been included in any other project report or dissertation that led to the award of a degree to any candidate earlier, whether in the same context or a different one.

_____

Ummah Tafsirun
Lecturer
Department of Business Administration,
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Acknowledgement

I want to express my heartfelt gratitude to all those who have supported me throughout the journey of this thesis on "An Analysis of Supply Chain Disruptions and Responses: A Case Study on Noapara Group."

First and foremost, I extend my sincere appreciation to my advisor, **Ummah Tafsirun,** for her invaluable guidance and encouragement. Their expertise and insightful feedback have been instrumental in shaping this research and ensuring its quality.

I am also grateful to the faculty members of the Department of Business Administration at Sonargaon University for their continuous support and for providing a conducive environment for academic growth. Their encouragement and dedication to teaching have greatly inspired me.

Special thanks to the professionals and managers in the Shipping and logistics industry who generously shared their time, insights, and experiences during the interviews and data collection process. Their willingness to provide information and perspectives on supplier selection criteria has enriched this study and contributed to a deeper understanding of the industry's challenges and opportunities.

I want to acknowledge my classmates and friends for their camaraderie, encouragement, and constructive discussion throughout this research. Their support has made this journey more enjoyable and fulfilling.

Lastly, I wish to express my deepest appreciation to my family for their unwavering support and belief in my abilities. Their encouragement and understanding during the demanding phase of this research have been my greatest motivation.

Thank you all for your contributions to this thesis and for being a part of my academic journey.

Abstract

Efficient responses to supply chain disruptions have become increasingly critical due to recent global shocks such as the COVID-19 pandemic, geopolitical tensions, and natural disasters. This study examines organizational responses to three major types of supply chain disruptions: operational, geopolitical, and environmental. Using archival data from public and private sources, the research analyzes shifts in transportation modes during COVID-19, sourcing diversification under geopolitical risk, and logistics market responses to natural disasters.

The findings indicate that Noapara Group faces recurring challenges, including transportation inefficiencies, port congestion, raw material volatility, and lead-time uncertainty, resulting in higher costs and reduced service performance. While some risk management practices exist, gaps remain in proactive monitoring, forecasting, supplier diversification, and digital integration. The study recommends advanced analytics, stronger supplier collaboration, digital supply chain platforms, and structured risk mitigation frameworks to enhance resilience. Overall, the thesis provides practical insights for strengthening supply chain resilience in disruption-prone environments.

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Chapter-01
Introduction

1.1 Introduction

Mentzer et al. (2001) describe supply chain management as a system that manages the flow of goods from the first supplier to the final customer, encourages cooperation between companies, and aims to create value for all customers. However, supply chain disruptions make this difficult. They interrupt the flow of goods (Craighead et al., 2007), reduce customer value by limiting production (Barrot & Sauvagnat, 2016), and force supply chains to use costly resources to control the damage (Pettit et al., 2010). Because disruptions can cause serious problems, many researchers have studied how supply chains can identify risks (Manuj, 2013), become more resilient (Ponomarov & Holcomb, 2009), respond to disruptions (Wiedmer et al., 2021), and recover afterward (Macdonald & Corsi, 2013). Recent studies highlight the importance of responsiveness—meaning how quickly and effectively supply chains change their behaviors, policies, or processes to continue serving customers during unstable conditions (Richey et al., 2022). A strong response can help firms stay competitive, survive disruptions, and grow (Ali et al., 2017; Bode et al., 2011; Durach et al., 2022; Hohenstein et al., 2015; Manhart et al., 2020; Richey et al., 2022; Sodhi et al., 2012).

This dissertation focuses on how supply chains respond after a disruption has taken place. Based on frameworks from Sheffi and Rice (2005) and Melnyk et al. (2014), Figure 1.1 shows how disruptions develop over time and explains the different phases managers go through when dealing with them. This helps place the dissertation within existing research and clearly shows that the main focus is on the response phase.

Many past studies have focused on what supply chains can do before disruptions happen, known as supply chain risk management. This includes identifying risks, assessing their likelihood and impact, taking preventive actions such as buying insurance (Dong et al., 2018), and updating plans as new risks appear (Fan & Stevenson, 2018). These actions apply to different kinds of risks, including supply, demand, operations, information, economic, policy, competition, and resource-related risks (Ho et al., 2015; Manuj & Mentzer, 2008). The general idea is simple: preventing a disruption is usually easier and cheaper than dealing with one after it happens (Kleindorfer & Saad, 2005).

Despite possessing exemplary supply chain risk management protocols, interruptions persist and adversely impact performance.

Before initiating recovery from a disruption, supply chains implement measures during the reaction phase to alleviate and reduce the impact of the disturbance on their performance.

Response actions may be established proactively during the risk management phase of the supply chain (Ho et al., 2015) or implemented reactively in response to the specific disruption encountered by the supply chain (Durach et al., 2015).

The reaction phase involves implementing suitable measures to facilitate rapid recovery from a supply chain disruption (Hohenstein et al., 2015).

When disruptions happen, the supply chain may be able to gain a competitive edge if the response phase is carried out effectively, especially if the disruptions have a major impact on rivals who fail to react appropriately (Kleindorfer & Saad, 2005; Richey et al., 2022; Sodhi et al., 2012).

1.2 Background of the Study

The RMBA program at Sonargaon University is structured into four trimesters, with the final trimester dedicated to the completion of a thesis. The thesis is a compulsory requirement for the fulfillment of the RMBA degree and aims to develop students' research capability by allowing them to apply theoretical knowledge to real-world organizational problems. Through this research work, students are expected to analyze practical issues systematically, draw meaningful conclusions, and propose recommendations that may contribute to both academic understanding and managerial practice.

In today's globalized business environment, supply chains have become increasingly complex and interconnected. While this integration has improved efficiency and cost effectiveness, it has also made supply chains more vulnerable to disruptions. Events such as natural disasters, political instability, pandemics, port congestion, raw material shortages, and transportation delays can significantly interrupt the smooth flow of goods and information. Supply chain disruptions can lead to production delays, increased operational costs, loss of customer trust, and overall deterioration of organizational performance. As a result, managing supply chain disruptions and developing effective response strategies has become a critical concern for organizations across industries.

The manufacturing and trading sectors in Bangladesh are particularly exposed to supply chain disruptions due to their heavy dependence on imported raw materials, port operations, and global logistics networks. Organizations must therefore adopt proactive and reactive strategies to mitigate risks, enhance resilience, and ensure continuity of operations. Effective supply chain responses, such as flexibility, collaboration with suppliers, inventory buffering, and contingency planning, play a vital role in minimizing the adverse impacts of disruptions.

Noapara Group is a prominent business entity in Bangladesh, involved in manufacturing, trading, and logistics-related activities. Like many other organizations operating in dynamic and uncertain environments, Noapara Group has faced various supply chain disruptions affecting procurement, production, and distribution processes. Understanding how the organization identifies disruptions and responds to them is essential for improving its supply chain resilience and long-term sustainability.

This study focuses on supply chain disruptions and response strategies within the Noapara Group. It aims to analyze the types and causes of disruptions faced by the organization, assess the

effectiveness of existing response mechanisms, and identify areas for improvement. By examining the real-life experiences of Noapara Group, the study seeks to provide practical insights and recommendations that can help the organization strengthen its supply chain management practices and contribute to a broader understanding of disruption management in the context of Bangladeshi business organizations.

1.3 Scope of the Study

The scope of this study is limited to examining supply chain disruptions and the response strategies adopted by Noapara Group. The research focuses on identifying the types, causes, and impacts of supply chain disruptions within the organization's procurement, production, and distribution activities. Emphasis is placed on understanding how the organization manages disruptions and maintains operational continuity under uncertain conditions.

This study covers selected departments of Noapara Group that are directly involved in supply chain activities, including procurement, logistics, operations, and inventory management. Data are collected primarily from managerial and operational-level employees who are involved in decision-making and execution of supply chain processes. Both primary and secondary data sources are used to gain a comprehensive understanding of the organization's supply chain disruption management practices.

The research is conducted within a specific time frame and is based on the current operational practices of Noapara Group. Therefore, the findings reflect the existing supply chain structure and response mechanisms during the study period. The study does not include a comparative analysis with other organizations or industries, nor does it examine long-term strategic changes beyond the scope of the research.

The scope of this study is confined to organizational and operational aspects of supply chain disruptions and does not extend to macroeconomic, political, or global trade policy analysis in detail. However, external factors are considered only to the extent that they directly influence the supply chain operations of Noapara Group.

1.4 Objectives of the Study

The primary objective of this study is to examine supply chain disruptions and the response strategies adopted by Noapara Group to assess their effectiveness and identify areas for improvement.

The specific objectives of the study are as follows:

1. To identify the major types of supply chain disruptions faced by Noapara Group.
2. To analyze the key causes and sources of supply chain disruptions within the organization.
3. To examine the impact of supply chain disruptions on the operational performance of Noapara Group.
4. To identify challenges faced by Noapara Group in responding to supply chain disruptions.

1.5 Significance of the Study

The significance of this study lies in its contribution to both academic research and practical supply chain management. Supply chain disruptions have become a critical issue for organizations operating in an increasingly uncertain and dynamic business environment. By examining the nature of disruptions and response strategies within Noapara Group, this study provides valuable insights into how organizations in Bangladesh manage supply chain risks.

From a practical perspective, the findings of this study will help the management of Noapara Group to better understand the sources and impacts of supply chain disruptions. The recommendations offered may assist decision-makers in improving response strategies, enhancing supply chain resilience, and ensuring continuity of operations. The study can also serve as a reference for other organizations facing similar supply chain challenges, particularly in developing economies. Furthermore, the study supports the practical application of theoretical concepts learned in the RMBA program, such as supply chain integration, risk management, and strategic decision-making. It bridges the gap between theory and practice by demonstrating how academic knowledge can be applied to real-life organizational problems. Overall, this study is expected to enhance understanding of supply chain disruptions and response mechanisms and contribute to improved supply chain management practices at both organizational and academic levels.

Chapter-02

Literature Review

2.1 Introduction

This chapter reviews relevant literature related to supply chain management, supply chain disruptions, and organizational response strategies. The purpose of this literature review is to develop a theoretical foundation for understanding supply chain disruptions and to identify how organizations respond to such disruptions. Previous studies, theories, and empirical research findings are analyzed to understand key concepts, impacts, and best practices in disruption management. This chapter also identifies research gaps that justify the present study on the Noapara Group.

2.2 The Response Phase of Supply Chain Disruptions

Supply chain management (SCM) refers to the coordination and integration of activities involved in sourcing raw materials, transforming them into finished goods, and delivering products to final customers. According to Mentzer et al. (2001), SCM is a systemic approach that emphasizes collaboration among supply chain partners to create value for customers.

Supply chain disruptions are commonly conceptualized as unfolding across two intertemporal phases: the risk management phase and the post-disruption phase, separated by the occurrence of a disruptive event (Ali et al., 2017; Sheffi & Rice, 2005; Sodhi & Tang, 2021). The risk management phase focuses on identifying, assessing, treating, and monitoring potential disruption risks, with an emphasis on prevention and mitigation before disruption occurrence (Fan & Stevenson, 2018; Kleindorfer & Saad, 2005; Manhart et al., 2020). Extensive literature highlights various strategies aimed at reducing supply chain risk exposure during this phase (Pournader et al., 2020; Wicaksana et al., 2022).

The post-disruption phase seeks to restore supply chain performance to pre-disruption levels as rapidly as possible (Bode et al., 2011; Sodhi et al., 2012). This phase comprises disruption discovery, response, recovery, and redesign (Macdonald & Corsi, 2013; Sheffi & Rice, 2005). Discovery involves identifying the disruption and its impacts, while recovery and redesign focus on restoring operations or transforming the supply chain to achieve improved performance (Kochan & Nowicki, 2018; Wieland & Durach, 2021).

Prior research emphasizes the response phase as particularly critical, as it determines how effectively supply chains maintain customer value under uncertain conditions (Bode & Macdonald,

2017). Supply chain responsiveness reflects the ability to align order fulfillment strategies with customer lead-time expectations, often requiring operational adjustments or reconfigurations following a disruption (Holweg, 2005; Novak et al., 2021). From a resource-based view, firms may deploy different combinations of response actions to manage uncertainty and exploit post-disruption opportunities (Hughes et al., 2022; Richey et al., 2022).

Given the complexity of disruption response, scholars suggest that managers frequently rely on flexible responses as an initial strategy, as these can be implemented using existing supply chain resources and structures (Bernardes & Hanna, 2009; Richey et al., 2022). Flexible responses are characterized by rapid execution, medium-term focus, and reliance on current logistics capabilities. Accordingly, the literature highlights logistics-based flexible responses as a key mechanism for enhancing supply chain resilience during the post-disruption response phase.

2.3 Supply Chain Disruptions & Impact of Supply Chain Disruptions

Supply chain disruptions are unexpected events that interrupt the normal flow of goods, services, or information within a supply chain. Such disruptions can significantly affect operational continuity and organizational performance. Disruptions are often characterized by uncertainty, unpredictability, and high impact.

Supply chain disruptions can be broadly classified into internal and external disruptions. Internal disruptions originate within the organization, such as machine breakdowns, labor shortages, poor planning, or system failures. External disruptions arise outside the organization and include supplier failures, transportation delays, port congestion, natural disasters, political instability, pandemics, and regulatory changes.

Modern supply chains are highly interconnected, making them more efficient but also more vulnerable to disruptions. Even a small disruption at one point in the supply chain can have cascading effects throughout the network.

Supply chain disruptions have wide-ranging consequences for organizations. Operationally, disruptions may lead to production delays, stock-outs, excess inventory, and inefficient resource utilization. These issues directly affect the ability of firms to meet customer demand.

2.4 Supply Chain Risk, Vulnerability, and Resilience

Supply chain risk refers to the probability and impact of events that may disrupt supply chain operations. Risk is closely related to vulnerability, which represents the degree to which a supply chain is exposed to disruptions.

Factors contributing to supply chain vulnerability include dependency on single suppliers, lack of visibility, limited flexibility, globalization, and complex logistics networks. Organizations operating in developing countries often face higher vulnerability due to infrastructure limitations and regulatory uncertainties. Understanding supply chain risks and vulnerabilities is essential for developing effective disruption management and response strategies.

Supply chain resilience refers to the ability of a supply chain to prepare for, respond to, and recover from disruptions while maintaining operational continuity. Resilient supply chains are capable of absorbing shocks and quickly restoring normal operations. Key dimensions of supply chain resilience include flexibility, redundancy, agility, visibility, and collaboration. Flexible supply chains can adapt to changes, while redundancy provides backup resources. Visibility allows organizations to detect disruptions early, and collaboration enhances coordinated responses among supply chain partners.

2.5 Theoretical Frameworks Related to Supply Chain Disruptions

Several theories provide a foundation for understanding supply chain disruptions and responses. The Resource-Based View (RBV) suggests that organizational capabilities such as flexibility and collaboration can serve as sources of competitive advantage in managing disruptions.

Risk Management Theory emphasizes the identification, assessment, and mitigation of risks to reduce uncertainty and losses. Contingency Theory argues that organizations must adapt their strategies based on environmental conditions and situational factors.

These theories collectively support the idea that effective disruption management requires strategic alignment between organizational resources and external conditions.

2.5.1 Empirical Studies on Supply Chain Disruptions

Previous empirical studies have examined supply chain disruptions across various industries and regions. Research has highlighted the increasing frequency of disruptions and their severe impact on organizational performance.

Studies conducted in developing countries indicate that infrastructure constraints, limited technological adoption, and supplier dependency increase disruption risks. Many researchers emphasize the importance of resilience, collaboration, and proactive planning in mitigating disruptions. However, empirical evidence from Bangladeshi organizations remains limited, particularly case-based studies focusing on organizational response strategies.

2.5.2 Supply Chain Disruptions in the Bangladeshi Context

Supply chains in Bangladesh face unique challenges due to port congestion, inadequate infrastructure, regulatory complexities, and dependence on imported raw materials. Political unrest, natural disasters, and global market fluctuations further intensify disruption risks.

Manufacturing and trading organizations in Bangladesh must manage uncertainties related to logistics delays, supplier reliability, and transportation inefficiencies. These challenges make supply chain disruption management a critical area of study within the Bangladeshi context.

2.5.3 Research Gap

Although extensive research exists on supply chain disruptions globally, there is limited empirical research focusing on Bangladeshi organizations, particularly at the firm level. Few studies examine how organizations identify disruptions and implement response strategies in practice.

Moreover, existing studies often focus on large multinational corporations, leaving a gap in understanding local business groups such as Noapara Group. This study aims to fill this gap by providing an in-depth case analysis of supply chain disruptions and responses within a Bangladeshi organization.

2.6 Conceptual Framework of the Study

Based on the literature, this study proposes a conceptual framework in which supply chain disruptions act as independent variables, response strategies serve as mediating variables, and organizational performance and resilience are dependent variables. The framework explains how effective response strategies can reduce the negative impact of disruptions and enhance organizational resilience.

2.7 Logistics- Flexible Response in Global Supply Chains

The focus of this study is on flexible responses to disruptions, particularly logistics-flexible responses in global supply chains. As a strategic capability, logistics flexibility is defined as "the ability of a firm to respond quickly and efficiently to changing customer needs in inbound and outbound delivery, support, and services" (Zhang et al., 2005, pp. 71-72). From a strategic perspective, developing and possessing logistics flexibility leads to higher performance outcomes and is highly sought after in an increasingly uncertain global environment (Jafari, 2015; Richey et al., 2022; Rogerson et al., 2022). Research currently tends to focus on building logistics flexibility from this high-level, strategic, mostly static standpoint (Closs et al., 2005; Jafari, 2015; Jain, 2018; Zhang et al., 2005) but does not examine the more tactical, actualized logistics-flexible response post-disruption from an operational level. This study contributes to the literature on logistics flexibility by examining how supply chains adjust their use of logistics-flexible responses in accordance with lead time uncertainty as well as contingency factors associated with the logistics-flexible response.

This study adds to this literature by examining how a large exogenous shock to lead time uncertainty in one mode of transportation makes the faster mode of transportation more valuable and how importers alter their mix towards the faster transportation mode in accordance with product and supply chain characteristics.

Chapter-03

Research Methodology

3.1 Introduction

This chapter outlines the research methodology adopted to examine supply chain disruptions and the corresponding response strategies of Noapara Group. It explains the research design, approach, data sources, sampling techniques, data collection instruments, and analytical methods used to achieve the research objectives. The methodological framework is designed to ensure reliability, validity, and relevance of the findings within the context of real-world supply chain disruptions.

3.2 Research Design

The study adopts a case study research design, focusing on Noapara Group as a representative organization operating within a complex global supply chain environment. A case study approach is appropriate as it allows for an in-depth investigation of real-life disruptions, organizational responses, and flexibility mechanisms within their natural setting. This design supports both descriptive and exploratory analysis of supply chain disruptions and response strategies.

3.3 Sources of Data

The study relies on both primary and secondary data sources.

3.3.1 Primary Data

Primary data are collected directly from Noapara Group through:

- Structured questionnaires
- Semi-structured interviews with key personnel

Respondents include supply chain managers, logistics officers, procurement managers, operations executives, and senior management staff who are directly involved in supply chain planning and execution.

3.3.2 Secondary Data

Secondary data are collected from:

- Company reports and internal documents of Noapara Group
- Academic journals, books, and conference papers
- Industry reports

- Government publications and trade data
- Online databases and credible websites

These sources help establish the theoretical foundation and support comparative analysis.

3.4 Data Collection Methods

3.4.1 Questionnaire Survey

A structured questionnaire is designed using a Likert-scale format to measure:

- Types of supply chain disruptions
- Frequency and severity of disruptions
- Effectiveness of response strategies
- Level of flexibility in logistics, sourcing, and operations

The questionnaire ensures consistency and ease of quantitative analysis.

3.4.2 Interviews

Semi-structured interviews are conducted to collect qualitative insights on:

- Major disruption experiences
- Decision-making during crisis periods
- Strategic flexibility and resilience practices
- Lessons learned from past disruptions

Interviews allow respondents to elaborate on issues not captured through questionnaires.

3.5 Group Variables of the Study

- **Independent Variables**:

Supply chain disruptions (e.g., transportation delays, supplier failure, port congestion, geopolitical risks, pandemics)

- **Dependent Variables**:

Supply chain response strategies (e.g., logistics flexibility, sourcing flexibility, inventory buffering, collaboration, digital coordination)

3.6 Data Analysis Techniques

→ **Quantitative data** are analyzed using descriptive statistical tools such as:

1. Frequencies
2. Percentages
3. Mean scores
4. Tables and charts

→ **Qualitative data** are analyzed using thematic analysis, where interview responses are categorized into key themes aligned with the research objectives.

The combined analysis provides a comprehensive understanding of disruptions and response mechanisms.

Chapter-04
Data Analysis and Findings

4.1 Introduction

This chapter presents the analysis and findings of the study based on both quantitative and qualitative data collected from the Noapara Group. The quantitative analysis examines the types, frequency, and impact of supply chain disruptions and evaluates the effectiveness of response strategies. The qualitative analysis provides in-depth insights into managerial experiences, decision-making processes, and organizational learning during disruption events. The findings are presented using tables, bar charts, pie charts, and thematic explanations to ensure clarity and comprehensiveness.

4.2 Quantitative Data Analysis

4.2.1 Demographic Profile of Respondents

A total of 40 questionnaires were analyzed from employees involved in supply chain-related functions.

Table 4.1: Department-wise Distribution of Respondents

Department	Frequency	Percentage (%)
Logistics	14	35%
Procurement	9	22.5%
Operations	10	25%
Warehousing	7	17.5%
Total	40	100%

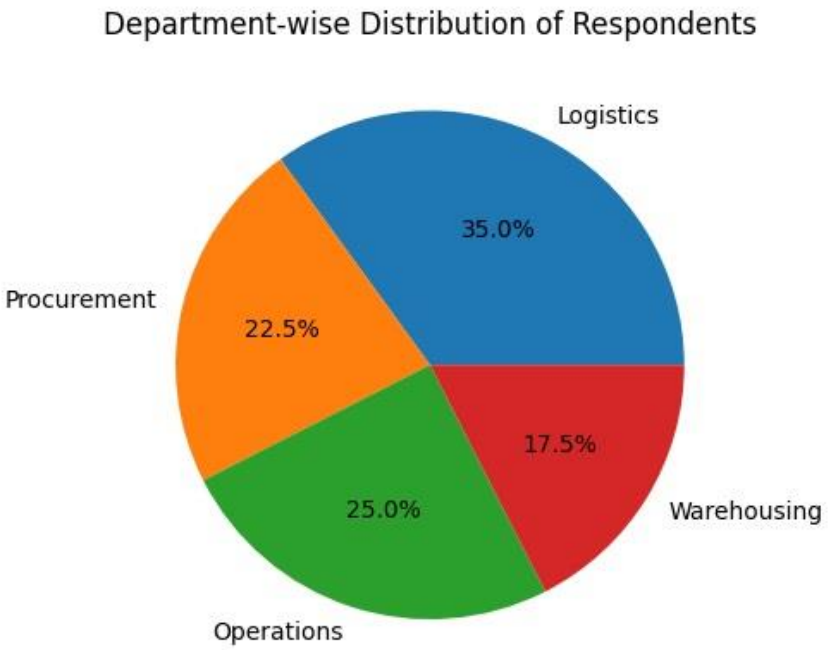

Figure 4.1: Pie Chart Showing Department-wise Distribution of Respondents

→**Finding:**

Most respondents were from logistics and operations departments, indicating that the data primarily reflect operational-level disruption experiences.

4.2.2 Types of Supply Chain Disruptions Faced by NOAPARA Group

Respondents were asked to identify the most common supply chain disruptions experienced.

Table 4.2: Major Supply Chain Disruptions

Type of Disruption	Frequency	Percentage (%)
Transportation delays	13	32.5%
Port congestion	9	22.5%
Supplier failure	8	20%
Demand volatility	6	15%
External shocks (COVID, geopolitical issues)	4	10%

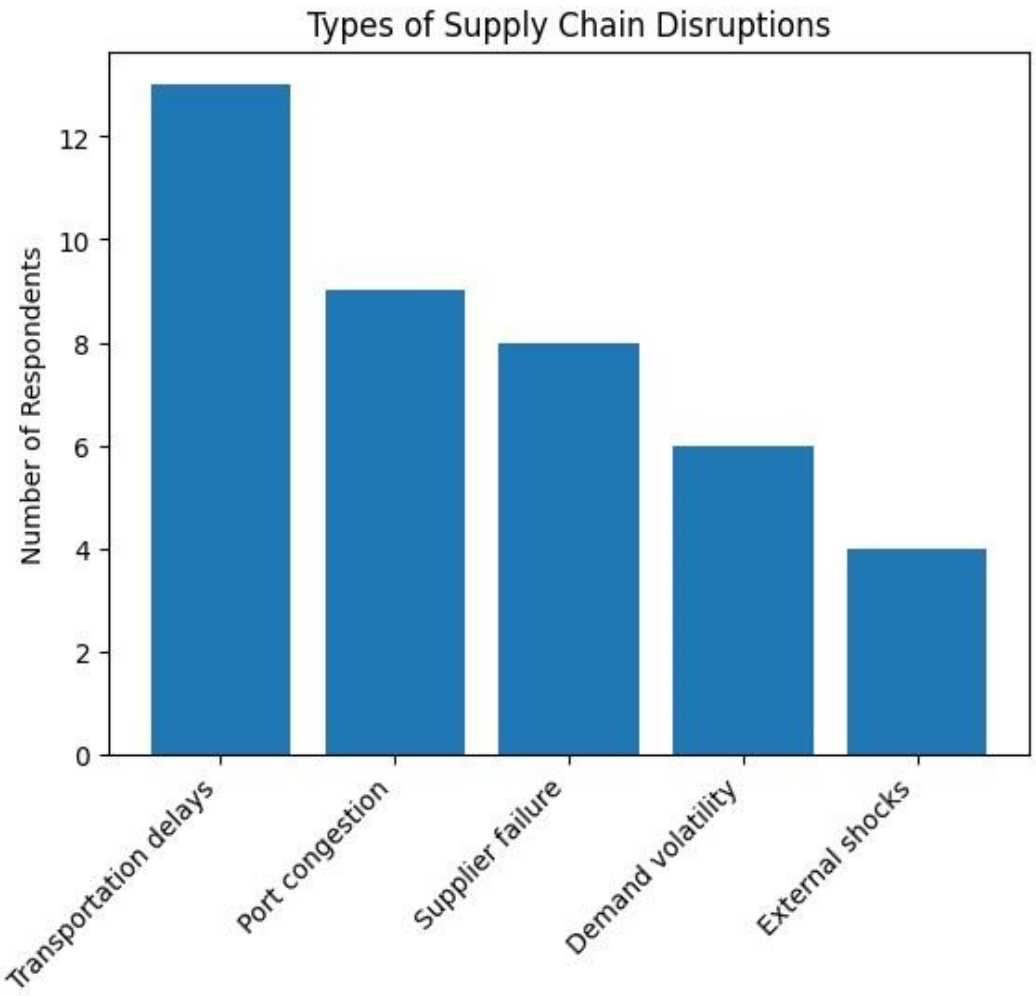

Figure 4.2: Bar Chart Showing Types of Supply Chain Disruptions

→**Finding:**

Transportation delays and port congestion are the most significant disruptions affecting Noapara Group, reflecting the firm's dependence on international logistics and maritime transport.

4.2.3 Frequency of Supply Chain Disruptions

Respondents rated how often disruptions occur.

Table 4.3: Frequency of Disruptions

Frequency Level	Respondents	Percentage (%)
Very Frequent	10	25%
Frequent	15	37.5%
Occasional	11	27.5%
Rare4	4	10%

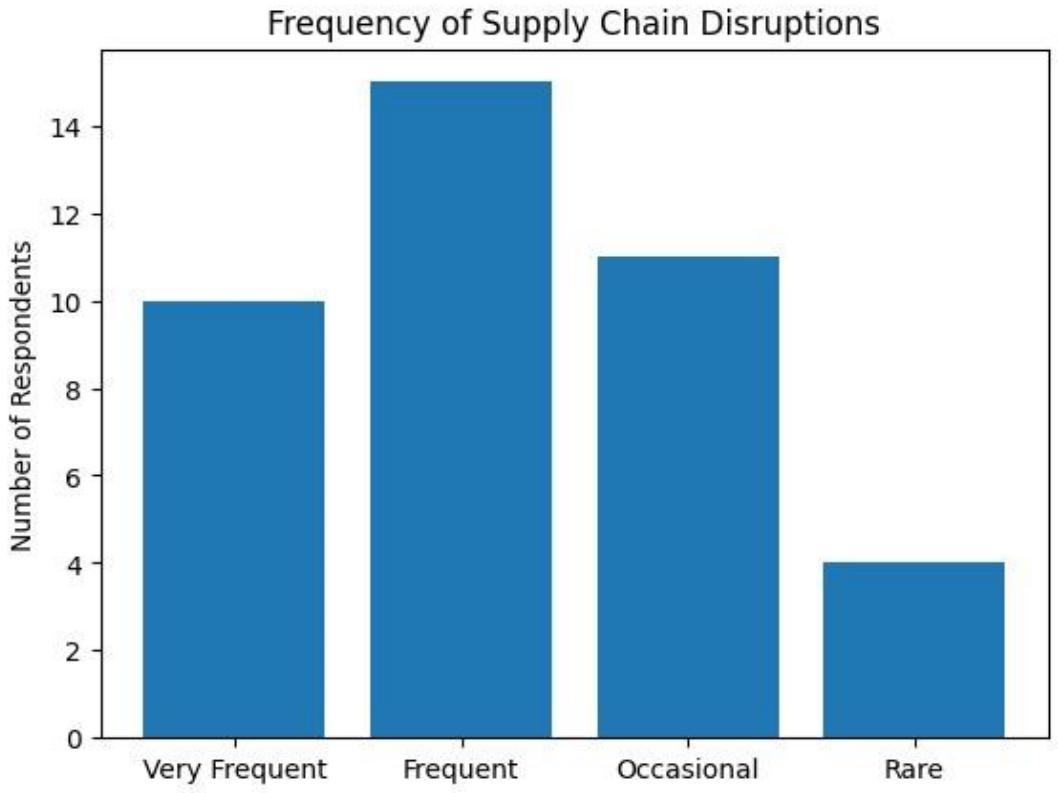

Figure 4.3: Bar Chart Showing Frequency of Disruptions

→**Finding:**

Over **60% of respondents** reported disruptions as frequent or very frequent, indicating a high level of supply chain uncertainty.

4.2.4 Impact of Disruptions on Supply Chain Performance

Respondents assessed the level of impact of disruptions.

Table 4.4: Impact of Disruptions

Impact Level	Frequency	Percentage (%)
High	18	45%
Moderate	14	35%
Low	8	20%

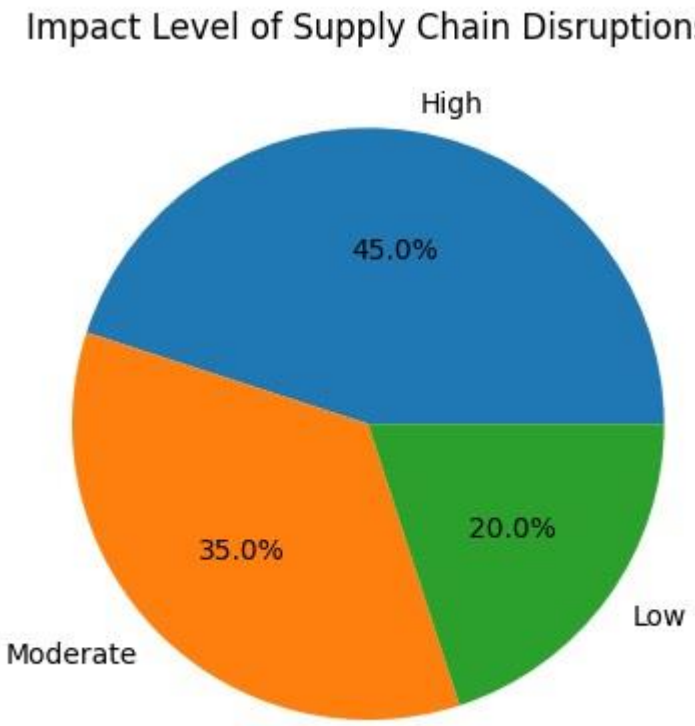

Figure 4.4: Pie Chart Showing Impact Level of Disruptions

→**Finding:**

A majority of respondents perceived disruptions as having a high impact on operational performance, delivery schedules, and cost structures.

4.3 Overview of Global Supply Chain Disruptions Affecting Noapara Group

Noapara Group operates within a complex global supply chain network that relies heavily on imported raw materials, international shipping routes, port operations, and coordination with overseas suppliers and logistics partners. As a result, the company has been significantly affected by global supply chain disruptions in recent years.

The major disruptions identified include:

- Delays in international shipping schedules due to port congestion and vessel unavailability
- Increased freight rates and volatility in transportation costs
- Delays in customs clearance and port handling
- Disruptions caused by the COVID-19 pandemic, including labor shortages and operational shutdowns
- Uncertainty in lead times from international suppliers
- Sudden changes in customer demand and delivery requirements

These disruptions posed serious challenges to the company's inbound logistics, production planning, and outbound distribution, necessitating flexible and timely responses.

Type of Disruption	Description	Impact on Noapara Group
Shipping Delays	Vessel congestion, schedule changes, port backlogs	Late arrival of raw materials and finished goods
Freight Rate Volatility	Sudden increases in ocean freight costs	Higher logistics expenses and cost uncertainty
Port Congestion	Delays in loading, unloading, and berth allocation	Increased waiting time and demurrage risk
Supplier Delays	Production and dispatch delays at the supplier end	Disruption in production planning
COVID-19 Related Disruptions	Labor shortages, lockdowns, and operational shutdowns	Reduced operational efficiency and uncertainty
Demand Fluctuations	Sudden changes in customer demand	Challenges in inventory and delivery planning

Table 4.1: Major Global Supply Chain Disruptions Faced by Noapara Group

4.4 Concept of Supply Chain Flexibility

Supply chain flexibility refers to a firm's ability to respond effectively and efficiently to changes, uncertainties, and disruptions within its supply chain environment. In the context of Noapara Group, flexibility has been exercised across multiple dimensions, including logistics flexibility, sourcing flexibility, operational flexibility, and relational flexibility.

Logistics flexibility, in particular, plays a crucial role, as it enables firms to adjust transportation modes, routes, delivery schedules, and inventory positioning in response to disruptions. The development of such flexibility allows organizations to minimize delays, reduce costs, and maintain service levels even during periods of uncertainty.

4.4.1 Effectiveness of Supply Chain Flexibility

Respondents rated overall flexibility effectiveness.

Table 4.6: Effectiveness of Flexibility Measures

Effectiveness Level	Frequency	Percentage (%)
Highly Effective	16	40%
Effective	14	35%
Moderately Effective	7	17.5%
Not Effective	3	7.5%

→**Finding:**

Approximately **75% of respondents** believe that flexibility measures significantly help mitigate disruptions.

Chapter-05

Recommendation, Limitations & Conclusion

5.1 Recommendations

Based on the findings of the study, the following recommendations are proposed to strengthen Noapara Group's supply chain resilience and disruption response capability:

5.3.1 Strengthening Logistics Flexibility

Noapara Group should further enhance logistics flexibility by:

- Expanding the use of alternative transport routes and ports
- Maintaining agreements with multiple freight forwarders and shipping agents
- Developing contingency logistics plans for high-risk trade routes

5.3.2 Supplier Diversification and Strategic Sourcing

To reduce dependency on limited suppliers, the company should:

- Increase multi-sourcing practices
- Develop backup suppliers in different geographic regions
- Conduct regular supplier risk assessments

This will help minimize the impact of supplier failure and regional disruptions.

5.3.3 Investment in Digital Supply Chain Technologies

The study recommends increased investment in:

- Real-time shipment tracking systems
- Integrated supply chain information systems
- Digital dashboards for disruption monitoring

Digital visibility will improve early detection of disruptions and support faster decision-making.

5.3.4 Improved Collaboration and Communication

Noapara Group should strengthen collaboration with:

- Suppliers
- Logistics service providers
- Port authorities and agents

Regular information sharing and coordination can significantly reduce response time during disruptions.

5.3.5 Enhanced Risk Management and Contingency Planning

The company should establish a formal supply chain risk management framework, including:

- Identification and classification of potential risks
- Scenario-based contingency planning
- Periodic simulation and stress-testing of response plans

5.3.6 Training and Capacity Building

Regular training programs should be introduced to:

- Improve employee awareness of disruption risks
- Enhance decision-making skills during crises
- Promote a proactive risk management culture

5.2 Conclusion

The objective of this study was to examine the nature of supply chain disruptions faced by Noapara Group and to analyze the effectiveness of response strategies adopted to mitigate such disruptions. The findings reveal that supply chain disruptions are frequent and high-impact, particularly in the areas of transportation delays, port congestion, supplier unreliability, and external shocks.

The quantitative results demonstrate that logistics-related disruptions are the most dominant challenges affecting supply chain performance. A significant proportion of respondents reported that disruptions negatively influence delivery schedules, operational efficiency, and cost management. However, the findings also show that Noapara Group has developed several effective response mechanisms, especially logistics flexibility, alternative routing, supplier collaboration, and inventory buffering.

The qualitative findings further support these results by highlighting the importance of managerial decision-making, coordination with logistics partners, and organizational learning. Managers emphasized that experience gained from past disruptions has strengthened preparedness and responsiveness. Overall, the study concludes that while Noapara Group operates in a highly uncertain global supply chain environment, the adoption of flexible and adaptive strategies has enhanced its ability to manage and recover from disruptions.

5.2.1 Managerial Implications

The findings of this study provide several important implications for supply chain managers and decision-makers at Noapara Group and similar organizations:

- Supply chain flexibility should be treated as a strategic investment rather than a short-term operational adjustment.
- Strong collaboration with logistics partners and suppliers enhances visibility and responsiveness during disruptions.
- Proactive planning and early detection of potential disruptions improve preparedness and reduce reaction time.
- Empowering operational teams to make timely decisions increases organizational agility in crises.

5.3 Limitations

Despite its contributions, the study has several limitations:

1. **Single-case focus**: The study focuses only on Noapara Group, which limits the generalizability of findings to other industries or organizations.
2. **Sample size limitation**: The number of survey respondents and interview participants was relatively small.
3. **Self-reported data**: Responses may be subject to bias or personal judgment.
4. **Time constraints**: The study captures disruption experiences at a specific time period, which may not reflect long-term trends.

These limitations should be considered when interpreting the findings.

5.3.1 Suggestions for Future Research

Future studies may consider:

- Conducting comparative studies across multiple organizations or industries
- Incorporating quantitative methods to measure the impact of flexibility on performance
- Examining the role of digital technologies in enhancing supply chain resilience
- Investigating long-term cost-benefit trade-offs of flexible supply chain strategies

5.3.2 Scope for Future Research

Future studies may:

- Conduct comparative studies across multiple firms or industries
- Apply advanced statistical techniques to analyze relationships between disruptions and performance
- Explore the role of digitalization and artificial intelligence in supply chain resilience
- Examine long-term impacts of global disruptions on supply chain strategy

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