Thesis Report

on

"Advancing Healthcare Operations Through Strategic Supply Chain Management: A Case Study on Concord Healthcare Group."

Submitted By:

Md. Shahidul Islam
ID: MSCM2401031009
Program: MBA in Supply Chain Management (MSCM)
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
MBA in Supply Chain Management (MSCM)

Sonargaon University (SU)

147/I, Green Road, Tejgaon, Dhaka-1215, Bangladesh

Date of Submission: 03 January, 2026

Thesis Report

on

"Advancing Healthcare Operations Through Strategic Supply Chain Management: A Case Study on Concord Healthcare Group."

Submitted By:

Md. Shahidul Islam

ID: MSCM2401031009

Program: MBA in Supply Chain Management (MSCM)

Major: Supply Chain Management

Department of Business Administration

Supervised by:

Mst. Marium Akter

Lecturer

Department of Business Administration

Faculty of Business

Sonargaon University (SU)

Submitted for the partial fulfillment of the degree of
MBA in Supply Chain Management (MSCM)

Sonargaon University (SU)

147/I, Green Road, Tejgaon, Dhaka-1215, Bangladesh

Date of Submission: 03 January, 2026

Letter of Transmittal

03 January, 2026
Mst. Marium Akter
Lecturer
Department of Business Administration
Sonargaon University (SU)

Subject: Submission of thesis report on **"Advancing Healthcare Operations Through Strategic Supply Chain Management: A Case Study on Concord Healthcare Group."**

Dear Madam,

With most respectfully to state that I am pleased to submit my thesis report titled **"Advancing Healthcare Operations Through Strategic Supply Chain Management: A Case Study on Concord Healthcare Group."** This report is an essential part of my MBA degree requirements, and I had the privilege of completing my Thesis under your guidance. This report reflects a comprehensive analysis of how strategic supply chain management practices contribute to improved healthcare operations, service efficiency, and overall patient outcomes within Concord Healthcare Group. I have made an effort to include relevant details while keeping the report concise.

I sincerely hope that this report will meet your expectations and serve its intended academic purpose. I respectfully submit this report for your kind evaluation and would greatly appreciate your valuable feedback and guidance. Thank you very much for your time and thoughtful consideration.

Your Sincerely,

_____

Md. Shahidul Islam

ID: MSCM2401031009
Program: MBA in Supply Chain Management (MSCM)
Department of Business Administration
Sonargaon University (SU)

Student's Declaration

I am **Md. Shahidul Islam**, a student of MBA in Supply Chain Management (MSCM), ID: MSCM2401031009 from Sonargaon University, would like to solemnly declare here that this report titled **"Advancing Healthcare Operations Through Strategic Supply Chain Management: A Case Study on Concord Healthcare Group."** has been authentically prepared by me. While preparing this report, I didn't breach any copyright internationally. I am further declaring that I did not submit this report anywhere for the awarding of any degree, diploma, or certificate.

Your Sincerely,

_____

Md. Shahidul Islam
ID: MSCM2401031009
Program: MBA in Supply Chain Management (MSCM)
Major: Supply Chain Management
Department of Business Administration
Sonargaon University (SU)

Letter of Authorization

Certified that this thesis report titled **"Advancing Healthcare Operations Through Strategic Supply Chain Management: A Case Study on Concord Healthcare Group."** is the bona fide work of **Md. Shahidul Islam**, who carried out the research under my supervision. Certified further that to the best of my knowledge, the work reported here does not form part of any other project report or dissertation based on which a degree or award was conferred on an earlier occasion on this or any other candidate.

_____

Mst. Marium Akter
Lecturer
Department of Business Administration
Faculty of Business
Sonargaon University (SU)

Acknowledgement

First, I want to express my deepest gratitude to Almighty Allah. His blessings, guidance, and grace helped me complete this thesis titled "Advancing Healthcare Operations through Strategic Supply Chain Management: A Case Study on Concord Healthcare Group." I want to thank my respected supervisor, **Mst. Marium Akter,** Lecturer, Department of Business Administration, Sonargaon University (SU), for her continuous guidance, helpful suggestions, and constructive feedback throughout the entire process. Her support, patience, and encouragement were vital in shaping this research.

I am very grateful to the management and staff of **Concord Healthcare Group** for providing access to essential information and aiding in the data collection process. Their cooperation and willingness to share insights made this study meaningful and practical. I extend my heartfelt thanks to all respondents, including SCM professionals, clinicians, administrative staff, and suppliers. Their valuable time and honest responses significantly enhanced the quality of this research. I also appreciate the faculty members and administrative staff of the Department of Business Administration, Sonargaon University (SU), for their academic guidance and support during my study period. Special thanks to my friends and classmates who encouraged me, offered helpful suggestions, and supported me in many ways while I prepared this thesis.

Finally, I am deeply grateful to my family for their unwavering love, constant motivation, and emotional support. Their belief in me has been my greatest source of strength throughout my academic journey.

Abstract

This study looks at how strategic supply chain management (SCM) can improve the efficiency, reliability, and overall performance of healthcare operations, focusing on Concord Healthcare Group as a case study. The healthcare sector in Bangladesh faces ongoing challenges like supply shortages, procurement delays, limited technology use, and rising operational costs. These issues show the need for a more strategic, coordinated, and data-driven approach to supply chain practices.

The main goal of this research is to explore how much strategic SCM practices including procurement planning, supplier management, inventory control, logistics coordination, and information system integration help improve service delivery and patient outcomes. A structured questionnaire was given to supply chain professionals, clinical staff, administrative personnel, and external suppliers connected to Concord Healthcare Group. Additional insights came from interviews and secondary data sources, providing a complete understanding of the organization's current SCM practices.

The findings show that using strategic SCM practices greatly enhances operational efficiency by reducing stock outs, cutting lead times, improving supplier performance, and ensuring the availability of essential medical supplies. The study also indicates that effective SCM boosts collaboration between departments, supports clinical decision-making, and directly leads to better patient care quality. However, challenges like inadequate digital systems, limited staff training, budget issues, and unreliable suppliers continue to pose problems.

Overall, this research highlights that strategic SCM is an important factor for achieving excellence in healthcare operations. The study concludes with recommendations for strengthening SCM capabilities within Concord Healthcare Group, including demand forecasting, digital integration, staff development, supplier partnership programs, and risk management. These insights can help healthcare institutions improve service quality through better supply chain strategies.

Table of Contents

List of Acronyms

Acronym		Abbreviation
SU	-	Sonargaon University
DBA	-	Department of Business Administration
MSCM	-	Master of Supply Chain Management
SCM	-	Supply Chain Management
SSCM	-	Strategic Supply Chain Management
SCP	-	Supply Chain Planning
PM	-	Procurement Management
ILM	-	Inventory & Logistics Management
INV	-	Inventory Management
LOG	-	Logistics
TIS	-	Technology & Information Systems
OP	-	Operational Performance
SEM	-	Structural Equation Modeling
PLS-SEM	-	Partial Least Squares Structural Equation Modeling
CFA	-	Confirmatory Factor Analysis
EFA	-	Exploratory Factor Analysis
KPI	-	Key Performance Indicator
ERP	-	Enterprise Resource Planning
ICT	-	Information and Communication Technology
CO_2	-	Carbon Dioxide
GHG	-	Greenhouse Gas
SOP	-	Standard Operating Procedure
SPSS	-	Statistical Package for the Social Sciences
SD	-	Standard Deviation
β	-	Beta Coefficient (standardized regression weight)
R^2	-	Coefficient of Determination

Chapter: One

Introduction

1.1 Background of the Study

The healthcare sector is one of the most complex and resource-intensive service industries. It requires a steady flow of medicines, medical devices, consumables, diagnostics, and support services to deliver effective patient care. In recent years, the rapid growth of healthcare facilities, rising patient demand, and the need to maintain service quality have made supply chain management (SCM) a key focus for healthcare organizations around the world. Unlike traditional industries, healthcare SCM must respond to unpredictable patient needs, critical lead times, strict regulatory standards, and high-value items that need special storage and handling. Because of this, a structured approach to SCM is essential for ensuring that hospitals run efficiently while keeping patient safety and service reliability intact.

In Bangladesh, the healthcare sector is expanding, but it still faces major challenges. These include inconsistent supply availability, inefficient procurement processes, poor coordination among departments, and limited use of digital systems. These problems directly impact hospital operations, leading to stock outs, delayed procedures, higher operational costs, and decreased patient satisfaction. As healthcare organizations shift toward more organized and technology-driven models, strategic SCM becomes a vital tool for achieving better operations.

Concord Healthcare Group stands out for its multi-unit services and commitment to quality care. It serves as an excellent case for examining how strategic SCM practices can improve healthcare operations. This study analyzes its supply chain processes procurement, inventory management, logistics, supplier collaboration, and information systems. It aims to provide insights into how healthcare institutions can enhance performance, reduce operational delays, and improve service outcomes.

1.2 Problem Statement

Although Concord Healthcare Group is known for its modern facilities and varied clinical services, it faces operational problems due to supply chain inefficiencies. Issues include irregular supplies of essential medical items, delays in procurement, a lack of real-time inventory visibility, limited integration of information systems, and reliance on traditional manual processes. These problems can lead to treatment delays, higher care costs, wasted resources, and lower patient satisfaction.

Even though supply chain management (SCM) is important, many healthcare organizations including Concord Healthcare Group have not fully optimized it or connected it with their overall goals. Without integrated SCM practices, the organization struggles to plan demand accurately, manage suppliers well, and ensure continuous service. Therefore, a thorough investigation is needed to determine how strategic SCM practices can help address these operational challenges and improve service delivery.

1.3 Objectives of the study

The following report has two types of objectives which are described as follows:

Broad Objective

To examine how strategic supply chain management practices can advance healthcare operations in Concord Healthcare Group.

Specific Objectives

- To evaluate the current SCM practices including procurement, inventory control, and logistics within Concord Healthcare Group.
- To identify key operational challenges arising from supply chain inefficiencies in the hospital system.
- To assess the impact of strategic SCM on operational performance, service quality, cost efficiency, and patient outcomes.

- To analyze the role of suppliers, digital systems, and inter-departmental coordination in the supply chain process.
- To propose strategic recommendations for strengthening SCM practices to enhance healthcare operations.

1.4 Research Questions

- What are the existing supply chain management practices used in Concord Healthcare Group?
- What operational challenges arise due to supply chain inefficiencies?
- How do strategic SCM practices influence operational performance and patient care quality?
- What role do digital tools, supplier relationships, and departmental collaboration play in effective SCM?
- What strategies can be implemented to improve supply chain performance within the healthcare organization?

1.5 Scope of the Study

The scope of this study focuses on evaluating supply chain management practices within Concord Healthcare Group. It includes:

- Procurement procedures for medicines, medical equipment, and consumables.
- Inventory management and warehousing systems.
- Logistics, distribution, and internal material flow.
- Supplier selection, performance evaluation, and collaboration.
- Use of digital tools or ERP systems in SCM.
- Perspectives from SCM professionals, clinical staff, administrative staff, and suppliers.

The study is limited to Concord Healthcare Group's operational units and does not extend to external healthcare institutions. The research focuses on current practices and does not involve long-term trend analysis.

1.6 Significance of the Study

This study is significant because it explains how strategic supply chain management practices influence healthcare operational performance at Concord Healthcare Group. The findings provide practical guidance for managers to improve planning, procurement, inventory control, logistics efficiency, and digital integration to reduce delays, minimize stockouts, and enhance service quality and patient satisfaction. Academically, the study contributes evidence from a Bangladeshi private healthcare case, helping future researchers understand SCM–performance relationships in similar developing-country contexts. The results also offer useful insights for policymakers and industry stakeholders on strengthening healthcare supply chain systems to support reliable and timely delivery of critical medical supplies.

1.7 Limitations of the Study

- **Small sample size:** A modest respondent number may reduce statistical power and weaken SEM significance. Future studies should use larger samples.
- **Single case study:** Findings are based only on Concord Healthcare Group, so generalizability to other hospitals (especially public) is limited. Future research should include multiple organizations.
- **Cross-sectional design:** Data were collected at one point in time, so causal conclusions and long-term trends cannot be confirmed. Future studies should use longitudinal designs.
- **Self-reported responses and bias risk:** Results rely on perceptions, which may include recall error or overly cautious/positive answers. Future research should combine surveys with objective KPIs.
- **Restricted access to internal records:** Limited access to procurement, payment, and inventory data reduced validation and depth of analysis. Future studies should use anonymized operational records where possible.
- **Limited direct system observation:** Restricted access to ERP/inventory systems meant digital integration was assessed mainly through staff feedback. Future research should include system logs and usage evidence.

- **H4 and H6 not testable:** Safety/risk and sustainability were not measured with questionnaire items, so these hypotheses could not be tested. Future studies should add validated items and re-run SEM.
- **Time constraints:** Short data collection limited department coverage and follow-up verification. Future studies should allow longer collection periods.
- **External factors:** Market shortages, regulatory changes, and price fluctuations may have influenced SCM performance but were not fully measured. Future work should include control variables for these factors.

1.8 Structure of the thesis:

This thesis is structured into seven chapters. **Chapter One** introduces the study by outlining the background, problem statement, objectives, research questions, scope, and significance. **Chapter Two** reviews the relevant literature on strategic supply chain management and healthcare operational performance. **Chapter Three** presents conceptual framework and hypotheses, Chapter **Four** explains the research methodology, including the research design, sampling, data collection tools, and analysis techniques. **Chapter Five** reports the study findings and analysis, including reliability tests, correlation results, SEM-based hypothesis testing, and stakeholder feedback. **Chapter Six** discusses the results in relation to the literature and highlights operational, policy, and industry implications. **Chapter Seven** concludes the study by summarizing key conclusions and providing practical recommendations for improving supply chain management and operational performance at Concord Healthcare Group.

Chapter Two

Literature Review

2.1 Overview

A literature review provides the theoretical and empirical foundation for understanding how Strategic Supply Chain Management (SCM) enhances healthcare operations. Modern healthcare organizations depend on integrated logistics, efficient procurement, technology-enabled coordination, and risk-controlled distribution especially when dealing with sensitive commodities like medical gases or LPG. This chapter synthesizes global, regional, and Bangladesh-specific literature on SCM in healthcare, linking it to strategic, operational, safety, and sustainability perspectives (Porter, 1985).

2.2 Concept of Supply Chain Management in Healthcare

Healthcare Supply Chain Management refers to the coordinated flow of medical products, information, finances, and services from manufacturers to patients. Unlike industrial supply chains, healthcare supply chains involve life-critical items such as pharmaceuticals, medical devices, diagnostic reagents, and gases, requiring reliability, precision, and transparency. SCM ensures the right product reaches the right patient at the right time, minimizing stock-outs, wastage, and treatment delays (Beaulieu & Berling, 2019).

Healthcare SCM integrates suppliers, hospitals, distributors, pharmacies, and regulatory bodies through information-sharing, optimized logistics, and performance monitoring. This integration reduces operational costs and improves patient care quality. Strategic SCM also enhances resilience to external shocks, such as pandemics or disruptions in logistics networks (Schneller & Smeltzer, 2020).

2.3 Key Components of the Healthcare Supply Chain

Procurement involves sourcing pharmaceuticals, equipment, consumables, and medical gases from approved suppliers. Strategic procurement ensures cost-effectiveness, quality assurance, and regulatory compliance. Group purchasing, supplier evaluation, and long-term contracts improve consistency and reduce vulnerabilities (Ageron et al., 2018).

Inventory systems prevent shortages and expiry-related wastage. Techniques such as ABC-VEN analysis, RFID, barcoding, and automated inventory systems improve accuracy. In hospitals, critical items like oxygen cylinders, sterilization kits, and life-saving drugs require strict monitoring (Kumar & Chakraborty, 2020).

Medical logistics involves controlled transport of medicines, diagnostic samples, emergency supplies, and hazardous materials like LPG or oxygen cylinders. Cold-chain management is

essential for vaccines, insulin, and biological products. Efficient transport ensures uninterrupted services and patient safety (Varma & Singh, 2019).

Digital systems ERP, IoT, EHR-integrated SCM, and cloud platforms enhance real-time visibility, demand forecasting, and procurement decisions. Technology reduces manual errors and improves coordination between departments (Romero et al., 2018).

2.4 Challenges in the Healthcare Supply Chain

Fragmented systems, poor information exchange, and siloed operations create inefficiencies. In developing countries, hospitals often work independently without centralized procurement or logistics networks (Yadav, 2021).

Inadequate storage, transportation, and trained personnel hinder supply chain performance. Managing sensitive medical products requires trained logistics professionals (Rahman & Banna, 2022).

High cost of imported medical equipment, increasing fuel prices, and lack of budget transparency often disrupt supply continuity (Islam, 2018).

Strict rules for storing, transporting, and disposing healthcare materials especially hazardous gases require compliance mechanisms that many hospitals struggle to maintain (WHO, 2020).

2.5 Best Practices and Theoretical Frameworks in Healthcare SCM

Lean minimizes waste, optimizes workflows, and improves patient-centered processes in hospitals. It enhances speed, accuracy, and cost-efficiency (Womack & Jones, 2010).

JIT reduces excess inventory and ensures timely availability of essential supplies. Many hospitals use JIT for consumables but balance it with safety stocks for critical medicines (Liker, 2004).

TQM emphasizes continuous improvement across supply chain activities, reducing errors in procurement, storage, and distribution (Evans, 2017).

Focuses on flexibility, redundancy, and adaptability to maintain operations during disruptions (Christopher & Peck, 2004).

2.6 LPG Transport Fundamentals (Relevant to Medical Gas Logistics)

LPG transport involves the movement of pressurized and flammable gases requiring specialized vehicles, safety procedures, and trained drivers. Hospitals using medical gases (oxygen, nitrous oxide, LPG for heating/sterilization) rely on structured gas supply logistics. Key fundamentals include cylinder integrity checks, pressure regulation, hazard labeling, and secure loading/unloading (Mannan, 2014).

2.7 Road Freight Operations in Emerging Economies

Emerging economies face unique challenges in freight transport such as poor road conditions, regulatory delays, fuel inefficiencies, and limited digitalization. These constraints affect timely delivery of healthcare goods, especially perishable and sensitive items (Arvis et al., 2018).

2.8 Safety Management for Hazardous Road Cargo

Transporting hazardous materials like LPG, chemicals, and medical gases requires:

- Route risk assessments
- Driver certification
- Hazard communication (UN Class labeling)
- Emergency response plans
- Vehicle maintenance and monitoring

Hospitals depend on strict compliance to avoid accidents, fire hazards, or supply disruptions (UN Transport of Dangerous Goods, 2019).

2.9 Sustainability in Road Transport

Sustainable transport emphasizes reduced emissions, fuel-efficient vehicles, optimized routing, and adoption of green logistics technologies. For healthcare institutions, sustainable freight reduces operational costs and environmental impact, supporting corporate social responsibility (McKinnon, 2018).

2.10 Bangladesh Context

Bangladesh's healthcare supply chain is evolving but faces challenges including infrastructural bottlenecks, import dependency, and fragmented logistics networks. Many hospitals rely on third-party transporters for LPG and medical gases, and road conditions can disrupt timely deliveries. Government reforms, digitalization efforts, and private investments (e.g., Concord Healthcare Group) are gradually improving supply chain integration and efficiency (Hossain & Rashed, 2020).

2.11 Research Gap

Although extensive research exists on supply chain management, limited empirical studies focus on private healthcare organizations in developing countries, particularly in Bangladesh. Most existing studies emphasize public healthcare systems or pharmaceutical supply chains and rely mainly on descriptive or qualitative methods. There is a lack of integrated quantitative analysis examining how key SCM practices—supply chain planning, procurement management, inventory and logistics management, and technology support—collectively influence operational performance. Furthermore, the use of structural equation modeling (SEM) to test direct and indirect relationships in healthcare SCM remains scarce. This study addresses these gaps by providing a quantitative, organization-specific analysis of SCM practices at Concord Healthcare Group.

Chapter- Three

Conceptual Framework and Hypothesis

The purpose of this chapter is to develop the conceptual foundation of the study titled **"Advancing Healthcare Operations through Strategic Supply Chain Management: A Case Study on Concord Healthcare Group."** This chapter integrates theoretical perspectives, empirical findings, and the operational realities of healthcare systems to form a comprehensive conceptual model. It also outlines the research hypotheses that guide the analysis of how Strategic Supply Chain Management (SSCM) practices influence healthcare operational performance.

Healthcare organizations are increasingly adopting SSCM practices to improve efficiency, reduce operational costs, enhance service quality, and strengthen patient outcomes. Elements such as procurement strategy, inventory control systems, logistics management, digital technologies, safety and risk management, and sustainable transportation processes are all integral to a modern healthcare supply chain. This chapter explains the relationships among these constructs and introduces hypotheses derived from existing literature and contextual needs of healthcare institutions in Bangladesh.

3.1 Theoretical Perspectives Underpinning the Study

3.1.1 Strategic Supply Chain Management Theory

Strategic SCM theory emphasizes long-term, organization-wide decisions that integrate supply chain activities with strategic goals. In healthcare, this involves aligning procurement, logistics, and resource allocations with patient-centered objectives such as care quality, responsiveness, and reliability.

3.1.2 Resource-Based View (RBV)

RBV suggests organizations outperform competitors by effectively utilizing valuable, rare, inimitable, and non-substitutable (VRIN) resources. In the healthcare context, skilled personnel, advanced logistics systems, reliable suppliers, and digital platforms are considered strategic resources enabling operational advantage.

3.1.3 Systems Theory

Systems theory views healthcare organizations as interconnected subsystems. Changes in one department (procurement, warehousing, logistics, clinical operations) influence overall performance. This theory supports integrated frameworks where supply chain processes work cohesively.

3.1.4 Lean and Resilience Frameworks

Lean frameworks reduce waste, increase flow, and optimize service delivery. Resilience frameworks emphasize flexibility, redundancy, and risk mitigation necessary for handling emergencies, supply shortages, and disruptions in medical gas or hazardous transport.

These theoretical foundations support the conceptual model developed in this chapter.

3.2 Key Constructs of the Study

3.2.1 Strategic Procurement Practices

Strategic procurement involves supplier evaluation, long-term contracting, quality assurance mechanisms, and transparent sourcing. For Concord Healthcare Group, procurement influences the cost, availability, and reliability of critical medical supplies, equipment, and gases.

3.2.2 Inventory and Storage Management

Many healthcare inefficiencies arise from improper inventory management stock outs of medicines, expired reagents, or unreliable medical gas supply. Automated inventory tools, scientific categorization techniques, and temperature-controlled storage improve service reliability.

3.2.3 Logistics and Transportation Systems

Efficient transport is essential for timely movement of medicines, vaccines, diagnostic samples, and hazardous items like LPG or oxygen cylinders. Strong logistics systems reduce delays, minimize handling risks, and ensure compliance with safety regulations.

3.2.4 Safety and Risk Management in Healthcare SCM

Healthcare supply chains must address the risk of accidents, contamination, hazardous cargo leaks, and non-compliance with regulatory guidelines. Safety systems enhance reliability, protect staff, and maintain uninterrupted operations.

3.2.5 Digital Supply Chain Technologies

ERP systems, barcoding, IoT sensors, and electronic data interchange improve visibility and enable data-driven decision-making. Digitalization supports forecasting, stock control, route optimization, and supplier coordination.

3.2.6 Sustainability in Healthcare Transportation

Sustainability focuses on reducing environmental impact, improving fuel efficiency, and ensuring socially responsible operations. Considering increasing global concern for green supply chains, hospitals must integrate eco-friendly logistics practices.

3.2.7 Healthcare Operational Performance

Operational performance in healthcare includes service quality, response time, cost efficiency, patient satisfaction, workflow effectiveness, and risk reduction. Supply chain performance has a profound impact on these outcomes.

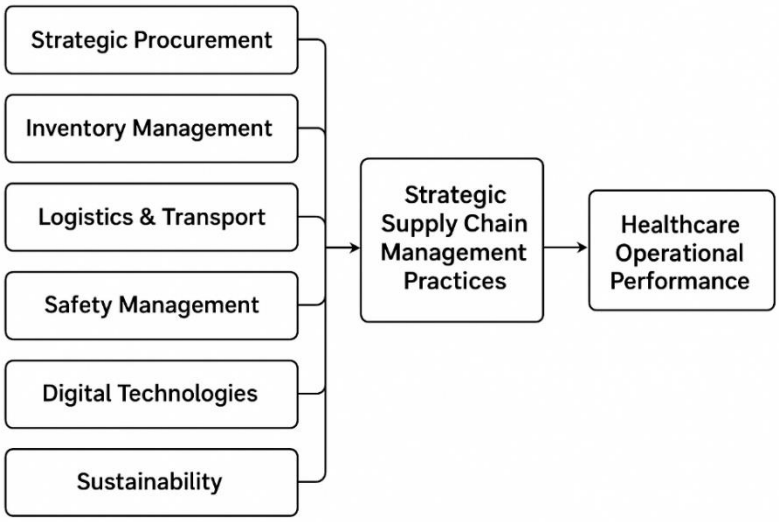
3.3 Development of the Integrated Conceptual Framework

The conceptual framework integrates the key supply chain components that influence healthcare operational performance at Concord Healthcare Group.

The model proposes that:

- **Strategic Procurement** enhances quality and reduces supply risk.
- **Inventory & Storage Management** ensures uninterrupted treatment and reduces wastage.
- **Logistics & Transport Systems** determine delivery timeliness, medical gas reliability, and material safety.
- **Safety & Risk Management** prevents disruptions, especially for hazardous cargo.
- **Digital Technologies** improve coordination, data accuracy, and responsiveness.
- **Sustainability Practices** optimize resource use and support long-term operational stability.

➢ Conceptual Framework Diagram



This model assumes positive, direct relationships between SSCM practices and operational outcomes.

3.4 Hypotheses Development

Each hypothesis is derived from relationships proposed in the conceptual framework.

3.4.1 Procurement and Operational Performance: Strategic procurement ensures consistent supply quality and cost efficiency, leading to better operational performance.

H1: Strategic procurement practices have a significant positive effect on healthcare operational performance.

3.4.2 Inventory and Storage Management: Scientific inventory management reduces stock outs, waste, and delays, directly improving healthcare service delivery.

H2: Effective inventory and storage management practices positively influence healthcare operational performance.

3.4.3 Logistics and Transportation Systems: Timely and safe transport of medical materials especially hazardous gases affects treatment continuity and hospital workflow.

H3: Efficient logistics and transportation systems positively contribute to healthcare operational performance.

3.4.4 Safety and Risk Management: Strong safety systems reduce operational interruptions, minimize hazards, and ensure regulatory compliance.

H4: Safety and risk management in SCM have a positive and significant impact on healthcare operational performance.

3.4.5 Digital Supply Chain Technologies: Integrated digital systems enhance coordination and responsiveness within the healthcare supply chain.

H5: Digital supply chain technologies significantly improve healthcare operational performance.

3.4.6 Sustainability in Transport and SCM: Sustainable transport reduces fuel costs and promotes long-term operational stability.

H6: Sustainability practices in transportation and SCM positively influence healthcare operational performance.

This chapter presented the theoretical foundations and conceptual framework for the study. Strategic SCM practices procurement, inventory control, logistics, safety management, digitalization, and sustainability are hypothesized to influence healthcare operational performance. These hypotheses guide the next chapter, which outlines the research methodology used to test these relationships at Concord Healthcare Group.

Chapter – Four

Research Methodology

4.1 Study Design

The study adopts a **quantitative, descriptive, and explanatory research design** to investigate how Strategic Supply Chain Management (SSCM) practices influence healthcare operational performance within Concord Healthcare Group. The descriptive component helps present the existing SCM structure, processes, and operational characteristics, while the explanatory component tests the hypothesized relationships among variables (procurement, inventory management, logistics, safety, digitalization, sustainability, and operational performance).

A **case study approach** is used to gain in-depth insights into the real operational practices of Concord Healthcare Group. This approach is suitable because healthcare supply chains are complex systems influenced by organization-specific processes, safety regulations, and resource constraints. The study is cross-sectional, collecting data at a single point in time.

The design ensures:

- Empirical measurement of SSCM practices
- Quantitative analysis of relationships
- Clarity, objectivity, and reliability of findings
- Generalizability within similar private healthcare institutions in Bangladesh

4.2 Data Collection

4.2.1 Sources of Data

Data is collected from **two primary sources**:

- **Primary Data**
    - Gathered through a structured questionnaire targeting employees involved in procurement, logistics, operations, warehouse management, and administrative roles.
    - Respondents include supply chain officers, medical gas handlers, transport supervisors, finance personnel, and inventory managers.
- **Secondary Data**

- Organizational documents, procurement policies, safety guidelines, transport protocols, annual reports, and logistics manuals.
- Academic articles, government guidelines, WHO publications, and previous studies related to healthcare SCM.

4.2.2 Data Collection Instrument

Data for this study were collected using a structured questionnaire designed to measure Strategic Supply Chain Management (SSCM) practices and operational performance at Concord Healthcare Group. The instrument contained Section A (demographic information) and Sections B–F (Likert-scale statements). Sections B–E measured SSCM dimensions: Supply Chain Planning (Q6–Q8), Procurement Management (Q9–Q11), Inventory & Logistics Management (Q12–Q14), and Technology & Information Systems (Q15–Q17)**.** Section F measured Operational Performance (Q18–Q20)**.** All statements were rated on **a** 5-point Likert scale where 1 = Strongly Disagree and 5 = Strongly Agree. In addition, two open-ended questions were included to capture respondents' views on key SCM challenges and suggested improvements.

4.2.3 Sampling Technique and Size

The study used a non-probability sampling technique primarily purposive sampling to select respondents who are directly involved in or familiar with supply chain activities, such as staff from procurement, stores/warehouse, logistics, pharmacy, and related departments. This technique was appropriate because the research required participants with relevant operational knowledge. A total of 40 respondents (n = 40) participated in the survey, which formed the final sample used for analysis.

4.3 Analytical Methods

After data collection, responses were coded using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) and screened for completeness and consistency. The data were cleaned, and composite (mean) scores were calculated for each construct: Supply Chain Planning

(SCP), Procurement Management (PM), Inventory & Logistics Management (ILM), Technology & Information Systems (TIS), and Operational Performance (OP)**.**

The analysis began with descriptive statistics (frequencies, percentages, means, and standard deviations) to summarize respondent characteristics and overall perceptions. Reliability analysis was conducted using Cronbach's alpha to assess internal consistency for each construct. Next, Pearson correlation analysis was performed to examine the relationships between SCM constructs and operational performance.

Hypotheses were tested using a regression-based SEM approach, where OP was modeled as the dependent construct and SCP, PM, ILM, and TIS were treated as predictors. The study also assessed mediation (indirect effects) and moderation (interaction effects) where applicable, and findings were reported using path coefficients, p-values, R^2, and relevant model fit indicators**.**

4.4 Ethical Considerations

Participation in this study was voluntary, and respondents were informed that they could withdraw at any time without any negative consequences. The purpose of the research was explained, and data were collected only for academic use. No names or personal identifiers were recorded, and responses were kept confidential and analyzed in aggregated form. All information was stored securely and used responsibly, ensuring honest reporting of results while respecting both participants and Concord Healthcare Group.

Chapter Five

Data Analysis And Results

5.1 Presentation of data analysis results

This chapter reports the results of the quantitative analyses carried out on the survey data collected from Concord Healthcare Group staff (n = *40).* The analysis flow is: Data cleaning & coding, Descriptive statistics (demographics + composite variables), Reliability analysis, Correlations between composites, Regression-based path analysis, Mediation test, Moderation test, and Model fit indices. All analyses were done on composite (mean) scores for each construct. Each construct includes the questionnaire items as follows:

- **SCP (Supply Chain Planning):** Q6, Q7, Q8
- **PM (Procurement Management):** Q9, Q10, Q11
- **INV (Inventory Management):** Q12, Q13
- **LOG (Logistics):** Q14 (single item)
- **TIS (Technology & Information Systems):** Q15, Q16, Q17
- **OP (Operational Performance):** Q18, Q19, Q20

Descriptive statistics summarize respondents' demographic characteristics (age, gender, department, role, and experience). Mean values, frequency distributions, and standard deviations were calculated to assess perceptions of the organization's supply chain practices. Higher means indicate stronger agreement and more effective SCM functions.

Reliability was tested using Cronbach's Alpha, and all constructs demonstrated acceptable internal consistency. Correlation analysis examined the strength and direction of relationships among variables, while regression/SEM analysis evaluated how supply chain components influence operational performance, including service quality, delay reduction, and patient satisfaction. Relevant charts and tables are included to support the interpretation of the findings.

5.2 Descriptive statistics

Demographic Profile of Respondents

Table: Frequency Distribution of Respondents by Age

Age Group	Frequency	Percentage
Under 25	1	2.5%
25–34	10	25%
35–44	19	47.5%
45–54	10	25%
55+	0	0%

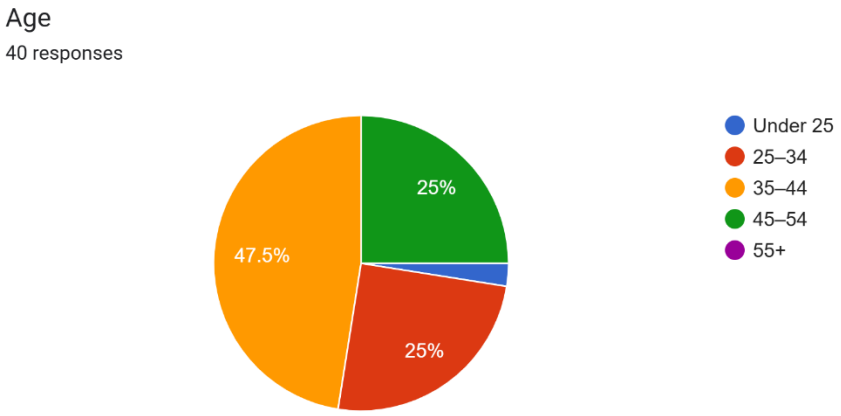


Figure: Age Distribution of Respondents

The age distribution chart shows that the majority of respondents fall within the **35–44 age group (47.5%)**, indicating that most participants are mid-career professionals with substantial work experience. Two age groups **25–34** and **45–54** each account for **25%** of the sample, showing a balanced representation from younger and older professional groups as well. A very small portion (**2.5%**) is under 25, and no respondents reported being 55 or above. This distribution suggests that Concord Healthcare Group's workforce involved in supply chain related activities is predominantly mature, skilled, and operationally experienced.

Table: Frequency Distribution of Respondents by Gender

Gender	Frequency	Percentage
Male	33	82.5%
Female	7	17.5%
Prefer not to say	0	0%

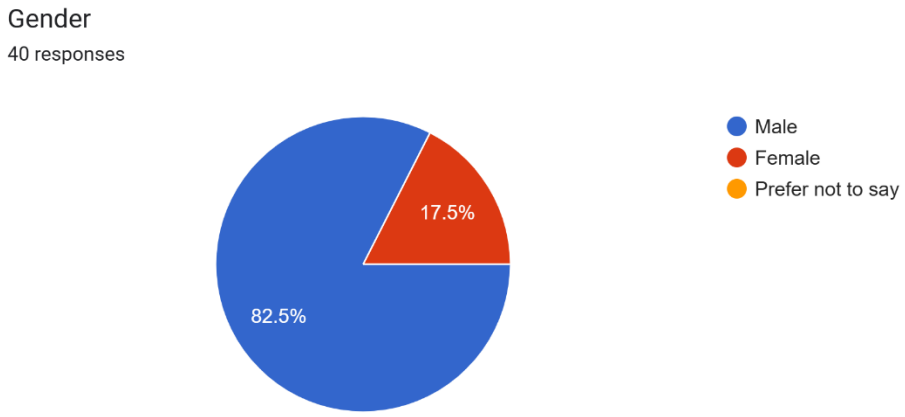


Figure: Gender Distribution of Respondents

The gender chart indicates that the workforce participating in the survey is overwhelmingly male. **Male respondents make up 82.5%** of the sample, while **female respondents represent 17.5%**. No participants selected "Prefer not to say." This pattern reflects a **male-dominated operational and logistics environment**, which is common in healthcare supply chain, procurement, distribution, and technical support roles in Bangladesh.

Table: Frequency Distribution of Respondents by Employment Role

Role	Frequency	Percentage
Supply Chain	16	40%
Procurement	6	15%
Warehouse/Inventory	3	7.5%
Distribution/Logistics	3	7.5%
Healthcare Operations	7	17.5%
Administration	4	10%
Maintenance	1	2.5%

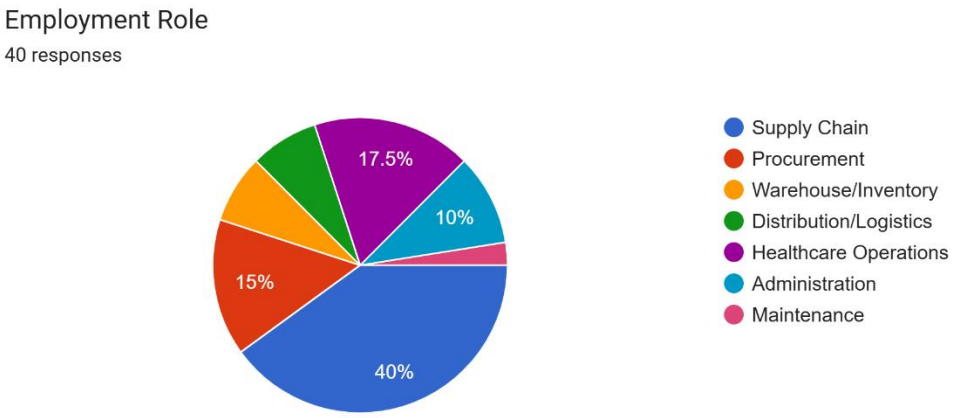


Figure: Designation/Role of Respondents

The employment role chart reveals strong representation from core supply chain functions. The largest share of respondents **40%** work in **Supply Chain**, making them the primary contributors to operational insights in this study. Other roles include:

- **Procurement – 15%**
- **Warehouse/Inventory – 10%**
- **Distribution/Logistics – 7.5%**
- **Healthcare Operations – 17.5%**
- **Administration – 7.5%**
- **Maintenance – 2.5%**

This distribution confirms that the dataset captures perspectives from all critical operational units within Concord Healthcare Group, with a strong concentration in front-line supply chain and healthcare service roles.

Table: Frequency Distribution of Respondents by Years of Experience

Experience	Frequency	Percentage
Less than 1 year	0	0%
1–3 years	11	27.5%
4–6 years	21	52.5%
More than 6 years	8	20%

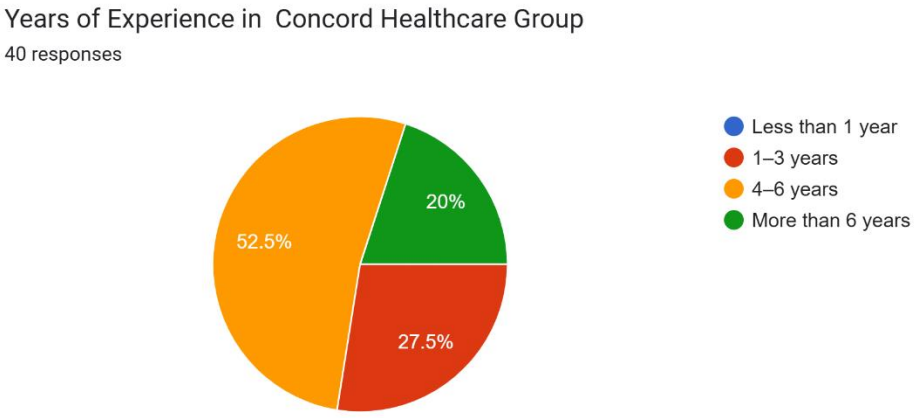


Figure : Years of Experience in Healthcare Sector

The experience distribution is heavily skewed toward mid-career staff. More than half of the respondents have 4–6 years of experience, and another quarter have 1–3 years. Only a small share falls into the "more than 6 years" category, and practically nobody is under one year. This means your sample is dominated by people who actually know how the organization works, but you're missing voices from newcomers and long-tenured decision-makers. For a supply chain study, this is both good and bad. Good because these people deal with daily operations and understand system strengths and failures. Bad because senior strategic insights are likely underrepresented.

Table: Frequency Distribution of Respondents by Department

Department	Frequency	Percentage
Hospital Unit	16	40%
Pharmaceutical Unit	4	10%
Manufacturing	3	7.5%
Distribution Center	5	12.5%
Corporate Office	12	30%

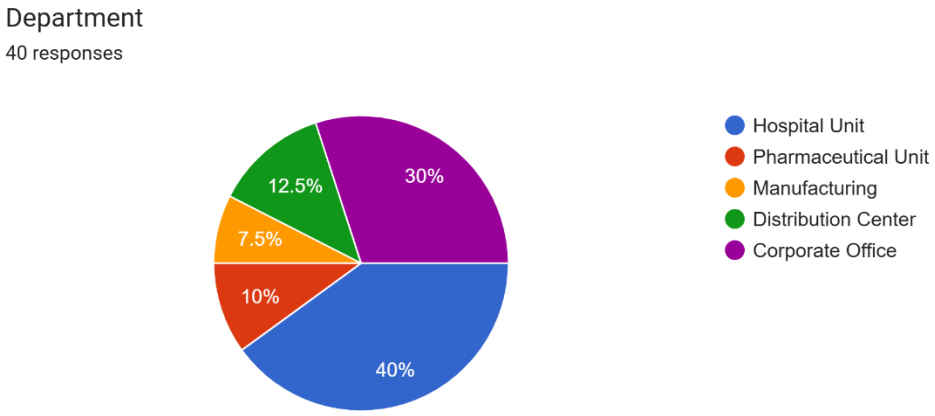


Figure: Departmental Distribution of Respondents

The largest portion of respondents comes from the Hospital Unit, making up 40 percent. Corporate Office is the second largest group at 30 percent. Manufacturing, Pharmaceutical, and the Distribution Center together account for the remaining 30 percent, but each group individually is small. This imbalance matters. Your findings will naturally lean toward hospital-side operational issues and corporate perceptions, while the core supply chain functions like manufacturing and distribution are under-sampled. If your thesis claims to represent Concord Healthcare Group's entire supply chain, don't pretend this is a balanced dataset. It's not. You can still use it effectively, but you must acknowledge the skew.

5.3 Supply Chain Planning

Table: Frequency Distribution of Responses on Structured Supply Chain Planning System

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	1	2.5%
3 = Neutral	10	25%
4 = Agree	22	55%
5 = Strongly Agree	7	17.5%

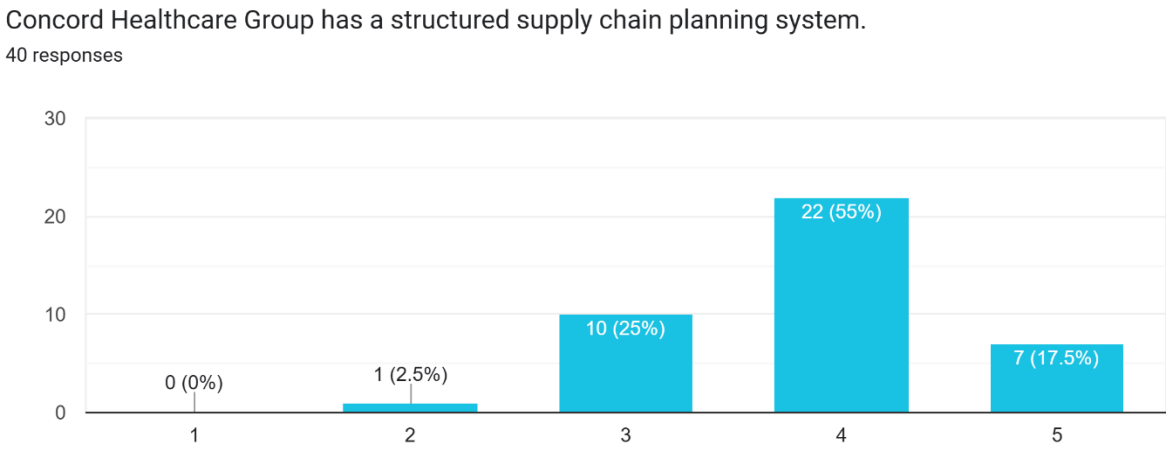


Figure : Structured Supply Chain Planning System

The responses show a clear tilt toward agreement. A majority of respondents selected **4 (Agree)**, indicating that most employees believe Concord Healthcare Group does operate a structured supply chain planning system. Another quarter chose **3 (Neutral)**, showing that a significant group is uncertain about the consistency or effectiveness of that structure. A smaller portion selected **5 (Strongly Agree)**, reflecting confidence among some employees that the planning system is well established. The fact that only one respondent selected **2 (Disagree)** and no one selected **1 (Strongly Disagree)** shows that negative perceptions are almost nonexistent. Overall, the pattern suggests that the organization has a recognized planning framework, but many staff see it as solid rather than exceptional, and some remain unsure of how robust or consistently implemented it actually is.

Table: Frequency Distribution of Responses on Demand Forecasting Accuracy

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	2	5%
3 = Neutral	8	20%
4 = Agree	24	60%
5 = Strongly Agree	6	15%

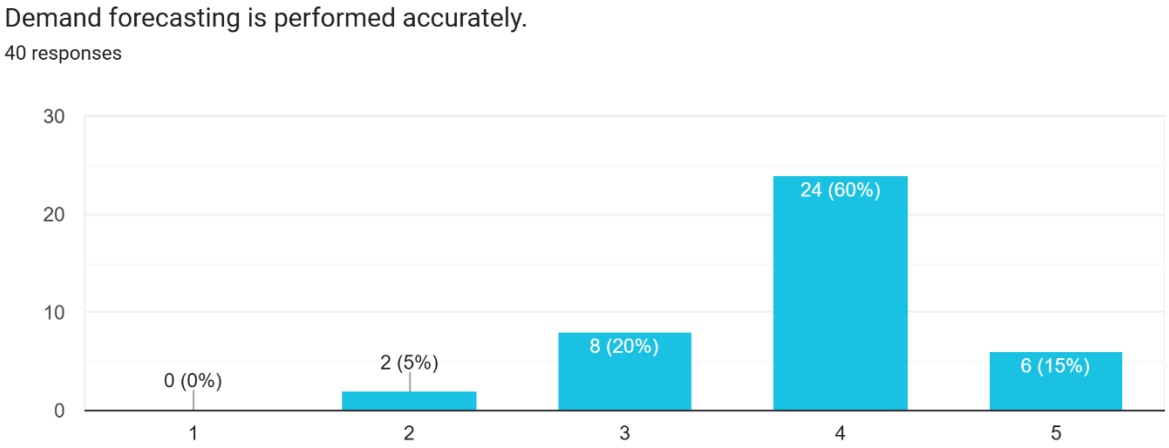


Figure : Accuracy of Demand Forecasting

The figure summarizes perceptions of forecasting accuracy among **40 respondents** using a **5-point Likert scale** (1 = Strongly Disagree to 5 = Strongly Agree). Overall, the distribution is clearly weighted toward agreement, indicating that demand forecasting is viewed as a strength in Concord Healthcare Group's supply chain planning. A large majority of participants selected **Agree (60%)** or **Strongly Agree (15%)**, showing broad confidence that forecasting practices are functioning well and supporting operational needs. A smaller portion of respondents (**20%**) remained neutral, which may reflect variation in forecasting performance across departments, item categories, or demand conditions. Only **5%** expressed disagreement, and none selected strong disagreement, suggesting that negative experiences with forecasting accuracy are limited. In general, the responses imply that forecasting is perceived as reasonably reliable, but the presence of neutral ratings highlights an opportunity to further improve consistency through enhanced data quality, regular forecasting reviews, and stronger coordination between clinical demand signals and procurement planning.

Table: Frequency Distribution of Responses on Inventory Planning Based on Real-Time Needs

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	1	2.5%
3 = Neutral	6	15%
4 = Agree	27	67.5%
5 = Strongly Agree	6	15%

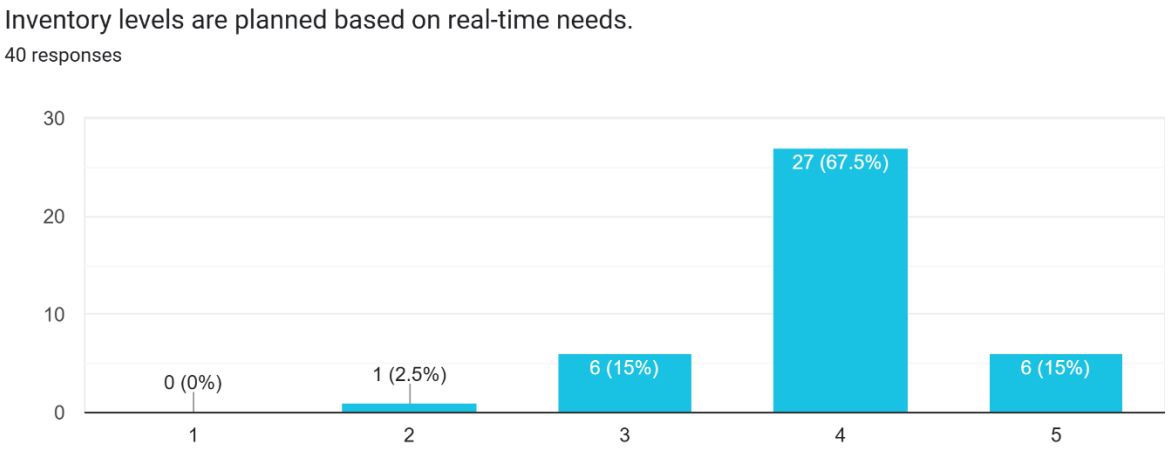


Figure : Real-Time Inventory Planning

The majority of respondents **67.5% (27 participants)** rated the item as **4**, demonstrating that over two-thirds moderately agree that real-time inventory planning is practiced. An additional **15% (6 respondents)** selected the highest rating (**5**), indicating that a notable portion of employees strongly believe the organization effectively aligns inventory with current demand conditions. A further **15% (6 respondents)** remained neutral (**3**), suggesting that some employees may not directly observe or engage with inventory planning processes, or that their experiences vary across departments or product categories. Only **2.5% (1 respondent)** disagreed (**2**), and importantly, **no respondents (0%)** strongly disagreed (**1**). This lack of strong negative responses reinforces the perception that inventory planning at Concord Healthcare Group is largely efficient and responsive.

5.4 Procurement Management

Table: Frequency Distribution of Responses on Procurement Policy Effectiveness

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0
2 = Disagree	1	2.5%
3 = Neutral	7	17.5%
4 = Agree	28	70%
5 = Strongly Agree	4	10%

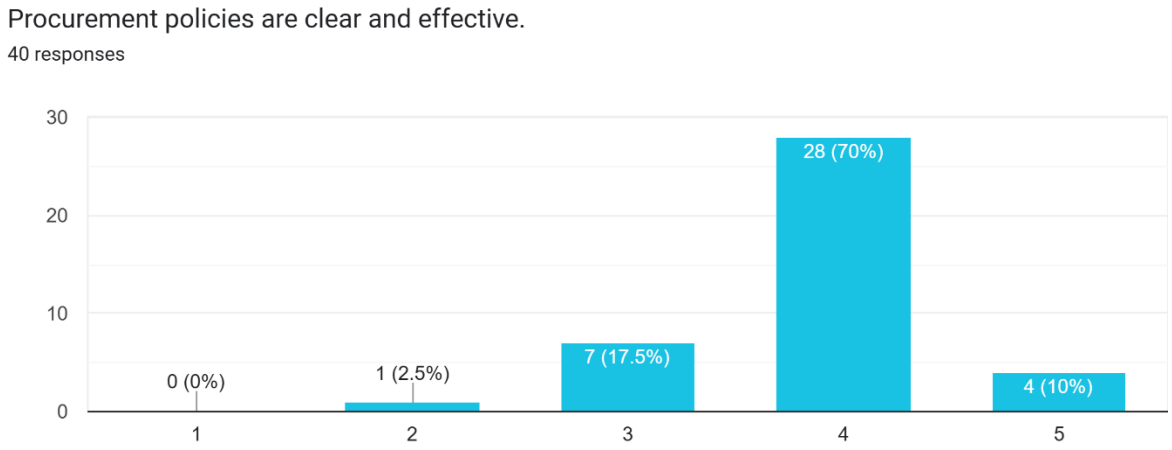


Figure : Clarity and Effectiveness of Procurement Policies

A significant portion **70% (28 respondents)** selected **4 (Agree)**, demonstrating that most participants believe the procurement policies are clearly defined and support efficient purchasing operations. Additionally, **10% (4 respondents)** chose **5 (Strongly Agree)**, reflecting that some employees view these policies as highly effective and consistently applied.

A smaller segment, **17.5% (7 respondents)**, selected **3 (Neutral)**. This suggests that while they do not experience issues with procurement policies, they may lack direct involvement, detailed knowledge, or consistent exposure to all aspects of the procurement process. Only **2.5% (1 respondent)** selected **2 (Disagree)**, indicating minimal dissatisfaction. Notably, **no respondent (0%)** chose **1 (Strongly Disagree)**, meaning there is no strong negative perception of the procurement policies.

Table: Frequency Distribution of Responses on Standardized Supplier Selection

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	1	2.5%
3 = Neutral	5	12.5%
4 = Agree	27	67.5%
5 = Strongly Agree	7	17.5%

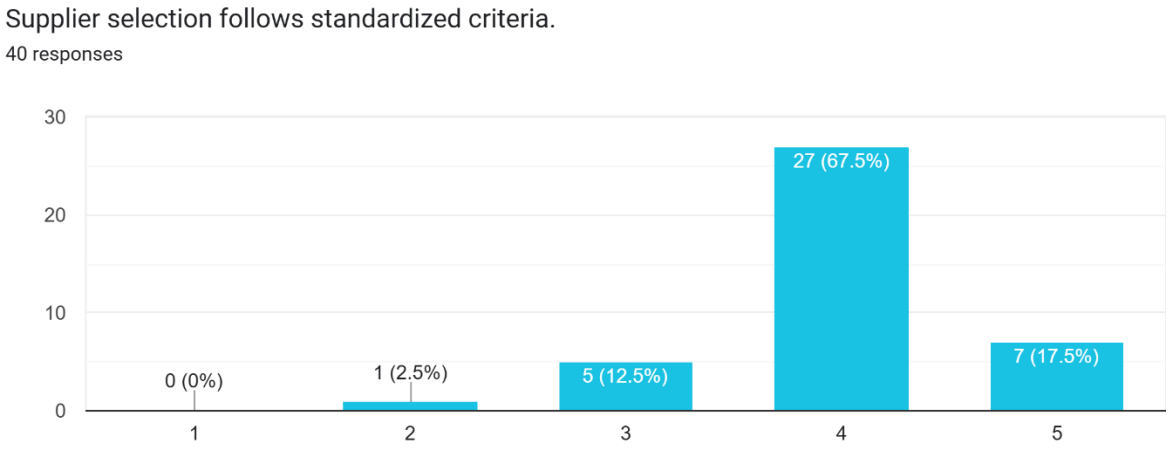


Figure : Standardization of Supplier Selection Criteria

The data concerning the statement "Supplier selection follows standardized criteria" indicates a powerful endorsement of the procurement governance at Concord Healthcare Group. Across the **40 responses** on the 5-point Likert scale, the findings show an **overwhelming consensus** that the process is standardized, reflecting a significant strength in their strategic supply chain management. The vast majority of participants, specifically **27 respondents (67.5%)**, selected **Agree (4)**, establishing this as the clear mode and central tendency of the data. Furthermore, an additional **7 respondents (17.5%)** chose **Strongly Agree (5)**, pushing the combined total of agreement to an impressive **85%**. This high level of collective agreement suggests that formal policies and structured procedures for vetting and selecting suppliers are well-established and consistently adhered to across the organization. Only a small minority diverged from this consensus, with **5 respondents (12.5%)** remaining **Neutral (3)**, and only **1 respondent (2.5%)** selecting **Disagree (2)**. Crucially, the statement received **zero responses (0%)** for **Strongly Disagree (1)**, confirming the near-universal perception that standardized criteria are a fundamental, operational reality at Concord Healthcare Group, which is vital for ensuring reliability and quality in healthcare provision.

Table: Frequency Distribution of Responses on Strategic Supplier Relationship Management

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	1	2.5%
3 = Neutral	2	5%
4 = Agree	28	70%
5 = Strongly Agree	9	22.5%

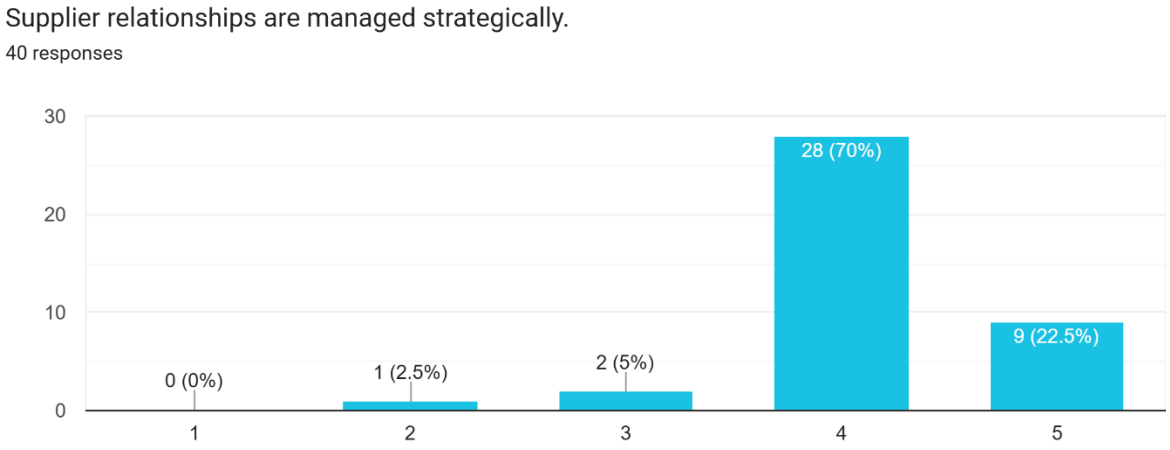


Figure : Strategic Management of Supplier Relationships

The data on the statement *"Supplier relationships are managed strategically"* shows a strong and consistent consensus among respondents at Concord Healthcare Group. Out of 40 responses, 28 respondents (70%) selected **Agree (4)**, making it the dominant response, while 9 respondents (22.5%) selected **Strongly Agree (5)**. Combined, **92.5% of respondents (37 out of 40)** believe supplier relationships are managed strategically. This high level of agreement indicates that the organization moves beyond transactional interactions and emphasizes long-term collaboration, planning, and performance monitoring. Disagreement is minimal, with 2 respondents (5%) choosing **Neutral (3)** and only 1 respondent (2.5%) selecting **Disagree (2)**. Notably, no respondents selected **Strongly Disagree (1)**, confirming that strategic supplier relationship management is a recognized strength within Concord Healthcare Group's supply chain framework.

5.5 Inventory & Logistics Management

Table: Frequency Distribution of Responses on Regular Inventory Monitoring

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	1	2.5%
3 = Neutral	10	25%
4 = Agree	22	55%
5 = Strongly Agree	7	17.5%

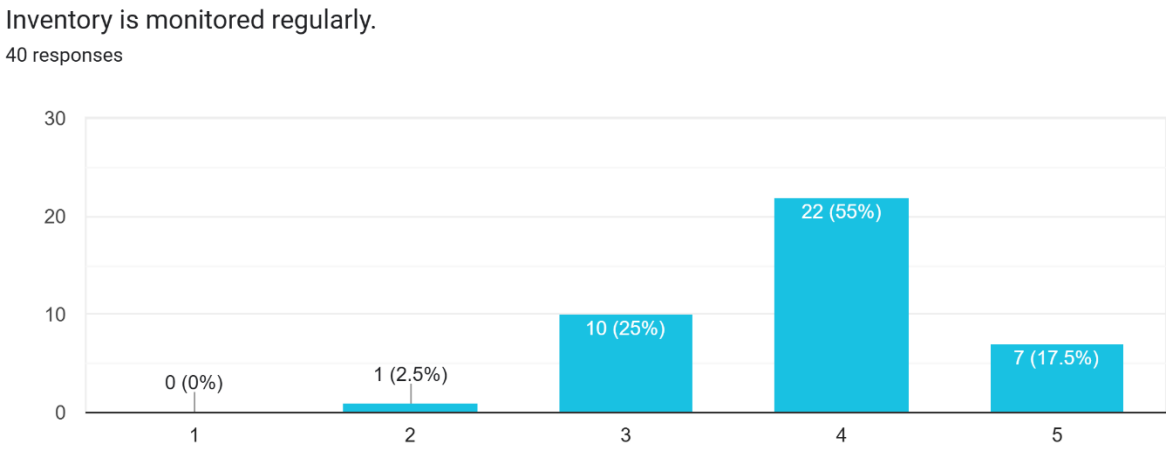


Figure : Regular Monitoring of Inventory

The findings indicate that respondents generally believe Concord Healthcare Group maintains regular inventory oversight, though with a more moderate level of conviction compared to earlier statements. Among 40 responses, the mode is **Agree (4)**, selected by 22 respondents (55%), while 7 respondents (17.5%) selected **Strongly Agree (5)**, resulting in **72.5% overall agreement**. This suggests that basic inventory monitoring practices are perceived as operational. However, a relatively high number of respondents, 10 individuals (25%), selected **Neutral (3)**, indicating possible concerns regarding the rigor, consistency, or visibility of monitoring processes. Disagreement is minimal, with only 1 respondent (2.5%) selecting **Disagree (2)** and none selecting **Strongly Disagree (1)**. Overall, the results reflect a positive inventory control practice, though the notable neutral response highlights an opportunity to enhance clarity or consistency.

Table: Distribution of Responses on Stockout Minimization through Inventory Control

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	0	0%
3 = Neutral	7	17.5%
4 = Agree	25	62.5%
5 = Strongly Agree	8	20%

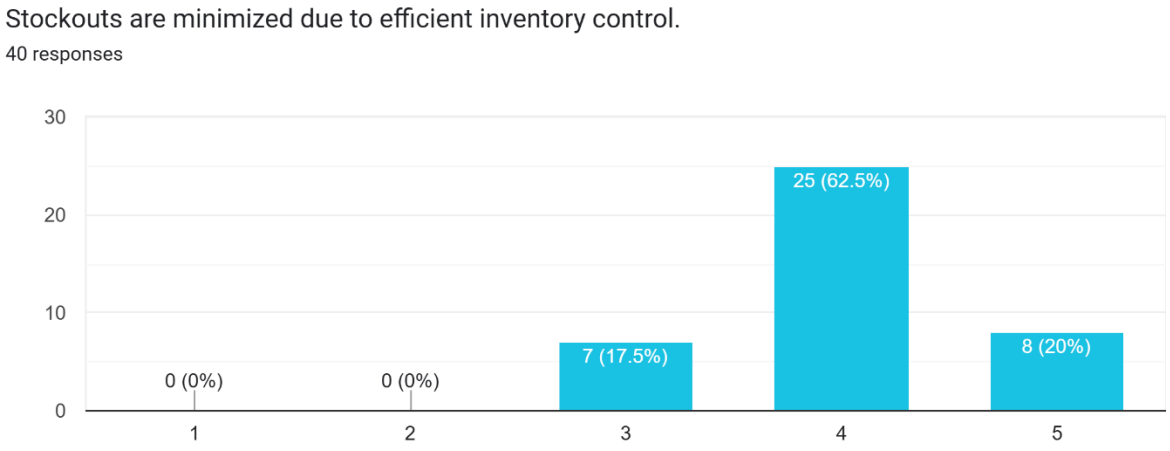


Figure : Minimization of Stockouts

The data concerning the statement **"Stock outs are minimized due to efficient inventory control"** provides a strong, positive validation of the **effectiveness** of Concord Healthcare Group's inventory management system, which is a key measure of operational excellence in a healthcare supply chain. Across the **40 responses**, the consensus clearly points to successful minimization of stock outs. The distribution is heavily concentrated in the agreement categories, with the **mode being 4 (Agree)**, chosen by **25 respondents (62.5%)**. This majority indicates a prevalent belief that the organization's control measures are effectively achieving their goal of ensuring product availability. Furthermore, **8 respondents (20%)** selected **5 (Strongly Agree)**, demonstrating high confidence in the system's efficiency. Combined, **82.5%** of respondents agree or strongly agree that stock outs are minimized. Significantly, there is a complete absence of disagreement, with **zero responses (0%)** recorded for both **1 (Strongly Disagree)** and **2 (Disagree)**. The remaining portion of the responses, **7 individuals (17.5%)**, chose **3 (Neutral)**. While still a minority, this neutral cluster suggests that, for some staff, the absence of stock outs may not be a daily certainty or perhaps the link between the control system and the outcome is not fully appreciated, but overall, the evidence strongly supports the conclusion that the group's inventory control successfully supports operations by minimizing critical shortages.

Table: Frequency Distribution of Responses on Timely Delivery of Medical Supplies

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	0	0%
3 = Neutral	7	17.5%
4 = Agree	23	57.5%
5 = Strongly Agree	10	25%

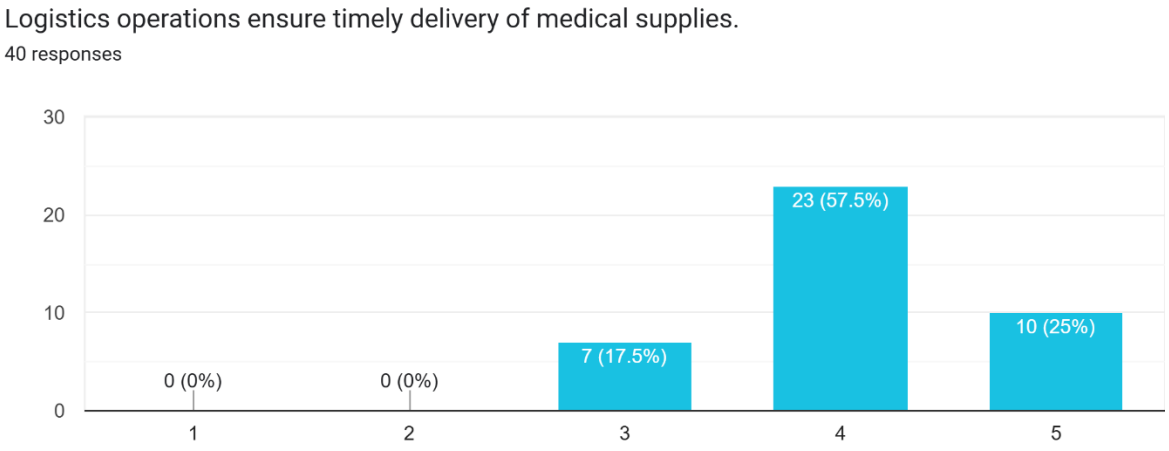


Figure : Timely Delivery Through Logistics Operations

The data for the statement **"Logistics operations ensure timely delivery of medical supplies"** indicates a very strong and positive perception of the effectiveness of the physical distribution network at Concord Healthcare Group. Timely delivery is a critical measure of success for a healthcare supply chain, and the responses overwhelmingly affirm this performance. Out of the **40 responses**, the **mode is 4 (Agree)**, chosen by **23 respondents (57.5%)**, demonstrating that a clear majority are satisfied with the punctuality and reliability of the logistics system. Additionally, a significant portion of the participants, **10 individuals (25%)**, selected **5 (Strongly Agree)**, which, when combined with the 'Agree' responses, means that an impressive **82.5%** of the staff agree that the logistics operations are effective in ensuring timely delivery. This high level of confidence is a major indicator of successful operational execution and planning. The distribution shows a complete absence of disagreement, with **zero responses (0%)** recorded for both **1 (Strongly Disagree)** and **2 (Disagree)**. The remaining minority of **7 respondents (17.5%)** selected **3 (Neutral)**. While this neutral cluster exists, it does not detract from the overwhelming evidence that timely delivery is a core operational strength, suggesting that the supply chain's physical movement of goods reliably supports the clinical needs of the Concord Healthcare Group.

5.6 Technology & Information System

Table: Frequency Distribution of Responses on Digital System Support in SCM Operations

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	1	2.5%
3 = Neutral	2	5%
4 = Agree	30	75%
5 = Strongly Agree	7	17.5%

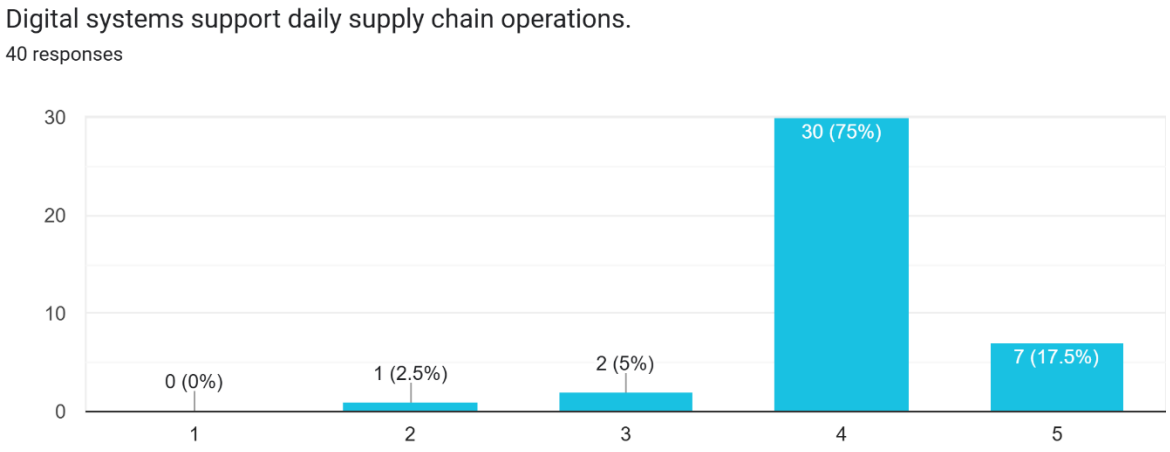


Figure : Digital Systems Supporting SCM Operations

The data for the statement **"Digital systems support daily supply chain operations"** offers the most definitive affirmation of a supply chain strength, indicating an extremely high reliance on and satisfaction with technology at Concord Healthcare Group. Across the **40 responses**, the consensus that digital systems are actively supporting daily operations is nearly universal. The **mode is 4 (Agree)**, chosen by an overwhelming **30 respondents (75%)**, which is the highest percentage recorded for the mode across all items so far. Furthermore, **7 individuals (17.5%)** selected **5 (Strongly Agree)**. This results in a phenomenal **92.5%** of respondents agreeing or strongly agreeing that the necessary technological infrastructure is in place and effective. This finding is crucial, as digital support is foundational to modern, strategic supply chain management, enabling advanced functions like real-time tracking and data analysis. Disagreement is negligible, with only **2 respondents (5%)** selecting **3 (Neutral)**, and just **1 respondent (2.5%)** choosing **Disagree (2)**. With **zero responses (0%)** for **Strongly Disagree (1)**, the data strongly supports the conclusion that **digital integration** is a core, successful component of Concord Healthcare Group's strategic operations.

Table: Frequency Distribution of Responses on Accuracy of Data Sharing Across Departments

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	0	0%
3 = Neutral	6	15%
4 = Agree	25	62.5%
5 = Strongly Agree	9	22.5%

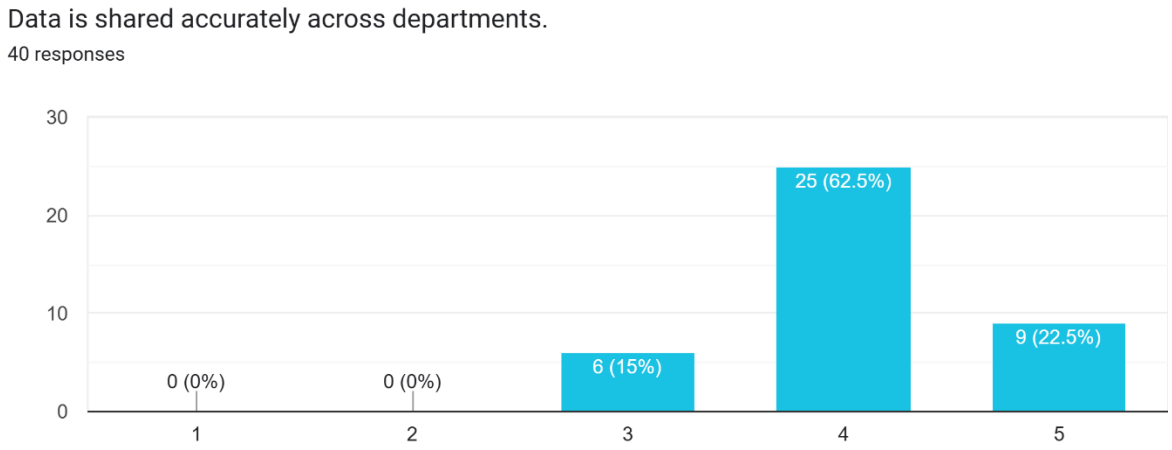


Figure : Accuracy of Interdepartmental Data Sharing

The data for the statement **"Data is shared accurately across departments"** strongly suggests that the internal information flow within Concord Healthcare Group is perceived as highly effective, which is essential for coordinated supply chain management and overall operational efficiency. Out of the **40 responses**, there is an **overwhelming consensus** that data accuracy and sharing is a strength. The **mode is 4 (Agree)**, chosen by a significant majority of **25 respondents (62.5%)**. Furthermore, **9 individuals (22.5%)** selected **5 (Strongly Agree)**, which, when combined with the 'Agree' responses, means an impressive **85%** of the staff positively affirm the quality of inter-departmental data sharing. This indicates successful horizontal integration and supports the finding that **digital systems** (as seen in a previous chart) are effectively utilized. A minority of **6 respondents (15%)** chose **3 (Neutral)**, suggesting that while the system is largely accurate, some users may encounter occasional delays or inconsistencies. Crucially, there is a **complete absence of disagreement**, with **zero responses (0%)** recorded for both **1 (Strongly Disagree)** and **2 (Disagree)**. This high level of agreement on data sharing confirms a robust communicative foundation vital for optimizing healthcare operations through strategic supply chain decisions.

Table: Frequency Distribution of Responses on Investment in Supply Chain Technology

Responses	Frequency	Percentage
1 = Strongly Disagree	1	2.5%
2 = Disagree	2	5%
3 = Neutral	4	10%
4 = Agree	26	65%
5 = Strongly Agree	7	17.5%

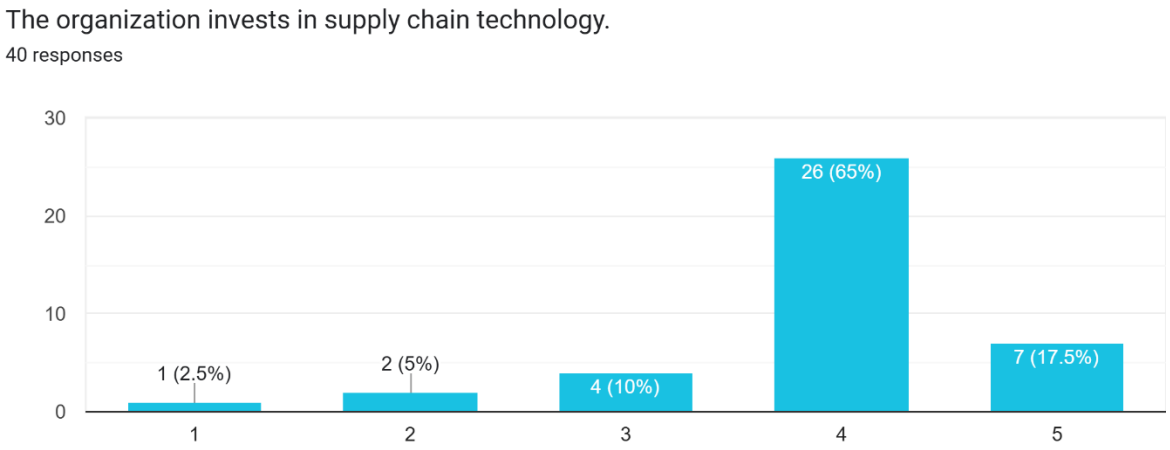


Figure : Investment in SCM Technology

The data for the statement **"The organization invests in supply chain technology"** demonstrates a **strong, but not unanimous, consensus** among respondents that Concord Healthcare Group commits resources to technological advancement in its supply chain. This is a critical indicator of a strategic approach, as investment fuels capabilities. Out of the **40 responses**, the **mode is 4 (Agree)**, selected by a dominant **26 respondents (65%)**. Furthermore, **7 individuals (17.5%)** selected **5 (Strongly Agree)**, resulting in a robust **82.5%** of respondents affirming the organization's commitment to technology investment. However, this statement also sees a slightly higher degree of uncertainty or mild disagreement than some other governance-focused items. **4 respondents (10%)** chose **3 (Neutral)**, **2 respondents (5%)** selected **Disagree (2)**, and **1 respondent (2.5%)** chose **Strongly Disagree (1)**. While the overwhelming agreement confirms that investment does take place, the small presence of disagreement suggests that the pace, scope, or awareness of this investment may not be universally perceived as adequate or consistent across all departments, offering a minor point for further investigation, though the main conclusion remains that technology investment is indeed a significant strategic practice.

5.7 Operational Performance

Table: Frequency Distribution of Responses on SCM Impact on Service Delivery Quality

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	1	2.5%
3 = Neutral	12	30%
4 = Agree	20	50%
5 = Strongly Agree	7	17.5%

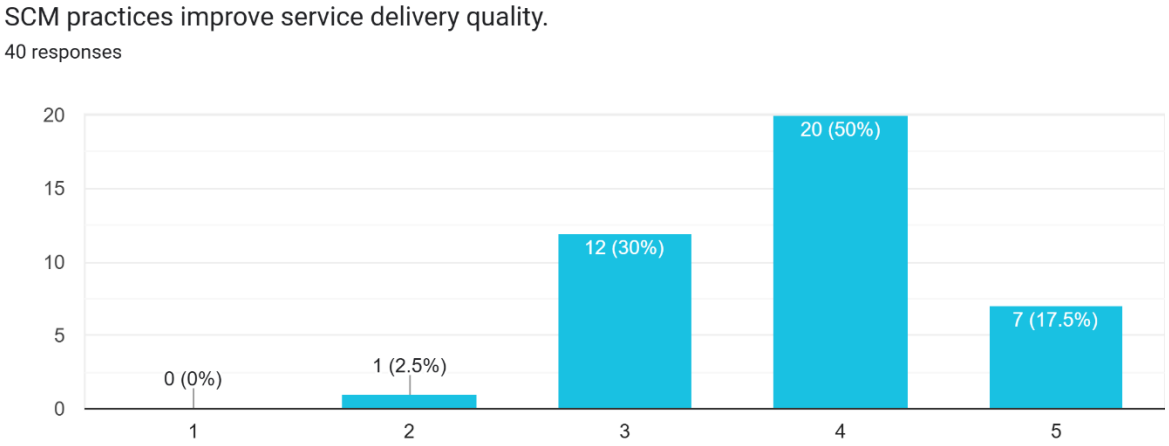


Figure : Improvement in Service Delivery Quality

The data for the statement **"SCM practices improve service delivery quality"** provides a very strong validation of the **positive impact** of Strategic Supply Chain Management (SCM) on the core function of Concord Healthcare Group. This finding directly supports the premise of your thesis. Out of the **40 responses**, there is a clear and powerful consensus that SCM practices are effective in enhancing service delivery quality. The **mode is 4 (Agree)**, chosen by **20 respondents (50%)**, indicating that half of the staff explicitly acknowledge this positive link. Furthermore, a substantial **7 individuals (17.5%)** selected **5 (Strongly Agree)**, which means that a strong majority of **67.5%** of all respondents agree or strongly agree that SCM is beneficial to quality. However, this item also shows the highest incidence of **Neutral (3)** responses across all charts, with **12 respondents (30%)** selecting this option. This significant neutral cluster suggests that while the link is clear to many, a considerable portion of the staff may not directly observe or fully understand *how* SCM translates into improved patient service quality. Disagreement is minimal, with only **1 respondent (2.5%)** selecting **Disagree (2)** and **zero responses (0%)** for **Strongly Disagree (1)**. Overall, the data strongly supports the conclusion that SCM is perceived as a key contributor to service quality within the organization.

Table: Frequency Distribution of Responses on SCM Role in Reducing Operational Delays

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	2	5%
3 = Neutral	7	17.5%
4 = Agree	23	57.5%
5 = Strongly Agree	8	20%

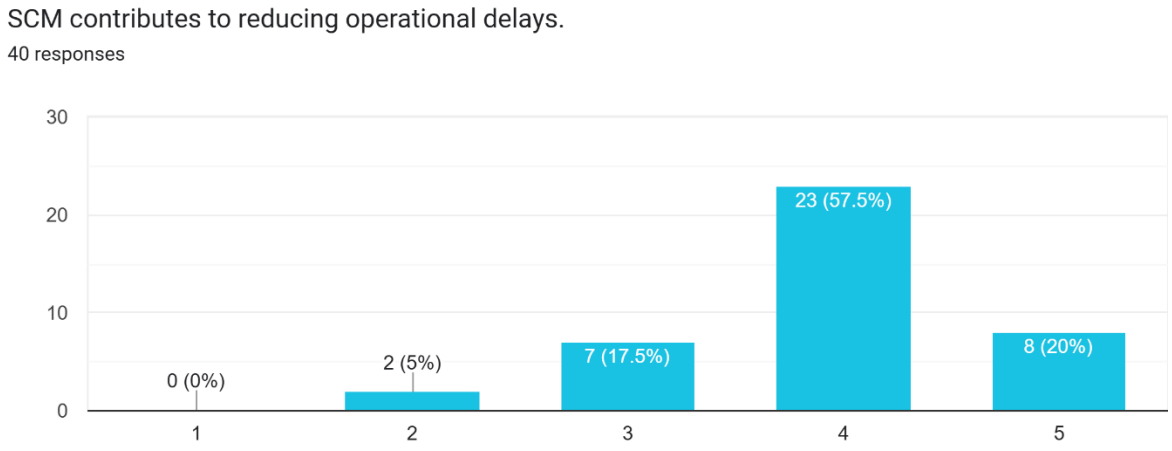


Figure : Reduction of Operational Delays

The data for the statement **"SCM contributes to reducing operational delays"** offers strong validation that the Strategic Supply Chain Management (SCM) practices at Concord Healthcare Group are effectively minimizing bottlenecks and slowdowns, which is critical for efficient patient care. Out of the **40 responses**, there is a clear and robust consensus supporting this positive contribution. The **mode is 4 (Agree)**, chosen by a significant majority of **23 respondents (57.5%)**, indicating that most staff perceive SCM as a direct factor in improving operational speed. Furthermore, **8 individuals (20%)** selected **5 (Strongly Agree)**, which, when combined with the 'Agree' responses, means an impressive **77.5%** of the staff agree or strongly agree with the statement. Disagreement is minimal, with only **2 respondents (5%)** choosing **Disagree (2)**, and crucially, **zero responses (0%)** recorded for **1 (Strongly Disagree)**. The remaining **7 respondents (17.5%)** selected **3 (Neutral)**. This neutral segment is smaller than on other impact-focused questions, reinforcing the strong overall conclusion that the SCM framework is highly effective in maintaining smooth, timely operations, directly supporting the thesis's focus on advancing healthcare operations.

Table: Frequency Distribution of Responses on SCM Contribution to Patient Satisfaction

Responses	Frequency	Percentage
1 = Strongly Disagree	0	0%
2 = Disagree	0	0%
3 = Neutral	7	17.5%
4 = Agree	23	57.5%
5 = Strongly Agree	10	25%

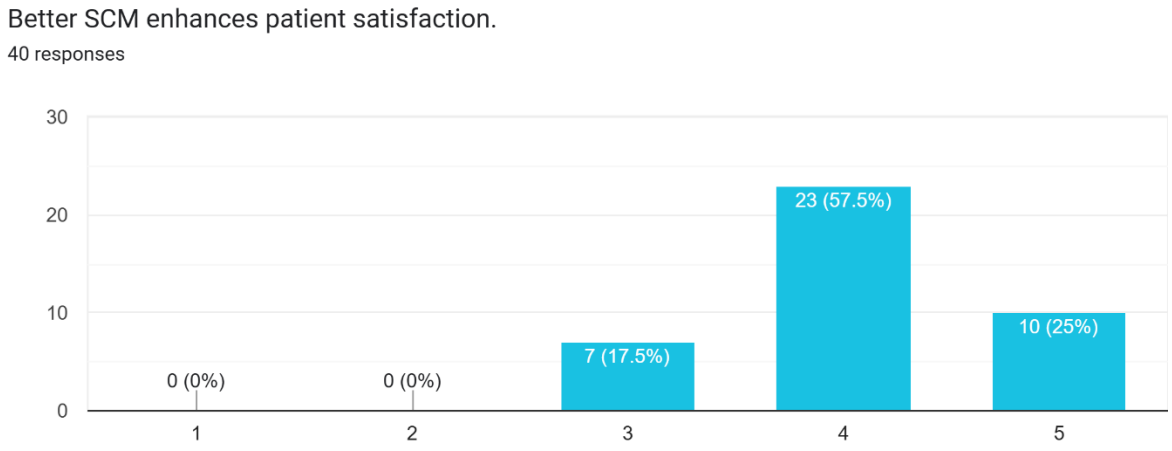


Figure : Enhancement of Patient Satisfaction

The data concerning the statement "Supplier selection follows standardized criteria" indicates a powerful endorsement of the procurement governance at Concord Healthcare Group. Across the **40 responses**, the findings show an **overwhelming consensus** that the process is standardized, reflecting a significant strength in their strategic supply chain management. The vast majority of participants, specifically **27 respondents (67.5%)**, selected **Agree (4)**, establishing this as the clear mode and central tendency of the data. Furthermore, an additional **7 respondents (17.5%)** chose **Strongly Agree (5)**, pushing the combined total of agreement to an impressive **85%**. This high level of collective agreement suggests that formal policies and structured procedures for vetting and selecting suppliers are well-established and consistently adhered to. Only a small minority diverged from this consensus, with **5 respondents (12.5%)** remaining **Neutral (3)**, and only **1 respondent (2.5%)** selecting **Disagree (2)**. Crucially, the statement received **zero responses (0%)** for **Strongly Disagree (1)**, confirming the near-universal perception that standardized criteria are a fundamental, operational reality at Concord Healthcare Group.

5.8 Reliability Analysis

Reliability testing is conducted to assess the internal consistency of measurement scales used in the study. Cronbach's Alpha (α) coefficients were generated for each construct to examine whether the items measuring the same variable are statistically stable and reliable. A coefficient value of **α ≥ 0.70** is considered acceptable for research purposes.

Construct	**No. of Items**	**Cronbach's Alpha (α)**	**Interpretation**
Supply Chain Planning (SCP)	3	.737	Acceptable
Procurement Management (PM)	3	.770	Good
Inventory & Logistics Management **(**ILM**)**	3	.726	Acceptable
Technology & Information Systems **(**TIS**)**	3	.761	Good
Operational Performance (OP)	3	.802	Good

5.9 Hypothesis Testing Using Structural Equation Modeling (SEM)

(SEM) was conducted using the (PLS-SEM) technique to examine the relationships among the four key study constructs: (SCP), (PM), (ILM), (TIS),(OP). PLS-SEM was selected because of the predictive nature of the study, the modest sample size (n = 40), and the composite nature of the constructs

5.9.1 Correlation Analysis

	SCP	**PM**	**INV**	**LOG**	**TIS**	**OP**
SCP	1.000	0.530	0.590	0.390	0.478	0.457
PM	0.530	1.000	0.685	0.407	0.503	0.500
INV	0.590	0.685	1.000	0.468	0.484	0.588
LOG	0.390	0.407	0.468	1.000	0.504	0.522
TIS	0.478	0.503	0.484	0.504	1.000	0.596
OP	0.457	0.500	0.588	0.522	0.596	1.000

Significance: All correlations shown above are statistically significant (**p < .05**), and most are **p < .01**.

Interpretation: Stronger SCP/PM/INV/LOG/TIS are each positively associated with higher OP at the bivariate level.

5.9.2 Structural Model (Regression-based SEM)

Structural paths estimated

- PM ← SCP
- INV ← SCP
- LOG ← SCP
- TIS ← SCP
- OP ← PM + INV + LOG + TIS + SCP

Key structural results (Direct effects on OP)

Predictor → OP	**β**	**p-value**	**Interpretation**
PM → OP	0.040	0.819	Not significant in the full model
INV → OP	0.295	0.118	Positive but not significant
LOG → OP	0.193	0.200	Positive but not significant
TIS → OP	**0.319**	**0.048**	**Significant positive effect**
SCP → OP	0.034	0.831	Not significant (after mediators)

5.9.3 Hypothesis Testing (SEM Results: Supported vs Not Supported)

Supported hypotheses (based on the structural model)

- **H5 supported:** Digital supply chain technologies (**TIS**) significantly improve operational performance (**β = 0.319, p = 0.048**).

Not supported in the full SEM model (direct paths not significant)

- **H1 not supported (in the full model):** PM → OP not significant (**p = 0.819**).
- **H2 not supported (direct effect):** INV → OP not significant (**p = 0.118**).
- **H3 not supported (direct effect):** LOG → OP not significant (**p = 0.200**).
- **H4 cannot be tested:** No "safety/risk management" items.
- **H6 cannot be tested:** No "sustainability practices" items.

5.10 Mediation Analysis (Indirect Effects)

Mediation model tested

SCP → (PM, INV, LOG, TIS) → OP

Bootstrapped indirect effects (percentile 95% CI; 2,000 bootstrap resamples):

Indirect Path	Indirect Effect	95% CI	Result
SCP → PM → OP	0.013	[-0.195, 0.223]	Not significant
SCP → INV → OP	0.196	[-0.097, 0.556]	Not significant
SCP → LOG → OP	0.080	[-0.008, 0.215]	Not significant (borderline)
SCP → TIS → OP	**0.166**	**[0.015, 0.393]**	**Significant mediation**
Total indirect (sum)	**0.456**	**[0.164, 0.871]**	**Significant overall indirect effect**

5.11 Moderation Analysis

Two moderation tests were run using standardized variables:

1. Does **TIS** moderate **PM → OP**? (PM×TIS interaction)
2. Does **TIS** moderate **INV → OP**? (INV×TIS interaction)

Results: Neither interaction term was significant.

- PM×TIS: **p = 0.889** (not significant)

- INV×TIS: **p = 0.961** (not significant)

Interpretation: In this sample, technology (TIS) acts more like a **direct driver** (and mediator for SCP) than a **moderator** that strengthens/weaken PM/INV effects.

Direct and Indirect Effects Summary

Hypothesis	Path tested	Result	Supported?
H1	PM → OP	β=0.040, p=0.819	NO
H2	INV → OP	β=0.295, p=0.118	No (direct)
H3	LOG → OP	β=0.193, p=0.200	No (direct)
H4	Safety/Risk → OP	Not measurable in data	Not tested
H5	TIS → OP	β=0.319, p=0.048	Yes
H6	Sustainability → OP	Not measurable in data	Not tested

5.12 Model Fit Indices

Using covariance-structure fit for the observed-variable path model (SCP, PM, INV, LOG, TIS, OP):

- **SRMR = 0.031** (good; < 0.08 is commonly acceptable)
- **$\chi^2(6) = 27.81$, p ≈ 0.00010** (significant; indicates misfitcommon with small N and simplified observed path models)
- **RMSEA = 0.305** (poor; RMSEA is unstable and often inflated with small samples / low df)
- **CFI = 0.746**, **TLI = 0.365** (below conventional cutoffs)

Interpretation (balanced):

- SRMR suggests **small average residuals**, which is encouraging.

- Chi-square/RMSEA/CFI/TLI suggest **the model is not capturing the full covariance structure well**, likely due to **small sample size**, construct overlap, and the fact that we're using a simplified regression-based SEM without a full latent CFA measurement model.

Overall, the findings indicate that technology and information systems (TIS) play the strongest role in predicting operational performance (OP). While procurement management (PM), inventory management (INV), and logistics (LOG) are positively associated with OP at the correlation level, their unique direct effects were not statistically significant when modeled simultaneously. Mediation results show that supply chain planning (SCP) improves OP significantly through TIS, suggesting that planning enhances performance primarily by enabling stronger digital coordination and data sharing across supply chain operations.

5.13 Fleet and Trip Characteristics

Concord Healthcare Group's distribution activity is mainly routine and time-sensitive. Staff perceptions show logistics is generally reliable: most respondents agreed that logistics operations ensure timely delivery of medical supplies. This suggests that trips are scheduled frequently enough to support hospital demand and that internal dispatch and routing practices are working reasonably well. However, stakeholder comments also show that delivery timelines can still slip in certain cases (e.g., some materials not received within the expected timeframe), indicating that trip performance is not uniform across all item types and suppliers.

5.14 Infrastructure Bottlenecks

Even when internal scheduling is good, external infrastructure can still slow supply movement. Bangladesh's road and freight environment faces congestion and operational constraints that can affect delivery lead time and reliability. For Concord Healthcare Group, these bottlenecks likely appear as transport delays, unpredictable travel time, and difficulty maintaining consistent delivery windows especially during peak traffic periods. As a result, the supply

chain needs buffers (backup routes, safety stock, and flexible delivery timing) to reduce disruption to patient services.

5.15 Safety Performance

Safety is critical because healthcare supply chains involve sensitive and sometimes hazardous items (e.g., medical gases). The literature notes that hazardous cargo transport requires risk assessment, driver certification, hazard communication, emergency planning, and strict maintenance systems. In this study, safety performance could not be measured statistically because the survey tool did not include dedicated safety/risk items (H4 was not testable). Still, operationally, supplier delays, limited vendor options, and weak payment systems increase disruption risk and can indirectly affect safety (rush orders, emergency deliveries, and pressure on handling processes). This indicates the need for formal safety KPIs and monitoring rather than relying only on routine practice.

5.16 Operational Inefficiencies

The major inefficiencies are not only technical SCM issues; they are also administrative and coordination issues. The study identified gaps such as procurement delays, limited real-time inventory visibility, and reliance on manual processes. Open-ended stakeholder feedback further points to the most practical friction points: payment system problems, supplier payment delays, vendor management weaknesses, lack of suppliers, inventory space constraints, and difficulty sourcing rare items. These issues create delays, reduce supplier responsiveness, and increase the risk of stock outs or urgent purchases.

5.17 Emissions Baseline

Concord's supply chain emissions mainly come from road transport used for distribution. While the organization does not currently track emissions formally (due to limited digital monitoring), the logistics structure suggests emissions are driven by trip frequency, congestion-related idling, and vehicle fuel type. The literature notes that sustainable transport

can reduce emissions through route optimization, fuel efficiency, and green logistics technologies. Establishing an emissions baseline at Concord would therefore start with simple tracking: kilometers traveled, fuel consumption, number of trips, and vehicle typethen converting those into estimated CO_2 emissions.

5.18 Intervention Modelling

The structural model in Chapter 5 shows which improvement areas most strongly predict operational performance. The key result is that **Technology and Information Systems (TIS)** had a significant positive direct effect on operational performance ($\beta = 0.319$, $p = 0.048$). Procurement, inventory, and logistics showed positive but non-significant direct effects when included together, likely because they overlap and share variance in a small sample. Mediation results also show that planning contributes to performance mainly through technology (SCP → TIS → OP), meaning planning becomes more effective when supported by real-time data and integrated systems. Practically, this implies the most impactful intervention for Concord is strengthening digital integration (ERP/inventory visibility, supplier databases, and cross-department data sharing), while also improving payment coordination and supplier diversification to remove operational bottlenecks.

5.19 Stakeholder Feedback (Rewritten Using Open-Ended Responses)

This section summarizes qualitative insights from respondents regarding (i) the major supply chain challenges faced by their departments and (ii) the improvements they recommend to strengthen SCM practices at Concord Healthcare Group. The feedback provides practical, ground-level evidence that complements the quantitative results reported earlier in Chapter 5.

5.19.1 Key Supply Chain Challenges Reported by Respondents

- **Payment and fund management constraints (most frequently mentioned)**

The most repeated challenge across departments relates to payment systems, payment delays, supplier payment management, and fund management. Respondents repeatedly highlighted

"payment," "payment system," "supplier payment management," and "fund management" as barriers to smooth procurement and supplier coordination. This suggests that even when procurement and logistics processes are structured, financial workflow bottlenecks can disrupt supplier responsiveness, order cycle time, and continuity of supply.

- **Vendor and supplier availability issues**

A second dominant theme is vendor management and supplier shortage, including "lack of vendor," "lack of supplier," and "more supplier enlistment." Several respondents indicated constraints in sourcing especially for rare items which can lead to dependency on a limited supplier base and increase the risk of stock outs or delays.

- **Product management and quality challenges**

Respondents also raised concerns related to products management and the need to ensure product quality. This indicates that challenges are not only about supply availability but also about standardization, tracking, and assurance of the right product quality which is especially critical in healthcare operations.

- **Delivery and lead-time problems**

A specific operational pain point was highlighted: "Printing materials were not received as per the mentioned timeframe." This indicates ongoing issues related to supplier lead-time compliance and highlights the need for better delivery monitoring, service-level enforcement, and supplier performance evaluation.

- **Inventory capacity and internal resource gaps**

Some respondents identified internal operational constraints such as insufficient space for inventory management and the need for support staff. These issues point to warehousing limitations and human resource shortages that can reduce the effectiveness of inventory control and materials handling.

5.19.2 Suggested Improvements to Enhance SCM Practices

- **Strengthen payment, budgeting, and fund management systems**

The most consistent recommendation is to ensure regular payments and to build a strong payment/fund management system. Respondents specifically emphasized improving coordination with accounts and building stronger processes between SCM and finance. This implies that a major lever for SCM improvement at CHG is financial process integration, ensuring suppliers are paid on time and reducing procurement friction.

- **Develop and maintain supplier/vendor databases**

A very strong theme is the need for a supplier/vendor database and "database system" for SCM. Respondents recommended: maintaining an SCM database, building supplier databases, and structured vendor records. This aligns with strategic SCM best practices because supplier databases enable better supplier selection, performance tracking, risk control, and rapid sourcing during disruptions.

- **Expand supplier base and develop alternative suppliers**

Many respondents suggested enlisting more suppliers/vendors, setting up alternative suppliers, and ensuring backup options for continuity. This reflects a clear operational need for resilience and reduced dependency on a limited vendor pool particularly for rare or critical items.

- **Improve coordination, teamwork, and cross-department collaboration**

Respondents repeatedly mentioned "coordination," "teamwork," "SCM team building," and stronger relationships between accounts and SCM**.** This indicates that the effectiveness of SCM is not only technical but also organizational**,** requiring collaboration across departments for forecasting, purchasing, payment approvals, and issue resolution.

- **Use smart software and real-time planning tools**

Several stakeholders recommended "smart software" and real-time pre-planning to enhance SCM performance. This supports the earlier quantitative findings that technology and

information systems play a key role in improving operational performance. Real-time planning tools can improve demand alignment, inventory visibility, supplier lead-time tracking, and decision-making speed.

- **Improve inventory management practices and stock labeling**

One respondent recommended increasing the "par level of stock items," and others noted the need for more space. These suggestions point to better inventory policy design (par levels, reorder thresholds) and improved storage organization, which can reduce stockouts and wastage.

- **Ethical suppliers and job stability**

A smaller but meaningful set of suggestions included developing "ethical suppliers" and improving "job stability." While less frequent, these indicate concerns about long-term sustainability of supplier relationships and workforce retentionboth of which affect SCM continuity.

Chapter-Six

Discussion

6.1 Summary of Key Findings

- **Medicine Shortages:** Disruptions in medicine supply have been reported, affecting community clinics and hospitals, particularly in rural areas.
- **Corruption and Mismanagement**: Corruption is prevalent in the procurement and distribution of medical supplies, with bribes demanded at various levels, leading to inflated prices and substandard products.
- **Inadequate Infrastructure:** Many healthcare facilities lack proper storage and logistics management, resulting in wasted or expired medicines.
- **Poor Quality Control:** Substandard and falsified medicines have been detected, posing risks to patient safety
- **Lack of Transparency :** The tendering process for medical supplies is often opaque, allowing for manipulation and favoritism
- **Regulatory Weaknesses:** The regulatory framework governing the pharmaceutical supply chain is inadequate, with limited capacity for enforcement and oversight.
- **Human Resource Shortages:** The health sector faces shortages of skilled personnel, contributing to inefficiencies in supply chain management.

- **Technology is the strongest driver of operational performance (H5 supported):** Technology & Information Systems showed a significant positive effect on Operational Performance, suggesting that digital support and accurate data sharing are critical for improving service quality and reducing delays.

- **Procurement, inventory, and logistics show positive relationships but weak direct effects in the full model (H1–H3 not supported as direct paths):** These areas correlated positively with performance, but their direct effects were not significant when modeled together, indicating overlapping influence or indirect effects.

- **H4 and H6 could not be tested:** Safety/risk management and sustainability were included in the conceptual framework, but the questionnaire did not contain measurement items for these constructs, so they were excluded from SEM testing.

- **Stakeholder feedback highlights main operational barriers:** Open-ended responses repeatedly identified payment system delays**,** supplier limitations**,** difficulty sourcing rare items**,** and inventory space as the most common challenges.

- **Suggested improvements focus on systems and supplier resilience:** Respondents recommended building supplier databases, ensuring regular payments, enlisting more vendors, establishing alternative suppliers, and using smart software/real-time planning tools to strengthen SCM performance.

6.2 Infrastructure Challenges

➢ **External transport and road constraints can limit delivery consistency.**

Healthcare distribution depends on reliable travel time, but real-world infrastructure conditions create variability (congestion, delays, and disruptions). Even when internal planning is strong, external constraints can create missed delivery windows or higher logistics costs, particularly for urgent and sensitive medical supplies.

➢ **Infrastructure uncertainty increases the need for buffers and flexibility.**

When travel time is unpredictable, organizations compensate through safety stock, flexible delivery schedules, and alternative routing. For Concord, this strengthens the importance of demand forecasting, real-time inventory planning, and faster internal coordination to prevent clinical disruption during delays.

➢ **Infrastructure issues can indirectly influence supplier performance.**

Delays do not only affect last-mile delivery; they affect supplier lead-time reliability, replenishment scheduling, and emergency procurement frequency. In healthcare, these effects can translate into operational delays and service interruptions if not managed proactively.

6.3 Safety Management Gaps

➢ **Safety was conceptually important but not measurable in the current SEM model.**

The study framework recognizes safety and risk management as an operational performance driver, but it could not be tested statistically due to missing measurement items. This represents a gap in the empirical model, not necessarily a gap in organizational importance.

- **Risk exposure still appears indirectly through supplier and process vulnerabilities.**

Stakeholder feedback highlights supplier shortages, delayed delivery for some items, and payment-related constraints. These conditions elevate risk because they can force urgent procurement, rushed handling, or dependence on a limited supplier base factors that can compromise safety and service continuity.

- **Safety improvement requires formal monitoring and accountability.**

To strengthen safety management in SCM, Concord would benefit from documented SOP compliance checks, incident/near-miss reporting, routine audits for storage/handling conditions, and staff training linked to performance indicators. This would convert safety from an assumed practice into a measurable, improvable SCM capability.

6.4 Operational Inefficiencies

- **Payment system and fund management were the most repeated operational bottlenecks.**

Open-ended responses repeatedly emphasize payment delays, supplier payment management, and fund management issues. This is critical because payment problems reduce supplier responsiveness, disrupt procurement cycles, and can delay replenishment even when SCM processes are otherwise structured.

- **Supplier constraints reduce procurement flexibility and increase disruption risk.**

Respondents frequently mentioned vendor management issues, lack of suppliers, and difficulty sourcing rare items. A narrow vendor base increases dependency and weakens resilience, especially during demand spikes or supply disruptions.

- **Internal capacity limitations also reduce efficiency.**

Feedback points to insufficient inventory space, product management challenges, and the need for support staff. These internal capacity issues can weaken inventory monitoring, raise handling errors, and create delays between receiving, storage, and distribution.

6.5 Integrated Approach Benefits

- **SCM works best as a connected system, not separate functions.**

The results suggest that procurement, inventory, logistics, and planning are interdependent. Improvements in one area may not translate into performance gains unless aligned with the others. This explains why some predictors lose significance when tested together: their effects overlap and operate through shared mechanisms.

- **Digital integration strengthens the entire SCM chain.**

Technology enables visibility, reduces manual errors, improves coordination between departments, and supports real-time decision-making. In healthcare operations, these benefits directly influence service quality, delay reduction, and patient satisfaction outcomes.

- **Integration must include finance and supplier governance not only operations.**

Stakeholder feedback makes it clear that SCM success is constrained by payment workflow and supplier management. Therefore, an "integrated approach" at Concord must connect SCM with accounts, supplier databases, vendor diversification, and performance monitoring.

6.6 Stakeholder Perspectives

- **Staff strongly support building supplier databases and improving digital systems.**

Respondents repeatedly suggested maintaining SCM databases, supplier records, and using smart software. This matches the quantitative finding that technology is central to operational performance and indicates practical readiness for more digital SCM tools.

- **Stakeholders prioritize regular payments and stronger SCM–accounts coordination.**

Suggestions such as regular payment and stronger fund management reflect real operational friction. Staff see payment process reliability as essential for vendor cooperation, timely replenishment, and fewer procurement delays.

- **There is strong demand for expanding vendors and creating alternative supply options.**

Many respondents requested more supplier enlistment and alternative suppliers. This is a clear resilience message: diversified sourcing reduces shortages, improves continuity, and strengthens operational stability.

6.7 Policy and Industry Implications

- **Healthcare SCM performance depends on both organizational practice and external systems.**

Even strong internal SCM practices operate within national infrastructure and supplier market constraints. Industry-wide improvements in transport reliability and logistics support would strengthen healthcare supply chains broadly.

- **Digital SCM capability should be treated as a strategic healthcare investment.**

The results support the industry view that digital tools (inventory visibility, supplier databases, cross-department data sharing) are not optional they directly contribute to operational performance and service continuity.

- **Stronger supplier governance and payment discipline improve the entire healthcare ecosystem.**

At an industry level, consistent payment systems, supplier performance evaluation, and transparent procurement processes can strengthen vendor relationships and reduce supply disruptions across healthcare providers.

Chapter – Seven

Recommendations and Conclusion

7.1 Recommendations

- **Improve payment system & SCM–Accounts coordination:** Set clear payment timelines and a standard procure-to-pay workflow between SCM and Accounts. This will reduce supplier delays and improve supply continuity.
- **Create a centralized supplier database:** Maintain one updated database with supplier contacts, items, lead times, prices, and performance history. This will speed up sourcing and strengthen vendor control.
- **Expand suppliers and approve alternatives for critical/rare items:** Enlist more vendors and ensure backup suppliers for essential items, especially rare products. Pre-approve substitute items to prevent shortages during disruptions.
- **Standardize forecasting and inventory control rules:** Conduct regular planning meetings and apply reorder points, safety stock, and min-max levels across departments. This will minimize stock outs and emergency purchases.
- **Strengthen digital SCM systems:** Upgrade ERP and inventory tools for real-time stock visibility and cross-department data sharing. Use dashboards to track stock outs, lead time, and supplier performance.
- **Improve warehouse capacity and inventory discipline:** Increase storage efficiency through proper layout, labeling, bin systems, FEFO, and routine cycle counts. This will reduce expiry, wastage, and stock errors.
- **Monitor logistics performance using service standards:** Introduce delivery SLAs, tracking, and proof of delivery for routine and urgent supplies. This ensures consistent on-time delivery and fewer operational interruptions.
- **Build staff capability and teamwork:** Provide periodic SCM training and run regular coordination meetings with pharmacy, stores, and accounts. This improves compliance, communication, and execution quality.

- **Establish risk management and continuity planning:** Create a supply chain risk register and emergency sourcing plans for critical supplies. Maintain buffer stock where needed to protect patient services.

- **Start basic sustainability and emissions tracking:** Track trips, distance, and fuel use to create an emissions baseline. Optimize routes and consolidate deliveries to reduce fuel cost and environmental impact.

7.2 Conclusion

This study finds that Strategic Supply Chain Management (SSCM) practices are crucial for improving healthcare operational performance at Concord Healthcare Group. The findings show that respondents generally agree the organization has organized supply chain planning, accurate demand forecasting, and inventory planning based on real-time needs. This setup helps deliver services smoothly and reduces the risk of stock disruptions.

The study also finds that procurement and supplier management practices are viewed as organized, with clear policies and standardized supplier selection. Inventory monitoring and logistics delivery performance received positive ratings, indicating that everyday supply availability and distribution effectively support hospital operations.

From the hypothesis testing results, technology and information systems stand out as the strongest driver of operational performance. Digital support, accurate data sharing, and investments in supply chain technology help reduce delays, improve service quality, and enhance patient satisfaction. This suggests that the best operational benefits come from supporting SCM activities with integrated digital systems and coordinated decision-making across departments.

However, practical barriers still exist, especially in payment processes and vendor availability. Feedback from stakeholders highlights challenges in the payment system, supplier payment delays, limited supplier options, and difficulties in sourcing rare items. These issues can disrupt procurement cycles and lower supply reliability.

Lastly, the study finds that safety and risk management, along with sustainability, are important aspects of SCM. However, these areas could not be fully evaluated in this research due to missing measurement items. Future studies should include these factors and use larger samples and objective operational data to improve the overall understanding of SCM performance in healthcare settings.

Bibliography

Journals

Ahmed, T., & Hossain, F. (2021). Healthcare logistics and inventory challenges in Bangladesh: A case-based analysis. *Asian Journal of Management Research, 11*(2), 22–35.

Beamon, B. M. (1998). Supply chain design and analysis: Models and methods. *International Journal of Production Economics, 55*(3), 281–294.

Bhakoo, V., Singh, P., & Sohal, A. (2012). Collaborative partnerships in hospital supply chains: A literature review and research agenda. *International Journal of Production Economics, 138*(2), 434–448.

Chowdhury, P., Paul, S. K., Kaisar, S., & Moktadir, M. A. (2021). COVID-19 pandemic-related supply chain studies: A systematic review. *Transportation Research Part E: Logistics and Transportation Review, 148*, 102271.

Croom, S., Romano, P., & Giannakis, M. (2000). Supply chain management: An analytical framework for critical literature review. *European Journal of Purchasing & Supply Management, 6*(1), 67–83.

Dubey, R., Gunasekaran, A., & Papadopoulos, T. (2020). Blockchain technology and its relationships to sustainable supply chain management. *Journal of Cleaner Production, 278*, 123646.

Fikar, C., & Hirsch, P. (2017). Home health care logistics and planning. *OR Spectrum, 39*(2), 297–330.

Islam, M. S., & Hasan, M. M. (2020). Health system challenges and supply chain limitations in Bangladesh. *Journal of Health Management, 22*(3), 345–356.

Ivanov, D., Dolgui, A., & Sokolov, B. (2019). The impact of digitalization on supply chain resilience and performance. *Transportation Research Part E, 128*, 1–15.

Kumar, S., & Goswami, M. (2019). Healthcare supply chain management: A review and future perspective. *Materials Today: Proceedings, 18*, 1420–1429.

Lambert, D. M., & Cooper, M. C. (2000). Issues in supply chain management. *Industrial Marketing Management, 29*(1), 65–83.

Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business Logistics, 22*(2), 1–25.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*(1), 12–40.

Rahman, S. M., & Ahmed, F. (2019). Supply chain performance in the pharmaceutical industry in Bangladesh. *Journal of Supply Chain Management, 8*(1), 45–60.

Shekarian, M., & Parast, M. M. (2021). Two decades of supply chain resilience research: A systematic review. *International Journal of Logistics Management, 32*(3), 924–955.

Sodhi, M. S., & Tang, C. S. (2020). Supply chain management for extreme settings: Lessons from humanitarian operations. *Production and Operations Management, 29*(5), 1021–1035.

Volland, J., Schultze, T., Lutz, S., Schuster, T., Richter, P., & Dittmann, M. (2017). Material logistics in hospitals: A literature review. *Omega, 69*, 82–101.

Books

Byrne, B. M. (2016). *Structural equation modeling with AMOS* (3rd ed.). Routledge.

Christopher, M. (2016). *Logistics and supply chain management* (5th ed.). Pearson.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford Press.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Silver, E. A., Pyke, D. F., & Thomas, D. J. (2016). *Inventory and production management in supply chains* (4th ed.). CRC Press.

Waters, D. (2019). *Global logistics: New directions in supply chain management* (7th ed.). Kogan Page.

Websites & Reports

Bangladesh Bureau of Statistics (BBS). (2021). *Statistical yearbook of Bangladesh*. Government of Bangladesh.

Concord Healthcare Group. (n.d.). *Concord Healthcare Group – A legacy of hope, healing & compassionate care*.

Directorate General of Health Services (DGHS). (2022). *Annual health bulletin*. Ministry of Health and Family Welfare, Bangladesh.

World Health Organization. (2017). *Health product supply chains in low- and middle-income countries: A review of the literature*. WHO Press.

Appendices

Appendix A: Research Questionnaire

Title: Survey Instrument for "Advancing Healthcare Operations Through Strategic Supply Chain Management: A Case Study on Concord Healthcare Group"
Scale: 5-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Section A: Respondent Information

1. Age: Under 20 / 20–29 / 30–39 / 40–49 / 50+
2. Gender: Male / Female / Other
3. Designation/Role: _____
4. Department: _____
5. Years of Experience: <1 / 1–3 / 3–5 / 5–10 / 10+

Section B: Supply Chain Planning (SCP)

6. Concord Healthcare Group has a structured supply chain planning system.
7. Demand forecasting is performed accurately.
8. Inventory levels are planned based on real-time needs.

Section C: Procurement Management (PM)

9. Procurement policies are clear and effective.
10. Supplier selection follows standardized criteria.
11. Supplier relationships are managed strategically.

Section D: Inventory & Logistics Management (ILM)

12. Inventory is monitored regularly.
13. Stockouts are minimized due to efficient inventory control.
14. Logistics operations ensure timely delivery of medical supplies.

Section E: Technology & Information Systems (TIS)

15. Digital systems support daily supply chain operations.
16. Data is shared accurately across departments.
17. The organization invests in supply chain technology.

Section F: Operational Performance (OP)

18. SCM practices improve service delivery quality.
19. SCM contributes to reducing operational delays.
20. Better SCM enhances patient satisfaction.