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**SUBMISSION DATE:**

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## **DECLARATION**

I, Persis Tembo, affirm that I am the author of this thesis, that during the period of registered study I have not used the information in this document in any other academic award or qualification, nor has any of the material been submitted solely or partially for any other award. This thesis is a result of my original research work, and where other people's research was used, they have been duly recognized.

## CERTIFICATE OF APPROVAL

This is to certify that the thesis titled:

**“IMPACT OF SUPPLY CHAIN MANAGEMENT PRACTICES ON ORGANIZATIONAL PERFORMANCE: A SURVEY OF NATIONAL MILLING CORPORATION (NMC) HQ IN LUSAKA, ZAMBIA”**


Submitted by

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In partial fulfillment of the requirements for the award of the degree of Master of Science in Procurement and Logistics at ZCAS University has been examined and approved as meeting the required standards for academic and research quality, and is hereby accepted for submission.


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## **DEDICATION**

To the Almighty God, your grace is more than enough.

This work is dedicated to my beloved mother for her prayers, love, support, and encouragement. May God bless you and multiply your blessings. To my husband Charles, for being my strongest support and cheerleader, your love, encouragement, and prayers are what sustain me.

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## **LIST OF ABBREVIATIONS**

SCM	Supply Chain Management
NMC	National Milling Corporation
DCT	Dynamic Capabilities Theory
SPSS	Statistical Package for the Social Sciences
KPI	Key Performance Indicator
JIT	Just-In-Time
ERP	Enterprise Resource Planning
EDI	Electronic Data Interchange
RO	Research Objective
HQ	Head Quarters

## **ABSTRACT**

This research examines the impact of Supply Chain Management (SCM) practices on the organizational performance of National Milling Corporation Limited (NMC) headquarters located in Lusaka, Zambia. The study assesses four essential dimensions of SCM: Strategic Supplier Partnerships, Internal Lean Practices, Quality of Information Sharing, and Level of Information Sharing, analyzing their impact on two primary performance metrics Supply Chain Flexibility and Operational Efficiency. Grounded in the Dynamic Capabilities Theory and Supply Chain Management Theory, this research utilizes a quantitative, cross-sectional design, employing a structured questionnaire that was distributed to 286 employees, with 220 responses subsequently analyzed using SPSS Version 20. The results reveal a statistically significant positive relationship between the identified SCM practices and organizational performance. Both descriptive and inferential analyses, including multivariate regression, validate that enhancements in supplier collaboration, lean practices, and information sharing considerably improve responsiveness and efficiency. The study concludes by offering practical recommendations for the enhancement of SCM strategies and discusses the implications for management and future research within the Zambian manufacturing industry.

# **CHAPTER ONE: INTRODUCTION**

## **1.0 Introduction**

This section outlines the research context, problem statement, objectives, research questions, and significance. Supply chain management (SCM) involves coordinating activities from procurement to final product use, essential for modern business operations. Effective SCM practices can reduce costs, improve efficiency, product quality, and customer satisfaction, ultimately enhancing organizational performance both financially and non-financially (Chopra & Meindl, 2021).

## **1.1 Background to the Study**

The notion of supply chain management (SCM) has existed for many years, yet it became widely acknowledged as a separate academic discipline during the 1980s (Stock, Boyer, & Harmon, 2010). The contemporary phase of SCM can be linked to the late 1970s and early 1980s, when the Japanese automotive sector pioneered the idea of 'just-in-time' (JIT) production. JIT highlighted the necessity of aligning and harmonizing all components of the supply chain to reduce waste and enhance efficiency.

Over the last several decades, the progression of supply chain management (SCM) has significantly reshaped the operational practices of manufacturing firms, placing a strong emphasis on strategic collaboration, customer relationships, lean practices, and efficient information flow. In the past, supply chains operated in isolation, with limited connectivity between suppliers, manufacturers, and customers. The introduction of strategic supplier partnerships in the 1980s and 1990s marked a critical transition from transactional procurement to long-term, value-centric collaborations (Stuart, 2007). These partnerships were established to enhance input quality, decrease lead times, and stimulate innovation through collective planning and shared accountability.

Together with strategic supplier partnerships, quality and level of information sharing, Lean methodologies have emerged as a fundamental philosophy in contemporary manufacturing, with the objective of improving efficiency, minimizing waste, and providing increased value to customers. Originally derived from the Toyota Production System in Japan, lean emphasizes the

optimization of internal processes, the removal of non-value-adding tasks, and the promotion of a culture centered on continuous improvement (Womack & Jones, 2003). As time has progressed, these methodologies have become essential in addressing competitive pressures and operational challenges across various industries. In the case of National Milling Corporation (NMC), lean methodologies are vital for sustaining production flexibility and cost-effectiveness within Zambia's ever-evolving food processing industry. Through the adoption of internal lean strategies such as standardized work procedures, waste minimization, and just-in-time inventory management, NMC can improve operational efficiency, shorten cycle times, and ensure consistent product quality thereby enhancing its competitive stance in the market (Shah & Ward, 2007).

Effective supply chain management (SCM) relies on information sharing, supplier collaboration, and customer relationship management (CRM) and lean practices. In the 1980s and early 1990s, traditional supply chains struggled with poor integration and manual communication, leading to issues with the quality and frequency of information exchange (Mentzer et al., 2001). This fragmentation caused slow feedback, limited visibility, and reactive decision-making. In the 1990s, companies recognized the benefits of strategic supplier partnerships, shifting from cost-cutting to creating long-term value through collaboration and shared goals (Lambert & Cooper, 2000). This change fostered trust and improved communication. The introduction of Enterprise Resource Planning (ERP) systems and Electronic Data Interchange (EDI) enhanced information sharing by enabling real-time data exchange (Chopra & Meindl, 2016). Modern systems support integrated supply chain networks, ensuring timely information flow for better planning and reduced uncertainty (Feldmann & Müller, 2003). Additionally, CRM evolved in the late 1990s and early 2000s from basic interactions to a strategic focus on customer retention, loyalty, personalized services, and demand forecasting (Payne & Frow, 2005). NMC has recognized ongoing issues with information exchange, both internally and with suppliers, leading to operational inefficiencies like stock shortages and delivery delays (Mwansa, 2023). To address this, NMC is modernizing its operations by digitizing procurement, creating supplier performance dashboards, as well as improving on internal lean practices. Effective supplier collaboration, quality information sharing, and strong lean practices can significantly boost performance by ensuring production continuity, reducing costs, and increasing customer satisfaction. However, NMC's SCM transformation is challenged by technological limitations, data silos, and pandemic-related disruptions.

## **1.2 Problem Statement**

The COVID-19 pandemic severely disrupted supply chain operations, which significantly impacted manufacturing companies in Zambia, including the National Milling Corporation (NMC). With borders closed, transportation slowed, and uncertainty around imports, these firms faced significant operational challenges. NMC's internal audit for the 2020/2021 fiscal year highlighted a loss of ZMW 85 million due to supply chain-related production downtimes, with 51 days of halted operations caused by supplier delays (NMC, 2021). Given NMC's average daily production value of approximately ZMW 1.67 million, this downtime severely reduced output and profitability. Furthermore, the Ministry of Commerce, Trade and Industry (2022) reported an increase in manufacturing delays in Lusaka, including at NMC, were a result of poor supply chain coordination and a lack of utilization of digital supply chain management (SCM) tools, leading to an annual revenue loss of ZMW 100 million. These challenges underscore the need for an empirical study on NMC to explore how strategies such as strategic supplier partnerships, internal lean practices, and the quality and level of information exchange influence organizational performance metrics like Delivery Performance, Supply Chain Flexibility, Operational Efficiency, and Cycle Time Reduction (Wong, Boon-itt, & Wong, 2020).

## **1.3 Justification for the Study**

This study aims to advance understanding of supply chain management (SCM) practices in Zambia and support future research. It offers insights into how SCM adoption affects organizational performance across sectors (Chopra & Meindl, 2016; Mentzer et al., 2001; Stadtler, 2015). Additionally, it seeks to help National Milling Company HQ optimize operations and guide government policy development for SCM regulation.

## **1.4 Research Objectives**

### **1.4.1 General Objective**

To analyse the impact of SCM practices on organizational performance of National Milling Corporation Limited (HQ), Lusaka, Zambia.

## **1.5 Specific Objectives**

- i. To assess the effect of Strategic Supplier Partnerships on the organizational performance of National Milling Corporation Limited (HQ), Lusaka, Zambia
- ii. To analyze the effect of Internal Lean Practices on the organizational performance of National Milling Corporation Limited (HQ), Lusaka, Zambia.
- iii. To measure the effect of the Quality of Information Sharing on the organizational performance of National Milling Corporation Limited (HQ), Lusaka, Zambia.
- iv. To determine the effect of the Level of Information Sharing on the organizational performance at National Milling Corporation Limited (HQ), Lusaka, Zambia.

## **1.6 Research Questions**

- i. What is the effect of Strategic Supplier Partnerships on the organizational performance of National Milling Corporation Limited (HQ), Lusaka, Zambia?
- ii. How does Internal Lean Practice affect organizational performance of National Milling Corporation Limited (HQ), Lusaka, Zambia?
- iii. What is the impact of the Quality of Information Sharing on the organizational performance of National Milling Corporation Limited (HQ), Lusaka, Zambia?
- iv. How does the Level of Information Sharing affect the organizational performance at National Milling Corporation Limited (HQ), Lusaka, Zambia?

## **1.7 Research Hypothesis**

H<sub>01</sub>: There is no significant impact of supply chain collaboration strategies on the performance of National Milling Corporation Limited (HQ).

H<sub>a1</sub>: There is a significant impact of supply chain collaboration strategies on the performance of National Milling Corporation Limited (HQ).

H<sub>02</sub>: There is no significant impact of information sharing practices on the performance of National Milling Corporation Limited (HQ).

H<sub>a2</sub>: There is a significant impact of information sharing practices on the performance of National Milling Corporation Limited (HQ).

## **1.8 Research Scope**

This research was explicitly limited to examining the impact of supply chain management (SCM) practices, specifically, strategic supplier partnership, internal lean practices, level of information sharing and quality of information sharing on organizational performance. For this objective, the researcher used practice of supply chain management in National milling corporation, Head office, Lusaka. This location was chosen not only for its accessibility and the presence of reliable internal data and personnel but also for the practicality it provided in conducting structured interviews, surveys, and document reviews, which aligns with best practices in case study research design (Yin, 2018; Saunders, Lewis, & Thornhill, 2019)."

## **1.9 Research Design**

This research uses an explanatory design within a quantitative framework to explore the impact between supply chain management (SCM) practices and the performance of National Milling Corporation Limited (HQ) in Lusaka, Zambia. Explanatory research is suitable for identifying cause-and-effect relationships among variables, often employing statistical tools for hypothesis testing (Saunders, Lewis, & Thornhill, 2016). A deductive approach is taken, where existing SCM theories guide hypothesis development, which is then tested with field data. This approach aligns with a quantitative research methodology, as it underscores objective measurement, statistical testing, and the generalization of findings from a demonstrative sample (Saunders, Lewis, & Thornhill, 2019). A cross-sectional survey design will be used, with delivery and collected structured questionnaires distributed to participants. Stratified random sampling will select a representative sample of 286 individuals from various departments involved in supply chain activities. Data analysis will be performed using SPSS version 20 and Microsoft Excel, applying both descriptive statistics (means and standard deviations) and inferential statistics, particularly multiple regression analysis, to evaluate the relationships between SCM practices and organizational performance.

## **1.10 Research Approach**

This research utilizes a deductive approach, initiating with established theories to create specific hypotheses that are subsequently tested through empirical data collection and statistical analysis. The deductive approach is typically linked to quantitative methodology, as it prioritizes objectivity, measurement, and the examination of cause-and-effect relationships among variables (Bryman & Bell, 2015). In this framework, the research is informed by Dynamic Capabilities Theory and Supply Chain Management Theory to formulate hypotheses regarding the influence of supply chain practices on organizational performance.

## **1.11 Data Collection**

In order to obtain information for the study, this research involves collecting primary data that was obtained through structured questionnaires administered to employees in key departments such as procurement and logistics, as well as secondary data, gathered from organizational documents, industry publications, and previous studies to provide contextual background and support the validation of primary findings. Quantitative data is information that can be easily converted into numerical indices from a population or from one or more representative large samples (Leedy & Ormrod, 2011). The research implements a survey strategy to obtain primary data through a delivery and collected structured questionnaire distributed to employees involved in supply chain, procurement, logistics, sales, marketing, and finance departments. This study is characterized as cross-sectional, gathering data at a single point in time to analyze current supply chain management practices and their impact on performance indicators such as profit margins and organizational performance (Saunders, Lewis, & Thornhill, 2019).

A stratified random sampling technique was utilized to ensure fair representation across various functional departments at NMC HQ, as it allows for more accurate and representative results by dividing the population into distinct subgroups (Creswell, 2014). With a total employee population of 1,001, that was determined based on internal human resources data provided in the company's official records and annual audit reports (NMC, 2021) where a sample size of 286 participants was derived.

## **1.12 Data Analysis Techniques**

The collected data were analyzed using SPSS Version 20 and Microsoft Excel, chosen for their effectiveness in processing quantitative data and aligning with the research objectives (Saunders et al., 2009). Descriptive statistics, including means, frequencies, and standard deviations, were utilized to summarize respondent characteristics and response patterns. To assess the relationship between the independent variables (Strategic Supplier Partnerships, internal lean practices, and Quality and Level of Information Sharing) and the dependent variables, organizational performance, regression analysis was employed as the primary inferential statistical tool (Field, 2013). This approach not only facilitated hypothesis testing but also enabled the generalization of results and provided a structured evaluation of how supply chain management (SCM) practices impact performance outcomes at National Milling Corporation Limited (NMC) in the post-pandemic context.

## **1.13 Dissertation Layout**

This dissertation comprises six chapters, each serving a distinct purpose:

Chapter one introduces the study with background, problem statement, objectives, significance, scope, and key definitions.

Chapter two reviews relevant literature, theories, and frameworks, highlighting gaps in current knowledge.

Chapter three details the research design, data collection, analysis methods, ethical considerations, and methodological recommendations.

Chapter four presents and analyzes the findings with supporting visuals.

Chapter five interprets results relative to objectives, discusses implications and limitations, and offers recommendations for National Milling Corporation, Zambian manufacturers, and future research.

## **1.14 Chapter Summary**

This chapter presented the research topic and its importance. The study's background outlined the development of Supply Chain Management (SCM). The problem statement and its justification underscored the necessity for this research. The research objectives and questions aimed to assess the influence of essential SCM practices on performance results, paving the way for the study's hypotheses. The focus was on NMC Headquarters in Lusaka. The chapter wraps up by emphasizing the research design, approach, data collection, and data analysis techniques. Lastly, the dissertation structure was detailed, outlining the organization of the entire study across five chapters.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.0 Introduction**

This chapter presents a thorough literature review that establishes the theoretical and empirical basis for the study, it commences with a definition of SCM and an exploration of its development. The review is organized into three main sections: an overview of pertinent SCM literature, a detailed theoretical framework based on Dynamic Capabilities Theory (DCT) and SCM Theory, and a synthesis of empirical research across various sectors and regions. Additionally, this chapter introduces a conceptual framework that delineates the relationships between key variables and elucidates how these connections support the research hypotheses. Moreover, the literature review highlights critical gaps, particularly the absence of context-specific studies within Zambia's agribusiness sector, thus rationalizing the study's emphasis on National Milling Corporation (NMC). By systematically reviewing existing research and theoretical viewpoints, this chapter lays the groundwork for examining how integrated SCM practices can improve non-financial performance in a dynamic operational context.

### **2.1 Supply Chain Management**

Mentzer (2001) defines SCM as the strategic coordination of business functions within and across firms to enhance long-term performance. It leverages supplier processes and capabilities for competitive advantage. According to Kim (2006), SCM strengthens performance through internal integration and collaboration with external partners. Handfield (2002) describes the supply chain as a network of three or more entities managing the flow of products, services, finances, and information from source to customer.

### **2.2 Supply Chain Management Practices**

The actions taken by the organization to make it easier to oversee the supply chain are referred to as supply chain management methods. According to scholars, supply chain management techniques are complex structures that include both upstream and downstream elements (Li et al. (2006). It relates to the tactics, protocols, and techniques used by businesses to manage the flow of products, services, information, and funds from the point of origin to the point of consumption.

Throughout the entire supply chain network, effective supply chain management (SCM) techniques aim to maximize productivity, cut costs, and raise customer satisfaction.

### **2.2.1 Strategic supplier partnership relationship**

Strategic partnerships with suppliers entail a long-term collaborative effort aimed at utilizing shared strengths to secure ongoing advantages (Stuart, 2007). The early engagement of suppliers in the design process enhances cost efficiency, component selection, and assessment (Tan et al., 2002). Collaboration with suppliers facilitates joint planning, problem-solving, and decision-making, which in turn improves efficiency and minimizes redundancy (Balsmeier & Voisin, 2006). These partnerships empower companies to mitigate risks, uphold quality standards, and adapt to market changes. As Noble (2007) points out, such alliances serve as strategic instruments for enhancing responsiveness, reducing procurement expenses, and promoting innovation.

### **2.2.2 Lean Practices**

The term 'lean' was introduced by Krafcik in the late 1980s, gaining traction in the West as a response to Japan's efficient automotive industry (Lean Enterprise Institute, 2009). Lean is viewed as a philosophy focused on eliminating waste in various processes, with its implementation varying by organization (Lewis, 2000; Mark, Wilson, & Ram, 2009). It has evolved into a comprehensive strategy for operational improvement at all levels (Womack et al., 1990; Liker, 1998). Key lean procurement methods include Kaizen, Kanban, and supplier development (Bhasin & Butcher, 2006). A successful lean transformation requires a long-term outlook, skilled personnel, and strong supplier relationships (Handfield, 1993; Liker, 2004; Henderson et al., 1999). The goal of lean procurement is to reduce waste, prevent shortages, cut costs, and improve efficiency and customer satisfaction (Liker, 1996; Lathin, 2001; Ferch et al., 1998).

### **2.2.3 Quality of Information Sharing**

Information quality defined by accuracy, timeliness, adequacy, and credibility—is vital to effective SCM. However, firms often limit sharing due to perceived power loss, making high-quality, timely, and strategic information flow essential (Feldmann & Müller, 2003).

#### **2.2.4 Level of Information Sharing**

The degree of information sharing encompasses two dimensions: quantity and quality. Both dimensions are crucial for supply chain management (SCM) practices and have previously been regarded as separate constructs (Moberg, Cutler, Gross, & Speh, 2012). The quantity aspect of information sharing pertains to the level of critical and proprietary information conveyed to supply chain partners. When supply chain partners engage in regular information exchange, they can operate cohesively as a unified entity. This collaboration enhances their understanding of end customer needs, enabling them to respond more swiftly to market changes.

#### **2.3 Organizational Performance**

Organizational performance reflects a firm's ability to achieve strategic and financial goals (Tzokas et al., 2015; Hashmi et al., 2020a, 2020b) by enhancing productivity, reducing costs, and increasing profits (Hussain et al., 2018; Rashid et al., 2020). To improve performance, firms must innovate and develop capabilities that strengthen supply chain operations (Al-Weshah et al., 2019; Rashid et al., 2020; Rashid & Rasheed, 2022).

#### **2.4 Empirical Studies**

Supply Chain Management (SCM) has emerged as a crucial strategic factor, enhancing efficiency, competitiveness, and customer satisfaction. As market dynamics change, companies implement SCM to reduce expenses and increase responsiveness. Research indicates that strategies such as collaboration with suppliers, sharing of information, and forecasting demand significantly improve profitability, market share, and adaptability (Wong, Boon-itt, & Wong, 2020).

##### **2.4.1 Influence of supply chain management practices on organizational performance**

Afzal and Lim (2022) found that business strategy, technology, and organizational culture enhance environmental sustainability in Australian construction firms, with culture and strategy also supporting social sustainability. In China, Saeed et al. (2018) reported that external GSCM practices significantly improve economic performance. Similarly, Flynn, Huo, and Zhao (2010) observed that internal integration directly improves both operational and business performance, customer integration affects operational performance, and supplier integration has no direct impact but contributes indirectly through broader integration.

#### **2.4.2 Role of competitive advantage in SCM and Performance**

Wijetunge (2017) found that supply chain management significantly enhances organizational performance in Colombo's manufacturing SMEs, with competitive advantage acting as a partial mediator. The study used survey data from 155 managers and applied descriptive, correlation, and regression analyses.

#### **2.4.3 Effects of SCM Elements on organizational performance**

Lenny et al. (2007) found that outsourcing and multi-supplier strategies (OMS), along with strategic collaboration and lean practices (SCLP), significantly enhance operational performance in Turkish SMEs, though they do not directly affect SCM-related organizational performance. Instead, their effect is indirect via operational performance. Ambreen and Siddiqui (2018) reported that strategic partnerships and quality of information sharing positively influence pharmaceutical firm performance in Pakistan, while the degree of information sharing has a negative effect.

#### **2.4.4 Models for assessing supply chain performance**

Alireza et al. (2011) developed a model for supply chain performance in Malaysia's electronics industry, finding that supply chain design influences performance indirectly via delivery and information sharing, while flexibility and information sharing also have direct and indirect effects. Chileshe and Phiri (2022), studying agro-dealer SMEs in Zambia, found that strategic partnerships, customer relationships, and quality of information sharing significantly affect performance, primarily through enhanced competitive advantage.

#### **2.4.5 Impact of modern supply chain practices on the performance**

Memia (2018) discovered that a range of supply chain management (SCM) practices—including relationships with suppliers and customers, outsourcing, and lean supply chains—exerted a considerable influence on the performance of large manufacturing firms in Kenya, as evidenced by data collected from 312 respondents and corroborated by five SCM theories. In a similar vein, Adebayo (2012) emphasized that strategic partnerships with suppliers, customer relations, the sharing of information, and postponement practices had a positive effect on SCM performance within Nigerian industries. Further supporting these conclusions, Moslem (2013) indicated that strategic partnerships, efficient information sharing, and streamlined internal operations played a significant role in enhancing competitive advantage among manufacturing firms in Iran.

#### **2.4.6 Impact of SCM Measurement on Operational Performance**

Priscila and Luiz (2011) identified information sharing, long-term relationships, cooperation, and process integration as SCM measures that positively influence operational performance in Brazilian firms. Ololade (2019) also found SCM practices significantly enhance organizational performance in the service sector, though results may not directly apply to FMCG due to sector differences. Similarly, Waqas (2020) reported positive SCM effects on organizational performance in textile manufacturing, a subsector distinct from FMCG due to longer product shelf life.

#### **2.4.7 SCM Practices and Customer Satisfaction**

Mahbubul (2013) conducted research on Effects of Supply Chain Management Practices on Customer Satisfaction in the pharmaceutical industry of Bangladesh: Evidence from Pharmaceutical Industry of Bangladesh. The results of the study indicate that SCM practices as observed in the industry comprise three dimensions, namely, collaboration and information sharing, logistics design and IT infrastructure, and organizational culture (OC). However, while the first two exerts their impact on customer satisfaction, OC does not have any influence on it.

#### **2.4.8 SCM Perceptions and Performance**

Loury-Okoumba and Mafini (n.d.) found that SME owners in South Africa view supply chain management practices like information sharing, trust, and synergies as vital for supplier performance but identified the need for better continuous improvement and information sharing. Similarly, Katunzi and Zheng (2010) reported that Tanzanian SMEs focus on cost reduction through SCM but show less willingness than large firms to share information or adopt advanced systems, highlighting gaps in integration and trust.

#### **2.4.9 Relationship between SCM practices and performance**

Chewe (2024) studied 71 respondents at Zambia Breweries and found that effective information, logistics, and relationship management significantly enhance organizational performance, explaining about 70% of its variability and promoting cost savings and competitiveness.

#### **2.4.10 Benefits and Challenges of SCM practices**

Demberere and Kasongo (2021) studied supply chain management (SCM) in Zambian MSMEs, focusing on practices, benefits, and challenges in selected manufacturing enterprises in Lusaka's

Mandevu and Kalingalinga markets. They found that while these MSMEs recognize the importance of effective SCM, they struggle to implement it, lacking strong relationships with customers and suppliers. Key challenges hindering growth include limited financial resources, inadequate quality improvement practices, poor process technology integration, and forecasting difficulties. However, effective SCM can provide significant benefits for MSMEs.

Stonkuté.E (2015) reviewed literature on supply chain management challenges, identifying key issues such as managing risks and disruptions, leadership dynamics, the need for timely deliveries, the importance of innovation in leveraging supply chain capabilities, and the implementation of effective information exchange technologies to improve visibility.

## **2.6 Theoretical Framework**

A theoretical framework essentially consists of a set of interconnected concepts, for instance, a theory that is not fully developed, which provides direction in identifying the elements to assess and the statistical correlations to investigate in research (Day, Fawcett, Fawcett and Magnan, 2016). Numerous theories attempt to clarify the effect of supply chain management on the performance of organizations. Nevertheless, the two theories that served as the foundation for this study in examining the practices of supply chain management (SCM), specifically Strategic Supplier Partnerships, internal lean practices, Quality of Information Sharing, and Level of Information Sharing, in connection with organizational performance were:

### **2.6.1 The Dynamic Capabilities Theory (DCT)**

This theory was formulated and advanced by David J. Teece, in 1997, it emphasizes on an organization's ability to integrate, build, and reconfigure internal and external resources to adapt to rapidly changing environments. It provides a strategic lens for understanding how firms achieve and sustain competitive advantage in dynamic markets (Teece,1997). DCT remains a critical source for evaluating how specific supply chain management (SCM) practices namely Strategic Supplier Partnerships, internal lean practices, Quality of Information Exchange, and Level of Information Exchange affect organizational performance in today's fast-changing business environment.

In the context of this study, strategic supplier partnerships are seen not merely as transactional arrangements but as flexible cooperative capabilities that foster joint innovation and responsiveness (Dubey et al., 2021). Internal lean practices are closely related to the Dynamic

Capabilities Theory (DCT), as both highlight the significance of adaptability, efficiency, and responsiveness in fluctuating market conditions. DCT asserts that organizations need to cultivate capabilities that enable them to integrate, develop, and reorganize both internal and external competencies to effectively respond to swiftly changing environments.

Internal lean practices including waste reduction, standardized procedures, continuous improvement (Kaizen), and value stream mapping function as tools that bolster these dynamic capabilities (Kumar et al., 2020). Hence they are dynamic capabilities that enable firms to respond quickly to market disruptions. Furthermore, high-quality and frequent information exchange enhances decision-making, coordination, and responsiveness across the supply chain. These capabilities collectively improve operational efficiency, reduce lead times, and foster innovation, all of which contribute to enhanced sales performance and profitability. Thus, DCT offers a robust framework for evaluating how adaptive and relational SCM practices drive sustainable competitive advantage in volatile business environments.

### **2.6.2 The Supply Chain Management Theory (SCM)**

The theory of Supply Chain Management (SCM) offers a detailed structural framework that highlights the strategic coordination and integration of activities among supply chain partners, aimed at generating value and improving long-term performance. Initially proposed by Keith Oliver from Booz Allen Hamilton in 1982 and subsequently elaborated upon by Lambert and Cooper (2000), this theory promotes synchronized efforts across organizational boundaries to attain efficiency, responsiveness, and competitiveness. A fundamental aspect of SCM theory is the significance of collaboration throughout the supply chain. Systematic partnerships between suppliers, manufacturers, and distributors are deemed essential for enhancing service delivery and reducing inefficiencies.

As noted by Chopra and Meindl (2019), aligning strategic processes across all nodes of the supply chain boosts responsiveness and diminishes operational redundancies, especially in intricate manufacturing settings. This concept is particularly pertinent to the current study, as establishing long-term partnerships with suppliers has been demonstrated to enhance supply reliability, facilitate joint problem-solving, and alleviate disruption risks (Wong, Boon-itt, & Wong, 2020).

### **2.6.2.1 Internal Operational Excellence through Lean Practices**

SCM theory posits that attaining internal operational excellence is essential for supply chain efficiency. Lean practices such as minimizing waste, fostering continuous improvement, and optimizing workflows are crucial for developing this capability. Womack and Jones (2003) assert that these methodologies establish the necessary internal framework to support responsive and agile supply chains.

### **2.6.2.2 Importance of Information Sharing**

The theory further emphasizes the importance of information sharing in facilitating supply chain coordination and agility. High-quality, timely, and clear data enhance decision-making, improve synchronization among partners, and boost responsiveness. Li et al. (2006) contend that effective information exchange not only mitigates uncertainty but also cultivates trust and enhances operational performance. The depth and reliability of shared information are critical in enabling adaptive and well-informed supply chain strategies.

### **2.6.3 Relevance to the Current Study**

This theoretical framework is closely connected to the objective of the current study: to evaluate the synergistic impact of Strategic Supplier Partnerships, internal lean practices, and the Quality and Level of Information Sharing on organizational performance metrics particularly supply chain flexibility and operational efficiency. Supply Chain Management (SCM) theory provides a pertinent perspective for comprehending how the alignment of supply chain activities with organizational strategy can result in quantifiable enhancements in performance (Lambert, 2008; Wong, Boon-itt, & Wong, 2020).

The above indicates that the DCT promotes adaptability and innovation in evolving contexts, in line with relationship-centered practices such as strategic partnerships and information management. On the other hand, the SCM theory provides a foundation for coordination, efficiency, and integration aligning with the larger goal of enhancing organizational performance through collaborative SCM strategies.

### **2.6.4 Corresponding Research Objectives to Theoretical Frameworks**

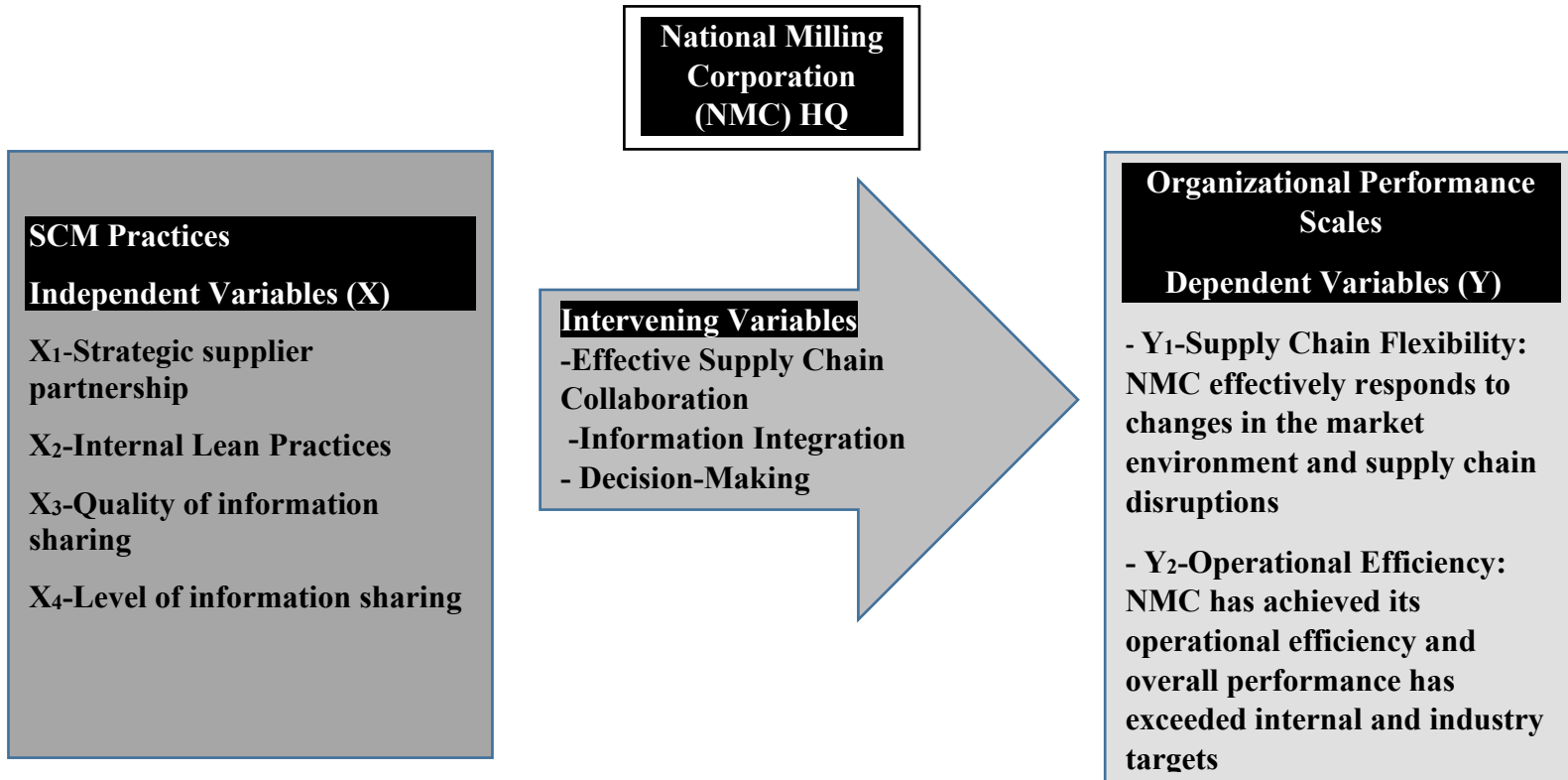
The Dynamic Capabilities Theory (DCT), as proposed by Teece (1997), emphasizes an organization's capacity to integrate, develop, and reorganize both internal and external competencies in order to adapt to swiftly changing environments. In the jurisdiction of supply chain management (SCM), this theory illustrates how companies can attain responsiveness,

innovation, and flexibility by strategically utilizing relationships and improving the quality of information.

For the purposes of this study, DCT serves as the basis for comprehending how Strategic Supplier Partnerships (Research Objective 1) and lean practices (Research Objective 2) enhance organizational performance at the National Milling Corporation (NMC) headquarters. These relationships are inherently dynamic and must evolve continuously to sustain competitiveness. Moreover, DCT facilitates the assessment of Quality of Information Sharing and Level of Information Sharing (Research Objectives 3 and 4) as vital enablers of adaptability and long-term advantage. In contexts characterized by volatility, such as the post-COVID supply chains, the capacity to swiftly reconfigure informational and relational assets is crucial for achieving performance enhancements, including cost-efficiency and responsiveness.

## **2.7. Conceptual Framework**

Combining Supply Chain Management (SCM) theory with Dynamic Capabilities Theory (DCT) provides a strong framework to evaluate how supply chain practices affect organizational performance. Key variables include Strategic Supplier Partnerships, lean practices, and the quality and level of information exchange, which enhance coordination and adaptability (Wong, Boon-itt, & Wong, 2020; Ali et al., 2023). These practices improve operational efficiency and performance dynamic capabilities enabling firms to address market challenges (Kamalahmadi & Parast, 2016). The model demonstrates how integrating strategic and operational SCM capabilities drives superior organizational outcomes.



**Figure 2.6.1: Conceptual Framework**

Source: Researcher's own construct

Strategic supplier partnerships (X<sub>1</sub>) play a crucial role in enhancing supply chain flexibility (Y<sub>1</sub>) and operational efficiency (Y<sub>2</sub>) at National Milling Corporation (NMC) by promoting long-term collaboration, improving access to resources, and enabling joint responses to market disruptions. These partnerships facilitate the smooth flow of materials, minimize delays, and contribute to performance enhancements. In a similar vein, internal lean practices (X<sub>2</sub>) such as just-in-time production and continuous improvement allow for quicker adaptation to shifts in demand and help to eliminate inefficiencies, thereby increasing productivity and overall operational effectiveness. Moreover, the quality of information sharing (X<sub>3</sub>) further bolsters flexibility and efficiency by ensuring timely and accurate communication that aids in proactive decision-making and diminishes uncertainty. Finally, the extent of information sharing (X<sub>4</sub>), which encompasses the transparent exchange of forecasts, inventory levels, and schedules, enhances coordination, builds trust, and aligns workflows, ultimately improving NMC's capacity to surpass performance benchmarks and respond adeptly to changes in the environment.

## **2.8 Research gap**

The existing body of literature regarding the connection between supply chain management (SCM) practices and organizational performance is substantial, however, it predominantly lacks context-specific analysis that is tailored to the Zambian manufacturing sector, especially in the jurisdiction of agribusiness. Most empirical research tends to either broadly classify SCM practices without breaking down essential components such as strategic supplier partnerships, internal lean practices, and information sharing, or it concentrates on unrelated sectors such as pharmaceuticals, electronics, and textiles (Ambreen & Siddiqui, 2018; Alireza et al., 2011; Waqas, 2020).

Furthermore, these studies often prioritize financial outcomes while neglecting non-financial performance indicators like supply chain flexibility and operational efficiency, which are vital in the manufacturing context (Demberere & Kasongo, 2021; Chileshe & Phiri, 2022). Additionally, there is a notable gap in addressing external shocks, such as those resulting from the COVID-19 pandemic that affect supply chain resilience. These shortcomings highlight the necessity for localized, empirical research that specifically investigates the impact of distinct SCM practices on non-financial performance metrics within Zambia's agribusiness sector.

## **2.9 Chapter Summary**

This chapter provided a thorough examination of supply chain management (SCM) by outlining essential definitions, significant practices, theoretical foundations, and empirical data to substantiate the research. It commenced with a definition of SCM and delved into key SCM practices analyzing how these practices impact organizational performance referencing empirical research from various industries and geographical areas. The theoretical framework, rooted in the Dynamic Capabilities Theory (DCT) and Supply Chain Management Theory, offered a strategic perspective on the connection between SCM practices and performance. This was succeeded by a conceptual framework that visually represented the proposed relationships among the variables. Ultimately, the chapter highlighted a significant research gap. This gap underscores the relevance of the current study and lays the groundwork for the methodology outlined in the subsequent chapter.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.0 Introduction**

This chapter delineates the methodological framework utilized in this study. It offers a comprehensive explanation of the research approach, design, strategy, and paradigm adopted to guarantee methodological rigor and validity. In particular, the chapter clarifies the application of a quantitative, deductive approach, bolstered by a cross-sectional survey design, which enabled the collection of standardized data across essential departments. Additionally, the chapter rationalizes the selection of a positivist paradigm, highlighting hypothesis testing and statistical generalizability. It outlines the sampling framework and the methods of data collection. Moreover, the chapter elaborates on the data analysis process, which incorporates descriptive and inferential statistics, particularly multivariate regression analysis, to investigate the relationships between SCM practices and performance outcomes. Lastly, the chapter discusses the validity, reliability, generalizability, and ethical considerations, ensuring that the research complies with the highest academic standards and provides a solid foundation for both practical and theoretical conclusions.

### **3.1 Research Approach**

There are three primary research approaches qualitative, quantitative, and mixed methods (Dawson, 2019). This research utilizes a quantitative research methodology, which is most appropriate for investigating measurable relationships among specified variables. Aligned with a deductive research approach, the study initiates with theoretical propositions and evaluates them through empirical data. Quantitative methods generally incorporate statistical tools to assess hypotheses and confirm theoretical constructs (Trochim, 2006). In particular, this research applies descriptive statistics to encapsulate trends and patterns within the data, as well as inferential statistics to ascertain the strength and nature of relationships between supply chain management practices and organizational performance, thus enabling conclusions to be extrapolated to the wider population. By seeking to establish a solid basis for statistical inferences this study utilized numerical data, thereby facilitating a clearer comprehension of the underlying dynamics in the case under investigation.

### **3.2 Strategy Justification**

This research employs a quantitative survey methodology, which is appropriate given the study's aim to quantitatively assess the influence of specific supply chain management (SCM) practices on organizational performance (Bryman & Bell, 2015). The SCM practices considered include Strategic Supplier Partnerships, Internal Lean Practices, Quality of Information Exchange, and Level of Information Exchange. A descriptive survey design was adopted to systematically collect numerical data from a substantial sample at National Milling Corporation Limited (HQ). Data collection was carried out using a structured questionnaire, which was physically administered and retrieved. This approach facilitated consistent measurement across participants and enabled structured comparisons. The use of a descriptive survey design allows for empirical investigation of relationships between variables through statistical tools such as regression analysis, thus enhancing the objectivity and generalizability of the findings. As emphasized by Saunders, Lewis, and Thornhill (2019), descriptive surveys are particularly suitable for examining and quantifying associations among specific variables within defined populations.

Aligned with a deductive, positivist research paradigm, this methodology emphasizes hypothesis testing and theory validation. Additionally, Creswell (2014) supports the use of quantitative surveys for their ability to promote efficient data collection and enable rigorous statistical analysis, making them well-suited for studies with objectives such as this one.

### **3.3 Research Paradigm**

This research is consistent with the positivist research philosophy, which advocates for the application of quantitative methods to investigate objective and measurable relationships among specified variables (Bryman & Bell, 2015). The positivist approach is suitable in this context, as the study aims to test hypotheses concerning the impact of Strategic Supplier Partnerships, lean practices, and the Quality and Extent of Information Exchange on Organizational Performance (Bryman & Bell, 2015). By prioritizing statistical analysis, systematic data collection, and generalizability, the positivist framework guarantees that the results are empirically substantiated and relevant across comparable organizational settings (Saunders, Lewis, & Thornhill, 2019).

### **3.4 Inductive Approaches**

The inductive approach, which emphasizes building theories from qualitative data and observations, is generally suited for exploratory studies aiming to generate new insights rather than test predefined hypotheses (Saunders, Lewis, & Thornhill, 2003). However, this method is not aligned with the current study. Since the research seeks to statistically test hypotheses and establish generalizable findings, the inductive method lacks the structured, hypothesis-driven framework necessary to address the evaluative and relational objectives of the study.

### **3.5 Deductive Approaches**

This study adopts a deductive approach, which involves developing hypotheses from established theories, such as the Dynamic Capabilities Theory, and testing them using empirical data (Saunders, Lewis, & Thornhill, 2003). This method is particularly relevant to the research objective of assessing how Strategic Supplier Partnerships, lean practices, and the Quality and Extent of Information Exchange affect Organizational Performance. By using structured surveys to collect quantitative data and applying statistical methods like multiple regression analysis, the deductive method allows for hypothesis testing within a positivist paradigm. This aligns closely with the study's aim of evaluating predefined relationships and supports the generation of generalizable, statistically validated findings across similar organizational settings.

### **3.6 Time Horizon**

The study's duration is specified by the time horizon. According to Bryman (2007, p. 44) The time horizon can be longitudinal, collecting data at different intervals over a long period of time to enable comparisons, or cross-sectional, collecting data on multiple cases at a single point in time. According to Saunders et al. (2009), the choice of research methodology or technique has no bearing on the amount of time required to examine the phenomenon. Due to time and resource constraints, this research study will use a cross-sectional time horizon. Since this is an academic endeavor, ZCAS University will determine the research's duration.

### **3.7 Research Strategy**

According to Yin (2018), research strategy is an all-encompassing plan for conducting a research investigation. This tactic aids a researcher in planning, carrying out, and managing the

investigation (Li et al., 2006; Huo, 2012). The Survey strategy is selected for this study to offer a detailed understanding of the implementation and operation of supply chain management (SCM) practices within actual organizational environments. In contrast to exploratory qualitative case studies, this research adopts a quantitative perspective by gathering numerical data, enabling empirical measurement and statistical analysis of the relationships among various variables (Creswell, 2014). This approach is especially suitable for examining supply chain management (SCM) practices, which are influenced by internal organizational policies, supplier interactions, and external environmental dynamics (Mentzer et al., 2001; Chopra & Meindl, 2016). Quantitative methods support the objective evaluation of these factors by identifying patterns and testing hypotheses, thus offering robust and generalizable insights into the impacts of SCM practices on performance outcomes.

### **3.8 Sampling Framework and Sample Size**

The target population for this study was determined by focusing on employees within specific departments at NMC Headquarters in Lusaka, Zambia. As defined by Hair et al. (2010), the target population is a distinct group from which data is gathered for the research. The population consists of 1001 employees, including both managerial and non-managerial positions, within departments directly involved in supply chain management and related functions (National Milling Corporation, n.d.).

The research specifically focused on individuals employed in procurement, supply chain management, logistics, sales and marketing, and finance.

The reasoning behind this choice is rooted in the critical functions these departments serve within the organization: procurement and supply chain management are essential for formulating and implementing supply chain strategies (Chopra & Meindl, 2016; Mentzer et al., 2001); logistics plays a vital role in the movement of goods and materials (Christopher, 2016); sales and marketing have a direct impact on revenue generation (Kotler & Keller, 2016); and finance is responsible for budgeting, cost management, and investment decisions, all of which significantly affect organizational performance (Brigham & Ehrhardt, 2017).

This targeted demographic enhances the study's validity by incorporating key personnel who engage directly with the pertinent variables being examined (Sekaran & Bougie, 2016).

### 3.8.1 Sample Size Determination

According to Alreck & Settle (2005) the choice of sample size is normally made after considering statistical precision, practical issues and availability of resources. For this study the researcher utilized “a sample of 286 participants, which was determined through the Yamane formula. Yamane (1967:886) offers a straightforward formula for computing sample sizes. In this formula,  $n$  represents the sample size,  $N$  denotes the population size, and  $e$  indicates the level of precision.

**Yamane formula:**  $n = N / (1 + Ne^2)$

$$1001 \times (0.05)^2 = 1001 \times 0.0025 = 2.5025$$

$$1 + 2.5025 = 3.5025$$

$$n = 1001 / 3.5025 = 285.8$$

So, the required sample size from a population of 1001 using Yamane’s formula at a 95% confidence level is 286 respondents.

### 3.8.2 Sampling technique and Sampling Criteria

This study employed a probability sampling method, specifically utilizing stratified sampling, as the target population consists of distinct categories. The use of stratified sampling ensures that individuals from different segments of the population are represented. Additionally, the researcher applied inclusion criteria to select participants, focusing on individuals actively engaged in supply chain management activities within key departments. This approach ensured that the collected data would provide relevant and specific insights into the impact of supply chain operations on organizational performance, by ensuring the participation of individuals with direct involvement in these critical areas (Crewel, 2014).

## 3.9 Data Collection

This research utilized both primary and secondary data collection techniques. Primary data was obtained through a structured questionnaire, which was delivered to and collected from employees at the headquarters of National Milling Corporation Limited to facilitate participation. The delivery and collected questionnaire was designed based on the conceptual framework of the study and concentrated on essential supply chain management strategies, such as Strategic Supplier

Partnerships, lean practices, and the quality and level of Information Exchange. Respondents provided quantitative data regarding their perceptions using a 5-point Likert scale that ranged from "Strongly Agree" -5 to "Strongly Disagree"-1. This methodology enabled a consistent assessment of attitudes and behaviors pertinent to the research objectives (Joshi et al., 2015). Secondary data, sourced from academic articles and journals, complemented the primary data by providing theoretical and contextual insights, thus allowing for a comprehensive analysis of the impact of supply chain strategies on organizational performance at NMC (Creswell, 2014)

### **3.10 Data Processing and Analysis**

The collected data were analyzed using both descriptive and inferential statistical techniques with the aid of SPSS version 20 and Microsoft Excel, in line with the research objectives. Descriptive statistics provided an overview of the data, while inferential statistics, specifically multivariate regression analysis, were employed to examine the relationships between the independent variables (Strategic Supplier Partnerships, lean practices, Quality of Information Sharing, Level of Information Sharing and the dependent variables, organizational performance (supply chain flexibility and operational efficiency). These hypotheses are evaluated using structured questionnaires, allowing the researcher to either validate or refute theoretical propositions. This correspondence between deductive reasoning and quantitative methods reinforces the positivist paradigm, which promotes the application of scientific techniques to achieve reliable and generalizable results (Saunders, Lewis, & Thornhill, 2016).

The multivariate regression model was applied to evaluate how much the independent variables explain variations in organizational performance, measured through non-financial performance metrics based on respondents' opinions (Hair et al., 2010; Saunders, Lewis, & Thornhill, 2019).

The model can be expressed as:  $OP = \beta_0 + \beta_1SSP + \beta_2ILP + \beta_3QIS + \beta_4LIS + \epsilon$ , where OP is organizational performance, SSP is strategic supplier partnership, ILP is internal lean practices, QIS is quality of information sharing, LIS is the level of information sharing, and  $\epsilon$  represents the error term (Saunders et al., 2009). This approach allowed for the testing of the hypothesized relationships between supply chain practices and performance outcomes.

### 3.11 Validity of research findings

Validating the research instrument is essential for accurately evaluating supply chain management (SCM) constructs, especially in a study on Strategic Supplier Partnerships, internal lean practices, and Information Exchange. By using previously validated questionnaires and aligning items with the conceptual framework, the study ensures strong content and construct validity (Bryman & Bell, 2003; Russell, 2011). This methodological rigor allows for precise measurement of complex SCM dimensions, such as information sharing quality and customer integration, which is crucial for credible conclusions. Given SCM's strategic role in enhancing cost efficiency and organizational performance, particularly for National Milling Corporation Limited (NMC), a valid instrument significantly boosts the study's practical value by supporting reliable, evidence-based decision-making.

### 3.12 Reliability of research findings

The reliability of the research instrument was confirmed through a pilot study with 30 participants, showing Cronbach's alpha values above the acceptable threshold of 0.7, indicating strong internal consistency (Nunnally, 1978). This validation was essential for ensuring the questionnaire accurately measured key variables like Strategic Supplier Partnerships, internal lean practices, and Information Exchange related to organizational performance. The graph below displays the reliability based on Cronbach's Alpha, providing evidence that all instruments that were used in this study meet or exceed the acceptable reliability threshold of 0.7.

#### 1. SSP Scale

Cronbach's Alpha	N of Items
.725	3

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted

We maintain long-term and collaborative relationships with our suppliers.	8.63	.585	.555	.629
We frequently work with suppliers to solve operational or technical issues.	9.03	.723	.493	.700
Our suppliers are involved early in the product design or planning stages.	8.33	.575	.601	.568

### 3.13 Research Generalizability

Generalizability refers to how research findings can be applied beyond the specific sample studied, allowing for broader relevance to similar populations (Bryman & Bell, 2015). This research investigates the effects of Strategic Supplier Partnerships, internal lean practices, and Information Exchange Quality on organizational performance at National Milling Corporation Limited (NMC) HQ in Lusaka. It uses a structured quantitative survey across key supply chain departments to enhance its relevance for similar manufacturing firms. By utilizing established theories like Dynamic Capabilities Theory and SCM Theory, along with standardized tools such as Likert-scale questionnaires, the findings not only hold validity for NMC but also can be applied to other organizations facing similar challenges. This ensures that the results support evidence-based improvements across the Southern African manufacturing sector, enabling companies to adopt effective SCM practices to boost efficiency, profitability, and responsiveness.

### 3.14 Ethical and Access Issues

Ethical considerations are fundamental to ensuring that research is conducted with integrity, respect for participants, and in compliance with established moral guidelines (Creswell, 2014). In this study, ethical principles were strictly followed to ensure that the research process was both transparent and respectful to the rights of all participants.

#### 3.14.1 Accessibility

In order to facilitate inclusive and ethical participation, the researcher secured official approval from the university (ZCASU) via an introductory letter and obtained authorization from

NMC(HQ), where the research was conducted. In alignment with established best practices for enhancing accessibility in research (British Psychological Society, 2014), all materials related to the study, including consent forms and questionnaires were crafted using clear, straightforward, and non-technical language to cater to participants with diverse educational and cognitive backgrounds. Furthermore, the researcher took proactive measures to prevent exclusion based on demographic factors such as gender, age, ethnicity, socioeconomic status, or disability, thus ensuring equitable access for all eligible participants. These actions reinforced ethical principles of fairness and transparency, creating an environment where all participants could engage with the study with confidence (Saunders et al., 2019).

### **3.14.2 Research Conduct**

Ensuring the confidentiality of participants was fundamental to the ethical integrity of the study, with rigorous protocols in place to guarantee that all data, including responses to questionnaires, were managed securely and anonymized to remove any identifying details. This approach safeguarded participants' privacy and cultivated trust (Nijhawan et al., 2013). Additionally, offering participants the chance to pose questions and obtain clarifications prior to consenting improved informed decision-making, thereby promoting transparency and ethical involvement throughout the research process.

### **3.15 Chapter Summary**

This chapter outlined the research methodology utilized to investigate the effects of supply chain management practices on the performance of National Milling Corporation Limited (HQ). It established a quantitative, deductive research framework grounded in the positivist paradigm, facilitating statistical analysis and hypothesis testing. A cross-sectional survey design was implemented. Data analysis was performed using SPSS Version 20 and Microsoft Excel, employing descriptive statistics. Additionally, the chapter discussed the validity and reliability of the research instruments. In summary, this methodological framework establishes a basis for credible, objective, and actionable insights into the influence of SCM practices on performance outcomes within a manufacturing context.

## **CHAPTER FOUR: FINDINGS AND ANALYSIS**

### **4.0 Introduction**

This research aimed to investigate the impact of supply chain management practices on Organizational Performance, specifically within the National Milling Corporation HQ. This chapter provides an analysis of the data gathered from a range of respondents at NMC HQ. Out of 286 potential participants invited to take part in the study, a commendable response rate of 220 was achieved. This figure represents an engagement rate of roughly 77% within the intended sample. Such a significantly high response rate enhances the reliability and strength of the collected data.

### **4.1 Profiles of respondents**

The profile of respondents for this research consists of a varied and representative group of 220 individuals selected from different departments at the National Milling Corporation (NMC) headquarters. Regarding gender distribution, the sample is fairly balanced, with males representing 57.7% and females 42.3%, which corresponds with wider industry patterns indicating a rise in female involvement in supply chain positions (Chin, Tat, & Sulaiman, 2015). In terms of age, the workforce is predominantly made up of individuals in their prime working years, with 42.7% falling within the 35–44 age range, followed by 27.7% aged 25–34, and 19.5% aged 45–54 suggesting a seasoned and knowledgeable group well-equipped for the dynamic nature of supply chain roles (Gunasekaran et al., 2018). From an educational standpoint, more than half of the participants (51.4%) possess postgraduate degrees, while 26.4% have undergraduate qualifications, indicating a highly educated workforce capable of applying intricate supply chain management (SCM) principles (Mentzer et al., 2004; Fawcett et al., 2007). In terms of departmental representation, the majority hail from essential supply chain-related functions Supply Chain Management (33.2%), Procurement (25.5%), and Logistics (24.5%) which ensures the relevance and depth of the data, as these respondents are actively engaged in SCM operations (Lambert, 2008; Monczka et al., 2015). Occupationally, there is a notable prevalence of administrative (37.3%) and operational (31.8%) personnel, followed by managerial (16.4%) positions, underscoring the perspectives of those most involved in executing and interacting with supply chain processes (Womack & Jones, 2003; Flynn et al., 2010). This detailed respondent

profile enhances the analytical rigor of the study by incorporating insights from individuals directly associated with the variables being examined.

#### 4.1.1 Gender Analysis

Among a total of 220 respondents, 127 (57.7%) identified as male, while 93 (42.3%) identified as female. This indicates a predominance of males within the sample, although the gender distribution is relatively balanced. The significant representation of both genders corresponds with trends observed in supply chain and logistics research, which indicate a growing involvement of females in fields traditionally dominated by males, despite ongoing gender inequalities in leadership positions (Chin, Tat, & Sulaiman, 2015). Recognizing the gender distribution is crucial, as diversity within supply chain teams has been linked to enhanced decision-making and innovation (Hoobler, Lemmon, & Wayne, 2014).

**Table 4.1 Gender**

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	127	57.7	57.7	57.7
	Female	93	42.3	42.3	100.0
	Total	220	100.0	100.0	

#### 4.1.2 Age Analysis

The distribution of ages reveals that the largest segment of respondents is within the 35–44 age category, accounting for 42.7% (94 individuals). This is succeeded by the 25–34 age group at 27.7% and the 45–54 age group at 19.5%. A mere 5.5% of respondents are below 25 years of age, while 4.5% are 55 years or older. The significant presence of individuals aged 25–54 indicates that the sample predominantly consists of people in their prime working years, which is consistent with existing research that highlights this age range as vital for productivity and innovation in supply chain positions (Gunasekaran, Yusuf, Adeleye, & Papadopoulos, 2018). Furthermore, this

suggests a workforce that is well-equipped to adapt to technological changes and fluctuating market conditions (Christopher, 2016).

**Table 4.2 Age**

		Age Bracket			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 25	12	5.5	5.5	5.5
	25-34	61	27.7	27.7	33.2
	35-44	94	42.7	42.7	75.9
	45-54	43	19.5	19.5	95.5
	55 and Above	10	4.5	4.5	100.0
	Total	220	100.0	100.0	

#### 4.1.3 Level of Education Analysis

A considerable percentage of the participants (51.4%) possess postgraduate degrees, whereas 26.4% have completed undergraduate studies, and 15.9% hold professional certifications. The remaining 6.4% are categorized as "Other." This highly educated cohort illustrates a workforce characterized by robust academic and professional training, aligning with research that indicates that elevated educational attainment enhances analytical, strategic, and problem-solving skills in supply chain positions (Mentzer, Min, & Bobbitt, 2004). Additionally, there is a positive correlation between educational attainment and the capacity to apply intricate SCM tools and methodologies (Fawcett, Ellram, & Ogden, 2007).

**Table 4.3 Educational Level**

		Education			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undergraduate	58	26.4	26.4	26.4
	Postgraduate	113	51.4	51.4	77.7
	Professional Certification	35	15.9	15.9	93.6
	Other (Please specify)	14	6.4	6.4	100.0

Total	220	100.0	100.0
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#### 4.1.5 Departmental Analysis

The majority of respondents are associated with departments that are closely linked to supply chain operations: 33.2% are from Supply Chain Management, 25.5% from Procurement, and 24.5% from Logistics. In contrast, lower percentages were observed in Sales and Marketing (11.8%) and Finance (5.0%). This distribution among departments enhances the study’s significance, as the majority of responses were provided by individuals who have direct operational involvement in supply chain activities. Existing literature highlights the necessity of gathering data from those who are integrated into essential operational sectors, as they provide precise insights regarding process efficiency, supplier interactions, and logistical issues (Lambert, 2008; Monczka, Handfield, Giunipero, & Patterson, 2015).

**Table 4.4 Departments**

		Department			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Procurement	56	25.5	25.5	25.5
	Supply chain management	73	33.2	33.2	58.6
	Logistics	54	24.5	24.5	83.2
	Sales and marketing	26	11.8	11.8	95.0
	Finance	11	5.0	5.0	100.0
	Total	220	100.0	100.0	

#### 4.1.6 Occupational Level Analysis

Administrative staff made up the largest group at 37.3%, followed by operational staff (31.8%), managerial staff (16.4%), support staff (9.1%), and others (5.5%). This indicates a majority of the responses originated from mid-level personnel. These staff members are often the ones actively engaged in executing SCM policies and interfacing with both internal and external stakeholders, providing vital insight into the daily application of strategic practices. Their inclusion is vital, as studies suggest that mid-level employees play a crucial role in driving lean initiatives and fostering

collaborative supplier and customer relationships (Womack & Jones, 2003; Flynn, Huo, & Zhao, 2010).

**Table 4.5 Occupational Level**

Occupational Level					
	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	Managerial	36	16.4	16.4	16.4
	Operational	70	31.8	31.8	48.2
	Administrative	82	37.3	37.3	85.5
	Support staff	20	9.1	9.1	94.5
	Other (please specify)	12	5.5	5.5	100.0
	Total	220	100.0	100.0	

## 4.2 Assessment of findings and analysis for each Instruments

In this section, the analysis investigates the impact of supply chain management practices on the performance metrics of NMC HQ. The focus is on four critical dimensions: strategic supplier partnerships, internal lean practices, and the influence of information exchange quality and level. Each part of this analysis presents the conclusions derived from the study's findings, with the primary aim of illuminating the implications of these practices on the dynamics of organizational performance metrics such as Supply Chain Flexibility and Operational Efficiency within the operational framework of NMC HQ.

By examining the effects of these essential supply chain elements, this section seeks to provide a thorough understanding of how strategic practices enhance the organization's overall performance metrics. Collectively, these instruments confirm existing SCM theories that advocate for integration, collaboration, and visibility as foundations of high-performing supply chains (Lambert, 2008; Chopra & Meindl, 2019).

### 4.2.1 Descriptive Analysis

This section provides a comprehensive descriptive analysis utilizing Likert scale data to evaluate how participants perceive the influence of various supply chain practices at National Milling

Corporation (NMC) on both supply chain flexibility and operational efficiency. By employing a systematic rating scale, responses are categorized into significant classifications such as "Strongly Agree" and "Agree," in accordance with recognized research methodologies (Saunders et al., 2019). The analysis focuses on three fundamental aspects of supply chain management strategic supplier partnerships, information sharing, and relationship management which are extensively acknowledged in the literature as essential for achieving operational excellence (Mentzer et al., 2001; Chen et al., 2009). The feedback from respondents indicates that these practices improve NMC's responsiveness, coordination, and supply reliability (Monczka et al., 2015; Li et al., 2005; Wong et al., 2011). The application of means and standard deviations quantifies the levels of agreement and uncovers performance perceptions, providing statistical evidence that bolsters theoretical assertions in the discipline (Chopra & Meindl, 2019). Consequently, the findings confirm that integrated supply chain practices are vital in fostering competitive advantage and operational resilience (Christopher, 2016).

#### 4.2.2 Strategic Supplier Partnership

The correlation results confirm that strategic supplier partnerships significantly enhance organizational performance, aligning with prior research. Participants who strongly agreed with practices like long-term relationships, early supplier involvement, and joint problem-solving reported higher performance (mean scores 4.86–5.00), particularly in responsiveness and efficiency. This supports Monczka et al. (2015), who linked supplier collaboration to agility, and Christopher (2016), who emphasized early involvement for better demand alignment. In contrast, neutral responses showed lower performance (~3.00), echoing Lambert's (2008) view that supplier integration is critical for effective supply chain strategies. Thus, strategic partnerships are vital for performance and resilience.

**Table 4.6 Strategic Supplier Partnership Correlation**

SSP_Indicators	Mean_Supply_Chain_Flexibility	Mean_Operational_Efficiency	N_Responses
Neutral	3	3	8
Agree	3.93	4	43
Strongly Agree	4	5	32
Mixed Levels	3.92	4.1	137
Overall Average	3.93	4.2	220

### 4.2.3 Internal Lean Practices

Descriptive statistics show a clear link between internal lean practices and enhanced organizational performance, particularly in responsiveness and efficiency. Participants who strongly supported standardized procedures, visual tools (e.g., KPIs, dashboards), and continuous improvement reported high performance scores (means 4.40–4.73), with minimal variation. This aligns with Womack and Jones (2003), who emphasized standardization and improvement as key to agility, and Shah and Ward (2007), who noted that structured lean systems boost responsiveness. Lower scores (3.00–3.56) among neutral or negative respondents support Bhamu and Sangwan’s (2014) view that weak lean integration hinders performance. Thus, strong lean practices are vital for adaptability and efficiency.

**Table 4.7 Internal Lean Practices Correlation**

<b>ILP Indicators</b>	<b>Performance Mean (Disruption Response)</b>	<b>Performance Mean (Operational Efficiency)</b>	<b>N_Responses</b>
Neutral-Neutral-Agree	3	3	6
Agree-Disagree-Strongly Agree	3.44	4	39
Neutral-Agree-Agree	3.88	3.85	33
Agree-Agree-Agree	3.45	4	20
Strongly Agree-Strongly Agree	4.67	4.54	46
Strongly Agree-Disagree-Strongly Agree	4	4	11
Neutral-Agree-Agree	3	3	1
Agree-Agree-Agree	3.57	4	7
Strongly Agree-Strongly Agree	4	5	32
Disagree-Strongly Agree-Strongly Agree	3.56	4	50
Neutral-Agree-Agree	3.73	3.7	40
Agree-Agree-Agree	3.73	4	52
Strongly Agree-Strongly Agree	4.4	4.73	78

#### 4.2.4 Level of Information Quality

The results derived from the descriptive analysis strongly support the notion that the quality and dependability of information sharing within the supply chain significantly bolster organizational performance, especially in the context of National Milling Corporation (NMC). Elevated levels of consensus regarding aspects such as the trustworthiness, clarity, and verification of shared information were linked to enhanced outcomes in both responsiveness to disruptions and operational efficiency. This aligns with previous research, which emphasizes that accurate, timely, and clear information flow among supply chain partners promotes effective coordination, diminishes uncertainty, and enhances agility (Li et al., 2006; Zhou & Benton, 2007). Participants who consistently agreed or strongly agreed with quality information-sharing practices reported the highest mean scores (4.00 to 5.00), which corresponds with findings by Wang and Wei (2007), who contend that reliable data improves planning and execution across supply chain functions. In contrast, lower scores among respondents who expressed neutral or inconsistent opinions indicate that ambiguity or lack of verification hinders performance supporting insights from Chan and Chan (2005) that poor information quality results in fragmented decisions and operational inefficiencies. Collectively, these findings underscore that strong information quality practices are essential to supply chain resilience and act as a foundation for strategic responsiveness and high performance at NMC.

**Table 4.8 Quality of Information sharing Correlation**

<b>QIS Indicators</b>	<b>Effectiveness Mean</b>	<b>Effectiveness Std. Dev.</b>	<b>Operational Performance Mean</b>	<b>Operational Performance Std. Dev.</b>	<b>N_Responses</b>
Neutral/Agree/Neutral	3.77	0.425	3.75	0.438	48
Agree/Agree/Neutral	3.81	0.392	4	0	75
Strongly Agree/Agree	4.17	1.236	4.25	0.434	53
Agree/Neutral/Strongly Agree	3.83	0.375	4.09	0.498	149
Strongly Agree/Neutral/Agree	4	0	5	0	10
Agree/Agree/Agree	4	0	5	0	44
Strongly Agree/Agree/Agree	4.15	1.152	4.34	0.479	61

#### 4.2.5 Level of Information Sharing

Descriptive statistics reveal a strong positive correlation between structured information sharing with supply chain partners and improved organizational performance, supporting existing research on communication’s role in integration. Participants who agreed that communication is consistent, two-way, and structured reported higher performance (mean scores 4.00–4.51) in market responsiveness and operational efficiency, consistent with Li et al. (2006) and Zhou and Benton (2007). These results underscore that clear, reliable information flow enhances decision-making and demand alignment at National Milling Corporation, highlighting the need to foster collaborative communication for strategic SCM success.

*Table 4.9 Level of Information Sharing Correlation*

<b>Our communication with partners is consistent and two-way.</b>	<b>We share forecasts and plans regularly with partners.</b>	<b>We have a structured approach to sharing key information with all partners</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>N_Responses</b>
Neutral	Strongly Agree	Agree	4	0	20
Agree	Agree	Agree	4	0	20
Strongly Agree	Agree	Strongly Agree	3.96	0.183	30
Strongly Agree	Strongly Disagree	Agree	4.07	0.815	122
Disagree	Agree	Agree	3.67	0.5	9
Agree	Agree	Strongly Agree	3.5	0.512	22
Strongly Agree	Strongly Disagree	Agree	4.16	1.214	55
Total	Total	Total	3.93	0.692	220

#### 4.2.6 Inferential Statistics

The MANOVA results reveal significant effects of supply chain management (SCM) practices on organizational performance, particularly in supply chain flexibility and operational efficiency. MANOVA, ideal for analyzing multiple outcomes simultaneously, showed that Strategic Supplier Partnerships, Internal Lean Practices, and high-quality, consistent information sharing improve responsiveness to disruptions (Hair et al., 2014; Li et al., 2006; Wong et al., 2011). However, the absence of significance in broader performance outcomes suggests the importance of other organizational factors. Thus, while SCM practices are crucial, firms like NMC must also invest in

wider strategic and organizational development to sustain long-term performance (Chopra & Meindl, 2019; Christopher, 2016).

**Table 4.10 MANOVA collective impact correlation (Multivariate Test)**

Test	Dependent Variable	Value	F	Hypothesis df	Error df	Sig.	Observed Power
Pillai's Trace	Both DVs	0.12	1.684	14	368	0.057	0.897
Wilks' Lambda	Both DVs	0.88	1.732	14	366	0.048	0.907
Hotelling's Trace	Both DVs	0.137	1.779	14	364	0.04	0.916
Roy's Largest Root	Both DVs	0.137	3.592	7	184	0.001	0.969
Pillai's Trace	Supply Chain Responsiveness	0.12	3.582	7	184	0.001	0.969
Wilks' Lambda	Supply Chain Responsiveness	0.88	3.582	7	184	0.001	0.969
Hotelling's Trace	Supply Chain Responsiveness	0.136	3.582	7	184	0.001	0.969
Roy's Largest Root	Supply Chain Responsiveness	0.136	3.582	7	184	0.001	0.969
Pillai's Trace	Operational Efficiency	0	0.005	7	184	1	0.051
Wilks' Lambda	Operational Efficiency	1	0.005	7	184	1	0.051
Hotelling's Trace	Operational Efficiency	0	0.005	7	184	1	0.051
Roy's Largest Root	Operational Efficiency	0	0.005	7	184	1	0.051

#### 4.2.7 Regression Analysis-Model Summary

The model summary indicates a strong, statistically significant relationship between supply chain management (SCM) practices and organizational performance. A correlation coefficient (R) of 0.742 reflects a strong positive link between strategic supplier involvement, lean practices, and structured information sharing with performance outcomes. The R<sup>2</sup> value of 0.550 shows that 55% of performance variation is explained by these SCM practices, aligning with Li et al. (2006) and Wong et al. (2011). The adjusted R<sup>2</sup> of 0.527 and a low standard error (0.476) confirm model accuracy and reliability (Hair et al., 2010). These findings support prior research showing that integrated SCM enhances responsiveness and competitiveness (Chopra & Meindl, 2019; Ketchen & Hult, 2007).

**Table 4.11 Regression Analysis -Model Summary**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.742 <sup>a</sup>	.550	.527	.476

**4.2.8 Multicollinearity Test**

The multicollinearity assessment reveals acceptable interrelationships among independent variables predicting organizational performance, particularly in responsiveness and efficiency. All Variance Inflation Factor (VIF) values are below the threshold of 10 (Hair et al., 2010), with the highest at 7.243, indicating moderate but acceptable collinearity (O’Brien, 2007). Other variables also show elevated VIFs (e.g., 5.974 and 4.408) but remain within safe limits. Tolerance values exceed 0.1, confirming no redundancy among predictors (Menard, 2002). Overall, the model shows acceptable multicollinearity, supporting reliable interpretation of SCM variables' effects.

**Table 4.12 Multicollinearity Test**

Variable	Unstandardized B	Std. Error	Standardized Beta	t-value	Sig. (p-value)	VIF
Constant	-0.243	0.681		-0.356	0.722	
Long-term & collaborative supplier relationships	0.139	0.091	0.107	1.518	0.13	2.313
Early supplier involvement in planning	-0.193	0.05	-0.28	-3.823	0	2.486
Supplier problem-solving collaboration	-0.001	0.056	-0.001	-0.019	0.985	1.686
Use of visual tools (dashboards, KPIs)	0.602	0.058	1.02	10.403	0	4.445
Continuous improvement culture	1.048	0.146	0.699	7.159	0	4.408
Reliable and trustworthy information	-1.227	0.134	-1.149	-9.186	0	7.243
Understandable and doubt-free information	-0.103	0.102	-0.077	-1.004	0.317	2.731
Verification of exchanged information	0.261	0.114	0.261	2.296	0.023	5.974
Consistent two-way communication	0.131	0.077	0.122	1.693	0.092	2.408
Regular sharing of forecasts/plans	0.205	0.04	0.291	5.16	0	1.472
Structured information sharing	-0.034	0.063	-0.032	-0.538	0.591	1.663

### 4.3 Assessment of Validity

Pearson correlation analysis was used to assess the strength and direction of linear relationships between SCM practices and organizational performance, a method effective for identifying associations (Field, 2013). With  $N = 220$ , the results are statistically reliable. Significant correlations ( $p < .01$ ,  $p < .05$ ) support meaningful links among SCM variables. For instance, long-term supplier collaboration strongly correlated with standardized procedures ( $r = .960$ ), and operational efficiency correlated with information reliability ( $r = .766$ ) and continuous improvement ( $r = .487$ ), confirming the value of data quality and lean culture. Technical collaboration also showed a strong positive correlation with performance ( $r = .741$ ), while a weak negative link between information clarity and technical collaboration ( $r = -.195$ ) suggests communication complexity. These patterns align with SCM literature (Christopher, 2016; Chopra & Meindl, 2019), reinforcing the study's theoretical foundation and confirming SCM's impact on operational outcomes.

*Table 4.13 Validity-Pearson correlation*

SCM Practice	Responsiveness to disruptions	Operational efficiency	Total
Long-term supplier relationships	0.122	0.43	0.433
Early supplier involvement	0.176	0.23	0.609
Supplier problem-solving	0.007	0.741	0.481
Standardized procedures	0.09	0.38	0.391
Visual tools for performance	0.459	0.609	0.623
Reliable information	0.109	0.766	0.774
Understandable information	0.161	0.01	0.354
Verification of information	-0.043	0.134	0.393
Consistent two-way communication	0.053	0.385	0.489
Sharing forecasts/plans	0.221	0.354	0.443
Structured information sharing	0.134	-0.055	0.142
Responsiveness to disruptions	1	0.307	0.455
Operational efficiency	0.307	1	0.806
Continuous improvement	0.288	0.487	0.727

Total	0.455	0.806	1
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## 4.4 Assessment of Reliability

*Table 4.14 Cronbach's Alpha Reliability Test*

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.700	.731	12

SCM Practice	Mean	Std. Deviation	N
Long-term supplier relationships	4.3	0.535	220
Early supplier involvement	3.68	1.007	220
Supplier problem-solving	4.11	0.744	220
Standardized procedures	4.32	0.522	220
Visual performance tools	3.72	1.171	220
Continuous improvement culture	4.7	0.461	220
Reliable information	3.98	0.648	220
Understandable information	4.23	0.52	220
Verification of information	4.03	0.692	220
Two-way communication	4.64	0.644	220
Sharing forecasts/plans	4.56	0.984	220
Structured information sharing	4.34	0.659	220

### 4.4.1 Research Hypothesis

#### Hypothesis 1

H<sub>01</sub>: There is no significant impact of supply chain collaboration strategies on the performance of National Milling Corporation Limited (HQ).

H<sub>a1</sub>: There is a significant impact of supply chain collaboration strategies on the performance of National Milling Corporation Limited (HQ).

The hypothesis tested the impact of supply chain collaboration on National Milling Corporation's performance. Results showed a significant multivariate effect, confirming that regular supplier engagement enhances performance. This supports earlier findings that collaboration improves information flow, resource sharing, and joint problem-solving, boosting efficiency and adaptability (Cao & Zhang, 2011; Simatupang & Sridharan, 2005). Therefore, the null hypothesis (H01) is rejected, affirming that supplier collaboration is essential for improved performance and competitiveness (Flynn, Huo, & Zhao, 2010).

**Table 4.15 Multivariate Hypothesis Test 1**

<b>Multivariate Tests</b>					
	Value	F	Hypothesis df	Error df	Sig.
Pillai's trace	1.086	81.933	6.000	414.000	.000
Wilks' lambda	.119	130.061 <sup>a</sup>	6.000	412.000	.000
Hotelling's trace	5.658	193.318	6.000	410.000	.000
Roy's largest root	5.336	368.198 <sup>b</sup>	3.000	207.000	.000

Multivariate test results show that frequent supplier collaboration significantly enhances multiple aspects of organizational performance. This underscores the strategic value of supplier relationships in building responsive, high-performing supply chains, consistent with Monczka et al. (2015), who found that collaboration drives innovation, reduces lead times, and boosts responsiveness.

## **Hypothesis 2**

H<sub>02</sub>: There is no significant impact of information sharing practices on the performance of National Milling Corporation Limited (HQ).

H<sub>a2</sub>: There is a significant impact of information sharing practices on the performance of National Milling Corporation Limited (HQ).

The hypothesis tested whether information sharing practices impact performance at National Milling Corporation HQ, focusing on verifying the accuracy and completeness of shared data. Results show a significant multivariate effect, supporting research that effective information sharing enhances coordination and reduces uncertainty (Cao & Zhang, 2011; Li et al., 2006). Thus,

the null hypothesis (H02) is rejected, affirming that routine verification of shared information positively influences performance (Fawcett et al., 2008; Gunasekaran et al., 2001). Accurate, complete information is vital for organizational success.

**Table 4.16 Multivariate Hypothesis Test 2**

<b>Multivariate Tests</b>					
	Value	F	Hypothesis df	Error df	Sig.
Pillai's trace	.516	36.654	4.000	422.000	.000
Wilks' lambda	.487	45.526 <sup>a</sup>	4.000	420.000	.000
Hotelling's trace	1.050	54.887	4.000	418.000	.000
Roy's largest root	1.046	110.353 <sup>b</sup>	2.000	211.000	.000

Multivariate analysis confirms that information verification is a strategic driver of supply chain performance. Firms like NMC that prioritize it are more responsive and operationally effective. This supports Li et al. (2006) and Zhou and Benton (2007), who found that accurate, verified information improves coordination, reduces delays, and boosts adaptability. The findings affirm its critical role in achieving superior outcomes.

## **4.5 Chapter summary**

Chapter four offers a presentation and analysis of data gathered from a range of respondents within NMC. The chapter initiates by detailing the profile of the respondents, including demographic data. Following this, it engages in descriptive analysis, interpreting responses on the Likert scale and exploring the influence of particular supply chain management practices on Supply Chain Flexibility and Operational Efficiency. The chapter wraps up with inferential statistics, utilizing regression analysis to measure the relationships among variables and to evaluate the hypotheses of the study.

## **CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS**

### **5.0 Introduction**

In this chapter, a thorough analysis of the study's findings is provided, concentrating on how supply chain management practices influence the organizational performance of NMC. This discussion is intended to offer a detailed understanding of the complex dynamics revealed during the research. The integration of empirical data with previously established research lays the groundwork for an investigation of the key dimensions addressed in earlier chapters. From the impact of information management practices to the claims regarding lean practices and supplier relationship management, each element is methodically analyzed, scrutinized, and contextualized within the wider academic discourse on supply chain management and organizational performance. This chapter aims to clarify the importance of the findings, create links with existing knowledge, and present practical insights that can guide strategic decisions in the ever-evolving field of supply chain management.

#### **5.1 RO1: To assess the effect of Strategic Supplier Partnerships on the organizational performance of National Milling Corporation Limited (HQ), Lusaka, Zambia**

The findings show that strategic alliances with suppliers greatly enhance the performance of the National Milling Corporation. Long-term partnerships, early supplier involvement, and collaborative problem-solving lead to improved operational efficiency and responsiveness. This aligns with research highlighting collaboration's role in building trust, effective communication, and joint decision-making, which are vital for supply chain agility and resilience (Cao & Zhang, 2011; Simatupang & Sridharan, 2005). Early supplier engagement results in better production synchronization, reducing delays and costs while improving quality (Krause, Handfield, & Tyler, 2007). Additionally, collaborative problem-solving fosters innovation and speeds up issue resolution, increasing adaptability (Flynn, Huo, & Zhao, 2010). Overall, these supplier relationship management strategies boost delivery reliability, cost-effectiveness, and customer satisfaction, emphasizing the need for proactive collaboration in dynamic markets (Cao & Zhang, 2011; Flynn et al., 2010).

**5.2 RO2: To analyze the effect of Internal Lean Practices on the organizational performance of National Milling Corporation Limited (HQ), Lusaka, Zambia.**

The findings show a strong positive link between effective internal lean practices and improved organizational responsiveness and performance. Standardized procedures reduce variation and enhance quality control, promoting stability (Womack & Jones, 2003). Visual tools like dashboards and KPIs enable real-time monitoring and quick issue resolution, boosting responsiveness (Fullerton, McWatters, & Fawson, 2003). A culture of continuous improvement fosters employee engagement and innovation, crucial for adapting to market changes and sustaining gains (Liker, 2004). These results align with research linking lean practices to greater agility and efficiency through workflow optimization, waste reduction, and proactive problem-solving (Shah & Ward, 2007; Bhamu & Singh Sangwan, 2014). Participants endorsing lean initiatives reported higher operational effectiveness, underscoring the strategic importance of lean management.

**5.3 RO3: To measure the effect of the Quality of Information Sharing on the organizational performance of National Milling Corporation Limited (HQ), Lusaka, Zambia.**

Sharing high-quality, clear information significantly boosts the National Milling Corporation's operational performance and disruption management. Reliable information enables quick decision-making, reduces uncertainty, and enhances coordination, fostering agility in dynamic environments (Li, Ragu-Nathan, Ragu-Nathan, & Subba Rao, 2006; Fawcett, Magnan, & McCarter, 2008). A strong consensus on information reliability correlates with better outcomes, as trustworthy communication speeds up problem-solving and aligns supply chains (Cao & Zhang, 2011). Conversely, neutral or inconsistent views on information quality can lead to reduced agility and efficiency, underscoring the risks of information distortion and delays (Lee, Padmanabhan, & Whang, 1997). These insights highlight the necessity of precise and transparent information flow for supply chain resilience and organizational success.

#### **5.4 RO4: To determine the effect of the Level of Information Sharing on the organizational performance at National Milling Corporation Limited (HQ), Lusaka, Zambia.**

The findings show that systematic, bidirectional information exchange with supply chain partners greatly enhances organizational performance. Effective communication ensures a smooth flow of information, fostering mutual understanding and timely decision-making (Li et al., 2006). Regular sharing of demand forecasts and strategic plans improves supply chain alignment, reduces uncertainty, lowers inventory costs, and increases responsiveness (Cao & Zhang, 2011; Fawcett et al., 2008). A well-organized communication framework builds trust and collaboration (Simatupang & Sridharan, 2005), while inconsistent information sharing hinders coordination and raises disruption risks (Lee et al., 1997). These findings highlight the critical role of proactive and transparent information sharing in creating efficient and resilient supply chains.

#### **5.5 Practical/managerial implications of findings**

These implications convert research findings into actionable steps that managers and decision-makers at National Milling Corporation (NMC) can implement to enhance performance:

##### **5.5.1 Strategic Supplier Partnership:**

The findings indicate that robust, enduring relationships with suppliers significantly improve operational efficiency, responsiveness, and quality results at NMC. This suggests that managers should regard suppliers not merely as vendors but as strategic allies. Involving suppliers early in the process facilitates improved coordination of production and resource distribution, while collaborative problem-solving encourages innovation and resilience in addressing disruptions (Krause, Handfield, & Tyler, 2007; Flynn, Huo, & Zhao, 2010). Trust-based, long-term partnerships enhance communication and joint decision-making, which are essential for attaining agility and a competitive edge (Cao & Zhang, 2011; Simatupang & Sridharan, 2005).

##### **5.5.2 Internal Lean Practices**

The results indicate that the regular implementation of lean methodologies enhances operational stability and responsiveness. This suggests that NMC managers ought to integrate lean principles, including standardized processes and visual management tools, into their everyday operations. Practices of continuous improvement (kaizen) not only minimize waste but also involve employees

in problem-solving, resulting in enduring organizational agility and improved performance (Womack & Jones, 2003; Liker, 2004; Shah & Ward, 2007). Consequently, lean systems act as a vital facilitator for responsiveness in competitive and unpredictable environments.

### **5.5.3 Information Quality Level**

High-quality, precise, and transparent information significantly enhances decision-making and strengthens NMC's capacity to address supply chain disruptions. This suggests that managers ought to emphasize the integrity, clarity, and promptness of information shared both internally among departments and externally with partners. Inadequate information quality leads to misalignment and delays, which obstruct agility (Lee, Padmanabhan, & Whang, 1997). Ensuring effective communication processes and tools directly contributes to performance, resilience, and customer satisfaction (Li et al., 2006; Fawcett et al., 2008).

### **5.5.4 Level of Information Exchange**

A structured, two-way method of information exchange greatly enhances coordination and responsiveness at NMC. The managerial takeaway is that leaders should establish formal communication frameworks and consistently share forecasts and operational data to promote alignment throughout the supply chain (Cao & Zhang, 2011). When communication is chaotic or sporadic, performance suffers due to inadequate synchronization and a heightened risk of supply chain interruptions (Simatupang & Sridharan, 2005; Lee et al., 1997).

## **5.6 Recommendations**

Based on the findings and conclusions, the researcher forwards the following recommendations:

1. NMC can formalize long-term contracts with key suppliers to build trust and encourage joint commitment to performance improvements to enhance coordination and reduce cycle times.
2. NMC should develop structured forums or platforms for joint problem-solving with suppliers, thereby enabling prompt and creative resolution of supply chain challenges.
3. NMC can standardize operational processes across departments to minimize variability and increase predictability.
4. NMC can cultivate a continuous improvement culture by empowering employees at all levels to actively participate in process enhancements and problem-solving efforts thereby supporting sustained organizational agility.

5. NMC should train employees on the importance of precise and clear data communication and establish robust validation procedures to ensure the accuracy and reliability of information shared internally and with external partners as investment in reliable communication technologies is also essential in maintaining high data integrity.
6. NMC should implement formalized, two-way information-sharing systems with clear protocols detailing communication frequency, content, and responsibilities and regularly disseminate demand forecasts and operational plans to enhance supply chain alignment, mutual understanding, and responsiveness.

### **5.7 Limitations of the Study**

This study provides significant insights into how supply chain management (SCM) practices affect the performance of the National Milling Corporation (NMC). However, several limitations must be recognized to properly contextualize the findings. Firstly, the research utilized a single-case study approach, concentrating solely on NMC. While case studies are beneficial for gaining a deep understanding (Yin, 2018), the results may not be applicable to organizations with different industry characteristics, ownership structures, or supply chain configurations (Voss, Tsikriktsis, & Frohlich, 2002).

Secondly, the data collection process depended on self-reported questionnaires, which are inherently susceptible to response bias, including social desirability and subjective interpretation (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Consequently, the data may represent perceived rather than actual performance outcomes, potentially skewing the relationship between SCM practices and organizational results.

Third, the cross-sectional design of the study restricts its capacity to establish causality or to observe the evolution of supply chain strategies over time. Therefore, temporal dynamics and long-term performance implications remain unexamined (Rindfleisch, Malter, Ganesan, & Moorman, 2008).

Lastly, the research primarily focused on internal SCM practices, neglecting significant external environmental factors such as market volatility, changes in government policy, or economic recessions. These external factors often exert considerable moderating effects on supply chain performance and strategic decisions (Christopher & Holweg, 2011), and their exclusion may restrict the study's comprehensiveness.

## 5.8 Directions for Future Research

To overcome the aforementioned limitations and deepen the existing comprehension of SCM impacts, several avenues for future research are suggested. Firstly, subsequent studies ought to implement a multiple case study framework across various industries and geographical regions, which would bolster external validity and offer a more comprehensive view on the applicability of SCM (Eisenhardt & Graebner, 2007).

Secondly, the adoption of a longitudinal research design would facilitate the monitoring of SCM practices over time, uncovering how these practices evolve in response to environmental changes and their long-term effects on performance. This methodology would also allow for more robust causal inferences in comparison to cross-sectional studies. For instance, Ellinger et al. (2020) used a triadic, longitudinal design to examine performance across multiple supply chain participants over a decade, demonstrating how supply chain proficiency drives improvements in cost efficiency and asset returns over time.

Thirdly, it is recommended that future research utilize mixed-method strategies by combining quantitative surveys with qualitative instruments such as interviews or focus groups. This would yield more profound insights into both quantifiable results and the fundamental processes that influence SCM effectiveness (Creswell & Plano Clark, 2017).

Fourthly, researchers should explore the impact of emerging technologies such as artificial intelligence, blockchain, and advanced analytics on the transformation of supply chain operations. These advancements are increasingly pivotal in enhancing agility, transparency, and resilience (Ivanov, 2020; Wang, Han, & Beynon-Davies, 2019), rendering them crucial to contemporary SCM research.

Finally, future investigations should take into account the effects of external moderating factors such as firm size, competitive intensity, and regulatory frameworks. Gaining insight into how these elements affect the relationship between SCM practices and performance would provide more context-specific and actionable findings (Ketokivi & Schroeder, 2004), particularly for firms functioning in unstable or resource-limited settings.

## **5.9 Conclusions**

This research thoroughly examined the influence of essential supply chain management (SCM) practices on the performance of National Milling Corporation Limited (HQ) in Lusaka, Zambia. The results indicated that Strategic Supplier Partnerships, Internal Lean Practices, the Quality of Information Sharing, and the Level of Information Sharing are pivotal factors in achieving organizational success, especially in improving operational efficiency and supply chain flexibility. Strategic supplier partnerships were identified as crucial for promoting agility and innovation, while lean internal practices played a significant role in minimizing waste and enhancing productivity. Additionally, the integrity and clarity of information, along with the consistency and structure of information exchange throughout the supply chain, were instrumental in enabling NMC to adapt to market disruptions and align its operations with performance objectives.

Collectively, these findings emphasize the necessity of integrating SCM practices into strategic management frameworks. To implement these insights effectively, NMC should formalize collaborative supplier models, institutionalize lean operations, invest in data accuracy and governance tools, and enhance information exchange systems. However, the study's relevance is tempered by its single-case focus, dependence on self-reported data, and cross-sectional design. Future investigations should employ broader, longitudinal, and mixed-method approaches to validate and extend these findings across various industries and regions. Ultimately, this research offers a framework for utilizing SCM as a strategic instrument for performance enhancement in manufacturing settings that encounter dynamic and complex operational challenges.

The endorsement of all alternative hypotheses in the study, alongside the dismissal of the null hypotheses, reinforces the research conclusions. This suggests that the proposed connections among information management, Lean practices management, and supplier relationship management, as well as their influence on organizational performance, are validated in the context of NMC.

## **5.8 Chapter Summary**

Chapter Five acts as a thorough synthesis of the research results and aims to provide practical insights and suggestions derived from the findings. It delivers a succinct overview of the principal discoveries related to the influence of supply chain management practices on Supply Chain Flexibility and Operational Efficiency initiatives within NMC. The chapter outlines targeted,

practical recommendations for NMC based on the research outcomes. Additionally, it proposes avenues for future research. Then finally draws a conclusion by highlighting the significance of supply chain management practices in enhancing organisational performance and competitiveness.

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# APPENDIX

## Appendix 1: Research Introductory Letter



9<sup>th</sup> April 2025

TO WHOM IT MAY CONCERN

Dear Sir/ Madam,

**RE: RESEARCH INTRODUCTORY LETTER FOR MS. PERSIS TEMBO**

This serves to confirm that **Ms. Persis Tembo**, student number **202401964**, is a Bona fide student at ZCAS University. She is enrolled in the Master of Science in Procurement and Logistics Programme.

Ms. Persis Tembo is currently working on her Dissertation and your organization has been chosen as the main organization for reference and research activities. The title of her research is: **“IMPACT OF SUPPLY CHAIN MANAGEMENT PRACTICES ON THE PERFORMANCE OF MANUFACTURING COMPANIES: A SURVEY OF NATIONAL MILLING CORPORATION LIMITED (NMC) HQ, LUSAKA, ZAMBIA.”**

Kindly assist her with any information that may be relevant to her in this regard. The information gathered will be purely used for academic purposes.

Should you need more information about the student, please do not hesitate to get in touch with undersigned on the numbers below.

**Yours faithfully,**  
**ZCAS University**

A handwritten signature in black ink, appearing to read 'Jonathan Chiyesu'.

**Jonathan Chiyesu**  
**ACTING ACADEMIC AFFAIRS MANAGER**

ZCAS University Dedan Kimathi Road|P.O Box 50497 RW LUSAKA, ZAMBIA| T: +260 211 222 508  
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**Appendix 2: Research Questionnaire**

**Questionnaire: Impact of Supply Chain Management Practices on Organizational Performance**

❖ *Tick the most appropriate*

**SECTION A: Demographic Information:**

**1. What is your Gender?**

Male  Female

**2. To which Age bracket do you belong?**

Under 25  25-34  35-44  45-54

55 and above

**3. What is your highest level of education?**

Undergraduate  Postgraduate  Professional Certification

Others (please specify)

**4. In which department do you work?**

Procurement  Supply chain management  Logistics  Sales and marketing

Finance

**5. What is your occupational level?**

Managerial  Operational  Administrative  Support Staff

Others (please specify)

**SECTION B:**

To what extent do you agree about practices which are stated in following statements? (Please mark X in appropriate box to your opinion)

Where; SD = strongly disagree, D = disagree, N = neutral A=agree and SA = strongly agree

<b>X1 : Strategic Supplier Partnerships</b>	<b>SD 1</b>	<b>D 2</b>	<b>N 3</b>	<b>A 4</b>	<b>SA 5</b>
We maintain long-term and collaborative relationships with our suppliers.					
Our suppliers are involved early in the product design or planning stages.					
We frequently work with suppliers to solve operational or technical issues.					

<b>X2: Internal Lean Practices</b>	<b>SD 1</b>	<b>D 2</b>	<b>N 3</b>	<b>A 4</b>	<b>SA 5</b>
We use standardized procedures across departments to maintain consistency and quality in our operations					
We use visual tools (e.g., dashboards, KPIs) to monitor internal performance and promote efficiency					
Continuous improvement is a core part of our operational culture.					

<b>X3: Quality of Information Sharing</b>	<b>SD 1</b>	<b>D 2</b>	<b>N 3</b>	<b>A 4</b>	<b>SA 5</b>
Our information is consistently reliable and trustworthy.					
Information shared is easy to understand and free from doubt.					
We regularly verify the accuracy and completeness of the information exchanged.					

<b>X4: Level of Information Sharing</b>	<b>SD 1</b>	<b>D 2</b>	<b>N 3</b>	<b>A 4</b>	<b>SA 5</b>
Our communication with partners is consistent and two-way.					
We share forecasts and plans regularly with partners.					
We have a structured approach to sharing key information with all partners					

### **Section C: Organizational Performance Metrics**

Organizational performance is how well an organization achieves its market-oriented goals as well as its financial goals. To what extent do you agree on the organizational performance of the company based on the following parameters? (Please mark X in appropriate box to your opinion)

<b>Supply Chain Flexibility:</b>	<b>SD 1</b>	<b>D 2</b>	<b>N 3</b>	<b>A 4</b>	<b>SA 5</b>
NMC effectively responds to changes in the market environment and supply chain disruptions.					

<b>Operational Efficiency:</b>	<b>SD 1</b>	<b>D 2</b>	<b>N 3</b>	<b>A 4</b>	<b>SA 5</b>
NMC has achieved its operational efficiency and overall performance has exceeded internal and industry targets					

**I appreciate your willingness to dedicate time to participate in this research.**