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Supply Chain Management Practices and Performance of Firms in Nigeria

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Abstract
This study examines the impact of supply chain management (SCM) practices on firm performance, focusing on Inventory Management Practices (IMP), Logistics Management Practices (LMP), Procurement Practices (PP), and Supplier Relationship Practices (SRP). Data were collected from 334 respondents in the procurement and production departments of 62 firms in Abuja, Nigeria. The results of regression analysis indicate that IMP, LMP, and SRP have significant positive effects on Firm Performance (FP), and PP demonstrates a positive association. These findings underscore the strategic importance of SCM practices in enhancing operational efficiency, customer satisfaction, and overall competitiveness. The study contributes to the existing literature by providing empirical evidence to support the critical role of SCM practices in driving firm performance, leading to organizational success. Additionally, recommendations are offered to practitioners and policymakers to optimize SCM practices and maximize their impact on firm performance. The findings contribute to a deeper understanding of the role of SCM in enhancing the competitiveness and sustainability of firms operating in Nigeria's dynamic business landscape.

Keyword: Supply Chain Management Practices and Firm Performance

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1.0 Introduction

Firm performance is the measurement of how well a company achieves its objectives and goals over a specific period of time. It encompasses various aspects such as financial performance, operational efficiency, market share, customer satisfaction, and overall competitiveness in the industry (Charles & Ochieng, 2023). Financial performance is a crucial component of firm performance and includes metrics such as profitability, return on investment (ROI), return on assets (ROA), and revenue growth (Oduro, De Nisco, & Mainolfi, 2023). Operational efficiency measures how well a company utilizes its resources to produce goods and services, including factors such as productivity, cost efficiency, and quality management (Sinaga, Anggraeni, & Slamet, 2021). Market share reflects the company's position relative to competitors and its ability to capture a portion of the market demand.

In the Nigerian context, firm performance is crucial for companies operating in a diverse and competitive business environment. Nigeria, as one of the largest economies in Africa, presents both opportunities and challenges for businesses across various sectors. With a population of over 200 million people and abundant natural resources, Nigeria offers a significant market potential for companies looking to expand their operations. However, operating in Nigeria also comes with challenges, such as infrastructural constraints, bureaucratic hurdles, regulatory uncertainties, and security concerns (Adegoke, & Dada, 2023). These factors can impact firms' ability to achieve optimal performance and compete effectively in the market.

Given the dynamic nature of the Nigerian economy, firms need to adapt and innovate to stay ahead of the competition. This involves implementing efficient supply chain management practices to streamline operations, reduce costs, and enhance overall performance (Bimha, Hoque, & Munapo, 2020). Effective inventory management, logistics optimization, procurement practices, and strong supplier relationships are critical factors that can contribute to improved firm performance in Nigeria. For Nigerian firms, achieving strong financial performance and operational efficiency are paramount for long-term success and sustainability.

Supply chain management (SCM) has emerged as a critical strategic tool for firms worldwide, allowing them to optimize their operations, reduce costs, and improve customer satisfaction (Okafor, Ani, & Ugwu, 2022). In Nigeria, a rapidly developing economy with a diverse business landscape, the effective management of supply chains is paramount for firms to remain competitive and achieve sustainable growth. However, despite the growing importance of SCM, there is a lack of comprehensive research on how SCM practices impact firm performance, specifically within the Nigerian context.

Nigeria's business environment is characterized by various challenges, such as infrastructure deficiencies, regulatory complexities, and supply chain inefficiencies, all of which can significantly affect firm performance (Omoraka, 2022). Understanding how different SCM practices are implemented and their effects on firm performance metrics is crucial for Nigerian firms seeking to navigate these challenges and thrive in the marketplace. Additionally, with the increasing globalization of markets and the rise of digital technologies, there is a need to explore how firms in Nigeria are adapting their SCM practices to remain competitive in a rapidly changing business environment.

In this study, four dimensions of supply chain management (inventory management practices, logistics management practices, procurement practices, and supplier relationship management practices) have a direct and profound impact on the performance of firms across industries. Effective inventory management practices ensure that firms maintain optimal levels of inventory, striking a balance between meeting customer demand and minimizing holding costs (Opoku, Fiati, Kaku, Ankomah, & Agyemang, 2020). When executed efficiently, inventory management practices contribute to improved cash flow, reduced carrying costs, and enhanced customer satisfaction through timely order fulfillment, thereby positively influencing firm performance (Eze, Awodele, Adegboyega, Onyeagam, & Guto, 2020).

Similarly, according to Molamohamadi, Ismail, Leman, and Zulkifli (2013), logistics management practices play a crucial role in firm performance by ensuring the seamless movement and storage of goods throughout the supply chain network. Efficient transportation, warehousing, and distribution processes enable firms to minimize lead times, reduce transportation costs, and enhance order accuracy and reliability (Niu, Zhang, & Mu, 2023). Therefore, optimizing logistics management practices, firms can improve operational efficiency, increase responsiveness to customer demand fluctuations, and gain a competitive edge in the marketplace. Moreover, procurement practices directly impact firm performance by influencing the quality, cost, and availability of inputs (Sindi, & Roe, 2017). Strategic sourcing and supplier selection strategies enable firms to secure high-quality materials and services at competitive prices, thereby reducing production costs, enhancing product quality, and improving overall profitability (Su, & Gargeya, 2012). Additionally, effective supplier relationship management practices foster collaboration, innovation, and risk mitigation throughout the supply chain, further contributing to enhanced firm performance and sustained competitive advantage.

Against this backdrop, this study aims to fill the gap in the literature by investigating the relationship between SCM practices and firm performance in Nigeria. By examining key SCM practices such as inventory management, logistics, and supplier relationships, the study seeks to provide valuable insights into how Nigerian firms can enhance their operational efficiency, reduce costs, and improve customer satisfaction through effective SCM strategies. The findings of this research will not only contribute to the academic literature on SCM but also offer practical recommendations for Nigerian firms to optimize their supply chain operations and achieve sustainable growth in today's dynamic business environment.

Furthermore, while there is a growing body of literature on SCM practices and firm performance globally, much of this research has focused on developed economies, with limited attention given to emerging markets like Nigeria. Given the diverse business environment and economic dynamics in Nigeria, there is a need for empirical research that examines how Nigerian firms are adopting and implementing SCM practices to overcome challenges and achieve sustainable growth. Understanding the specific SCM practices that contribute to improved firm performance in the Nigerian context is crucial for informing strategic decision-making and enhancing the competitiveness of Nigerian businesses in both domestic and international markets.

Therefore, the overarching problem addressed by this study is the lack of empirical research on the relationship between SCM practices and firm performance in Nigeria. Thus, investigating this relationship and identifying the key SCM practices that drive performance improvements, this study aims to fill the existing gap in the literature and provide valuable insights for Nigerian firms seeking to optimize their supply chain operations and achieve sustainable growth.

The following hypotheses were formulated to guide the study:

1. Null Hypothesis (H01): There is no significant relationship between inventory management practices and firm performance in Nigeria. Alternative Hypothesis (H1): There is a significant positive relationship between inventory management practices and firm performance in Nigeria.

2. Null Hypothesis (H02): Logistics management practices do not have a significant impact on firm performance in Nigeria. Alternative Hypothesis (H1): Logistics management practices have a significant positive impact on firm performance in Nigeria.

3. Null Hypothesis (H03): Procurement practices do not significantly affect firm performance in Nigeria. Alternative Hypothesis (H1): Procurement practices significantly affect firm performance in Nigeria.

4. Null Hypothesis (H04): Supplier relationship management practices do not significantly affect firm performance in Nigeria. Alternative Hypothesis (H1): Supplier relationship management practices significantly affect firm performance in Nigeria.

2.0 Literature Review

The literature review section thoroughly examines previous scholarly works and theoretical frameworks pertinent to the study's focus on how supply chain management impacts firm performance. Synthesizing past research findings and theoretical perspectives, this section aims to establish the groundwork for the empirical investigation conducted in this study.

2.1 Firm performance

Firm performance encompasses the achievement of strategic objectives and delivery of value to stakeholders, as articulated by Dess, Lumpkin, Eisner, and McNamara (2019). Barney (1991) emphasizes sustainable profitability and competitive advantage derived from unique resources and capabilities, while Wernerfelt (1984) underscores the efficient utilization of resources to create customer value and secure market position. Grant (1991) extends this notion to include both financial and non-financial indicators of success, such as customer satisfaction and innovation, while Kaplan and Norton (1996) advocate for a balanced scorecard approach, integrating financial metrics with measures of internal processes, customer relations, and organizational learning. Together, these perspectives provide a multifaceted understanding of firm performance, considering both quantitative financial outcomes and qualitative strategic achievements.

Firm performance refers to the measurement of how well a company achieves its objectives and goals over a specific period of time (Nicolaou, 2004). It encompasses various aspects such

as financial performance, operational efficiency, market share, customer satisfaction, and overall competitiveness in the industry (Morimura, & Sakagawa, 2023). Firm performance is often evaluated using key performance indicators (KPIs) that are tailored to the specific goals and objectives of the organization. Financial performance is a crucial component of firm performance and includes metrics such as profitability, return on investment (ROI), return on assets (ROA), and revenue growth (Santos, & Brito, 2012). Operational efficiency measures how well a company utilizes its resources to produce goods and services, including factors such as productivity, cost efficiency, and quality management. Market share reflects the company's position relative to competitors and its ability to capture a portion of the market demand.

In the realm of manufacturing firms, firm performance is a concept crucial for assessing overall success and competitiveness. Operational efficiency stands as a cornerstone, where streamlined processes, optimized resource allocation, and effective supply chain management contribute to enhanced productivity and reduced costs (Ramachandran, 2023). Financial health is another pivotal aspect, gauging a firm's profitability, liquidity, and ability to generate returns for stakeholders. Market position serves as a barometer of competitiveness, encapsulating factors such as brand reputation, market share, and customer satisfaction. Moreover, innovation capability distinguishes leading manufacturing firms, as they leverage research and development efforts to introduce new products, improve existing processes, and maintain relevance in rapidly evolving markets (Dess, Lumpkin, Eisner, & McNamara, 2019). Finally, sustainability performance is increasingly vital, reflecting a firm's commitment to environmental stewardship, ethical practices, and social responsibility, thereby enhancing brand image and mitigating risks in an ever-conscious marketplace. Across these dimensions, manufacturing firms navigate a complex landscape, striving to optimize performance while adapting to dynamic market conditions and evolving customer demands.

2.2 Supply Chain Management

Previous studies offer various definitions and views on SCM. These definitions of supply chain management (SCM) highlight its essence as a holistic approach to managing the flow of goods, services, and information across a network of interconnected organizations. Olaniyan, Bosede, and Olusola (2015) emphasize the interconnectedness of activities within a supply chain, emphasizing that no single activity can ensure the effectiveness of the entire system. Khalfan, McDermott, and Kyng (2015) elaborate on this interconnectedness, describing SCM as a network of organizations working together to produce goods and services for end consumers through integrated processes and activities.

The scope of SCM, as articulated by Sindi and Roe (2017), extends from the extraction of raw materials to the delivery of finished products to the final consumer. This comprehensive view encompasses all stages of production, transformation, and distribution, with the goal of ensuring that goods are produced and delivered in the right quantities, to the right locations, at the right time, and in a cost-effective manner. Molamohamadi et al. (2013) add to this perspective by highlighting the role of material and information flow among the various members of the supply chain network, including suppliers, contractors, and clients.

Supply chain management encompasses four critical dimensions that are essential for optimizing the flow of goods, services, and information throughout the supply chain network.

Inventory management practices involve effectively balancing inventory levels to meet demand while minimizing holding costs and stockouts. Logistics management practices focus on the efficient movement and storage of goods, encompassing transportation, warehousing, distribution, and order fulfilment processes. Procurement practices entail sourcing raw materials, components, and services from suppliers, aiming to secure quality inputs at optimal prices and terms. Supplier relationship management practices emphasize building collaborative and mutually beneficial partnerships with suppliers, fostering trust, transparency, and continuous improvement throughout the supply chain. Together, these dimensions of supply chain management play a pivotal role in enhancing operational efficiency, reducing costs, improving customer satisfaction, and driving competitive advantage for organizations across various industries.

2.2.1 Inventory management practices

Inventory management practices are integral components of supply chain management (SCM) as they directly impact the flow of goods and materials throughout the supply chain network. Within SCM, inventory management serves as a critical link between suppliers, manufacturers, distributors, and end customers (Chan & Prakash, 2012). In this regard, by effectively managing inventory levels, organizations can ensure the smooth and efficient flow of goods from suppliers to customers while minimizing costs and maximizing service levels.

Within the broader context of SCM, inventory management practices contribute to the overall efficiency and effectiveness of the supply chain by addressing key operational challenges such as demand variability, lead time uncertainty, and supply chain disruptions (Habib, 2011). For example, accurate demand forecasting helps organizations anticipate fluctuations in customer demand and adjust their inventory levels accordingly, thereby reducing the risk of stockouts or excess inventory. Similarly, JIT inventory systems enable organizations to streamline their operations by aligning production with customer demand, thereby minimizing the need for excess inventory and reducing inventory holding costs (Opoku et al., 2020).

Furthermore, inventory management practices such as ABC analysis allow organizations to prioritize their inventory management efforts by focusing resources on the most critical inventory items (Sari, 2008). This strategic allocation of resources helps organizations optimize their inventory levels, improve inventory turnover rates, and enhance overall supply chain performance. Overall, effective inventory management practices are essential for achieving the goals of SCM, including cost reduction, improved customer service, and enhanced supply chain resilience.

2.2.2 Logistics Management Practices

Logistics management practices play a crucial role in supply chain management (SCM) by facilitating the efficient movement of goods and materials throughout the supply chain network (Mangan, & Lalwani, 2016). Logistics encompasses a range of activities, including transportation, warehousing, inventory management, and order fulfilment, all of which are essential for ensuring the timely and cost-effective delivery of products to customers. Within SCM, logistics management focuses on optimizing these activities to minimize costs, reduce lead times, and improve overall supply chain performance (Kankaew et al., 2021).

One key aspect of logistics management within SCM is, according to Mangan, and Lalwani, (2016), transportation management, which involves the planning, execution, and monitoring of transportation activities to ensure goods are delivered to the right place at the right time. Effective transportation management helps organizations minimize transportation costs, reduce transit times, and improve delivery reliability, thereby enhancing customer satisfaction and competitiveness. Additionally, logistics management encompasses warehousing and distribution activities, which involve the storage, handling, and distribution of goods within the supply chain network (Mukhamedjanova, 2020). Thus, by strategically locating warehouses and distribution centres, organizations can minimize transportation costs, reduce order fulfilment times, and improve inventory visibility and control.

Moreover, logistics management practices such as route optimization, load consolidation, and cross-docking enable organizations to streamline their transportation operations and minimize inefficiencies (El Khatib, Al Hammadi, Al Hamar, Oraby, & Abdulaziz, 2022). Other studies like Mukhamedjanova (2020) are optimizing that transportation routes and consolidating shipments to organizations to reduce empty miles, lower fuel consumption, and decrease transportation costs. Similarly, cross-docking facilities allow for the direct transfer of goods from inbound to outbound trucks, eliminating the need for storage and reducing handling costs and transit times. Therefore, effective logistics management practices are essential for achieving the goals of SCM, including cost reduction, improved customer service, and enhanced supply chain agility and responsiveness.

2.2.3 Procurement practices

Procurement practices are fundamental components of supply chain management (SCM) as they involve the acquisition of goods and services required for the production or operation of a business (Studer, & De Brito Mello, 2021). Within SCM, procurement encompasses activities such as sourcing suppliers, negotiating contracts, managing supplier relationships, and ensuring the timely delivery of goods and services. Effective procurement practices are critical for optimizing supply chain performance, reducing costs, and enhancing overall operational efficiency (Wu, Luo & Zhang, 2020). Organizations must carefully evaluate potential suppliers based on factors such as price, quality, reliability, and responsiveness to ensure they can meet the organization's needs and expectations (El Khatib et al., 2022). Once suppliers are selected, effective supplier management practices involve establishing clear communication channels, monitoring supplier performance, and resolving any issues or disputes that may arise. In addition, procurement practices also involve contract management and negotiation, which are essential for securing favourable terms and conditions with suppliers. Effective contract management entails defining clear terms, conditions, and expectations, as well as monitoring compliance and addressing any deviations or discrepancies (Vrijhoef, 2020). This study argues that negotiating competitive pricing, favourable payment terms, and flexible contracts, can stimulate organizations to reduce procurement costs, improve cash flow, and enhance overall supply chain efficiency.

2.2.4 Supplier Relationship Management Practices

Supplier relationship management (SRM) practices are integral to supply chain management (SCM) as they involve developing and maintaining collaborative partnerships (Studer, & De

Brito Mello, 2021) with key suppliers to ensure the smooth flow of goods and services throughout the supply chain. SRM practices focus on building strong, mutually beneficial relationships with suppliers to enhance supply chain performance, reduce costs, mitigate risks, and drive innovation. In this regard, organizations must strategically identify and classify suppliers based on factors such as criticality, performance, and alignment with organizational objectives (Vrijhoef, 2020). In this study, by segmenting suppliers, firms can allocate resources effectively, prioritize investments, and tailor relationship management strategies to meet the unique needs of each supplier category.

These firms can engage in open communication, transparency, and trust-building activities with suppliers to foster long-term partnerships. This means they can collaborate in sharing information, aligning goals and objectives, and jointly developing strategies to improve supply chain efficiency, quality, and innovation. Additionally, SRM practices encompass performance measurement and improvement initiatives, as on-time delivery, quality standards, and cost-effectiveness can improve performance levels. Through regular performance evaluations and feedback mechanisms, organizations can identify areas for improvement, address issues proactively, and drive continuous performance enhancement (El Khatib et al., 2022).

2.3 Empirical Review

The literature presents a comprehensive overview of supply chain management (SCM) practices and their impact on firm performance across various industries and contexts. Jahanbakhsh Javid and Amini (2023) emphasize the significance of effective SCM in securing competitive advantage and enhancing organizational performance. Their study highlights the positive relationship between SCM practices, competitive advantage, and organizational performance, suggesting that higher levels of SCM practices can lead to improved firm performance. Eze et al. (2020) focus on the construction industry and identify triggers of inefficient material management practices among construction SMEs, which adversely affect project performance in terms of time, cost, quality, and productivity. Ososanmi et al. (2022) delve into green supply chain management (GSCM) practices in a manufacturing organization in Nigeria, highlighting the importance of government, organizational, and societal drivers in promoting sustainable production practices. Oyedijo et al. (2022) investigate the factors influencing supply chain (SC) collaboration in Nigeria's food and beverage sector, revealing both restraining and driving forces at internal, SC, and external environment levels.

Synthesizing the existing literature underscores several notable gaps that warrant attention in future research endeavours. Firstly, the current body of research predominantly focuses on specific industries or countries, limiting the breadth of insights into supply chain management (SCM) practices and their impact on firm performance. To address this limitation, future studies should explore SCM practices across diverse industry sectors and geographical regions, allowing for a more comprehensive understanding of the nuanced dynamics at play. Such cross-industry and cross-country analyses could shed light on universal principles as well as industry-specific variations in SCM effectiveness and its implications for firm performance. Such research endeavours could identify trends, patterns, and success factors that contribute to enduring improvements in firm performance, thereby enriching our understanding of the long-term implications of effective SCM practices.

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2.4 Theoretical Framework

The theoretical framework for the study on supply chain management practices and firm performance in Nigeria draws upon two relevant theoretical perspectives to guide the research and analyze the relationships between key variables. One prominent theoretical lens is the Resource-Based View (RBV), which posits that a firm's competitive advantage and performance are driven by its unique resources and capabilities (Barney, 1991). In the context of supply chain management, this perspective suggests that effective utilization of resources such as inventory, logistics, procurement, and supplier relationships can lead to improved firm performance.

Another theoretical perspective that supports the study is Transaction Cost Economics (TCE), which emphasizes the role of transaction costs in shaping the structure and governance of supply chains (Williamson, 1985). TCE suggests that firms make decisions regarding inventory management, logistics, procurement, and supplier relationships based on minimizing transaction costs, such as those associated with information asymmetry, opportunistic behaviour, and asset specificity. Therefore, by reducing transaction costs through efficient supply chain practices, firms can enhance their performance.

2.3.1 Conceptual Framework

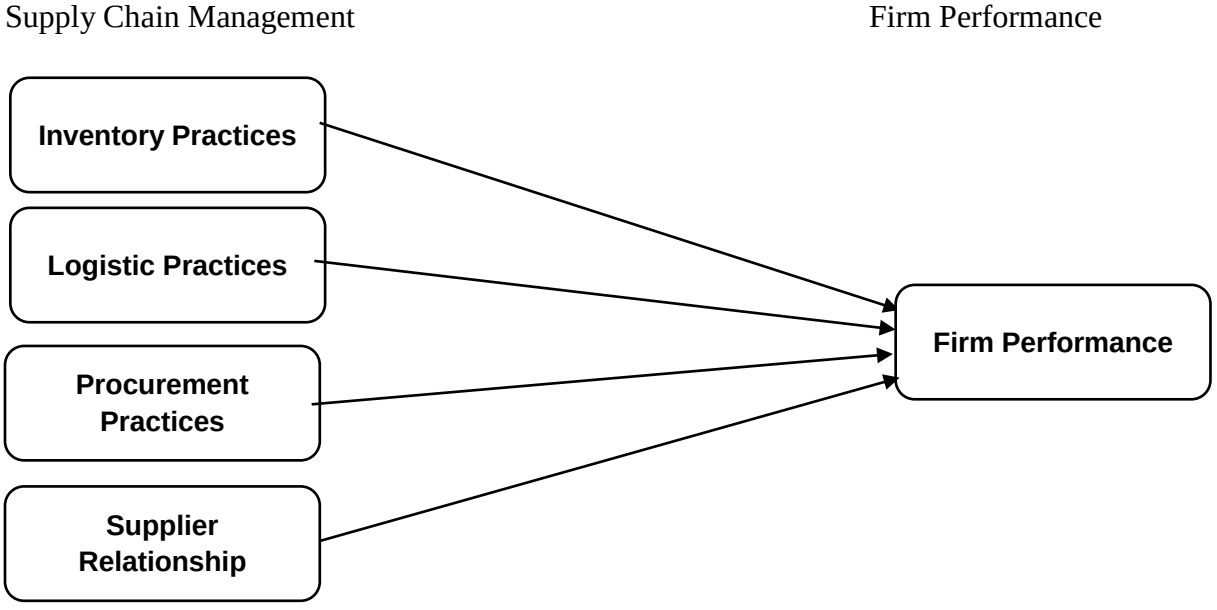

Figure 1 Research Conceptual Framework

3.0 Methodology

Utilizing a descriptive research design coupled with a survey method provides a structured and systematic approach to investigating the research questions at hand. Descriptive research aims to describe the characteristics of a phenomenon or population, offering insights into existing conditions, practices, and perceptions. In this study, the focus is on understanding the

procurement and production practices within firms Edu industrial layout in Abuja, Nigeria, and their potential impact on firm performance. Employing a survey, the researchers gather quantitative data directly from the procurement and production departments of a sizable sample of firms, allowing for a comprehensive assessment of prevalent practices and perceptions in these key areas.

The choice of census sampling techniques further strengthens the study's validity and generalizability, and by including all 62 firms under study in Abuja with a total staff of 496 across the procurement and production departments, the researchers ensure that the entire population of interest is represented in the study sample. This approach eliminates potential sampling biases and enhances the reliability of the findings, as every eligible participant has an equal chance of being included in the study. Additionally, the large sample size increases the statistical power of the study, by enabling robust analyses and meaningful interpretations of the survey data. The study uses a regression method to test the study's hypotheses using SPSS v. 24. It provides a solid foundation for conducting a comprehensive investigation into supply chain practices and firm performance in Abuja, Nigeria.

4.0 Result and Discussion

The collection of 334 valid returned questionnaires represents a substantial portion of the total sample population, indicating a robust response rate of 67.4 percent. This high response rate enhances the reliability and validity of the study findings, as it suggests that a significant proportion of the target population has been effectively captured and represented in the survey data. The considerable number of responses allows for a comprehensive analysis of the research variables and provides a solid basis for drawing meaningful conclusions.

In terms of demographic characteristics, the distribution of respondents reveals interesting insights. The predominance of male respondents, with 257 individuals, compared to 77 female respondents, may reflect gender disparities within the procurement and production departments of firms in Abuja, Nigeria. This observation could potentially highlight gender-related issues or disparities in employment opportunities and representation within these departments. Furthermore, the educational background of the respondents indicates a diverse range of qualifications, with 189 individuals holding a degree, 112 individuals having a Higher National Diploma (HND) or National Diploma (ND), and 33 individuals possessing a higher degree. This variation in educational attainment levels underscores the importance of considering diverse perspectives and experiences when analyzing the survey data and drawing conclusions about procurement and production practices and their impact on organizational performance. Overall, these demographic insights provide valuable context for interpreting the survey findings and understanding the characteristics of the respondent sample in relation to the study objectives.

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Table 1 Reliability Result

Variable	Number of Items	Cronbach Alpha
Inventory Management Practices (IMP)	4	0.715
Logistics Management Practices (LMP)	5	0.842
Procurement Practices (PP)	4	0.788
Supplier Relationship Practices	5	0.734
Firm Performance (FP)	6	0.868

Source: Field survey 2025

Table 1 presents the reliability results for variables including Inventory Management Practices (IMP), Logistics Management Practices (LMP), Procurement Practices (PP), Supplier Relationship Practices, and Firm Performance (FP), derived from a 2024 field survey. The Cronbach's alpha coefficients indicate the internal consistency of the items within each variable. IMP exhibits moderate internal consistency with a Cronbach's alpha of 0.715, while PP demonstrates high consistency with a coefficient of 0.788. Supplier Relationship Practices show moderate consistency with a coefficient of 0.734, and FP displays high internal consistency with a coefficient of 0.868. However, the reliability measure for LMP is 0.842. These results suggest that most variables have acceptable to high levels of internal consistency, underscoring the reliability of the measurement instrument.

Table 2 Collinearity Diagnostics

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	IMP	.710	1.275
	LMP	.755	3.373
	PP	.822	2.443
	SRP	.805	4.017

Source: Field survey 2025

Table 2 presents the collinearity diagnostics for the regression model, assessing multicollinearity among the independent variables: Inventory Management Practices (IMP), Logistics Management Practices (LMP), Procurement Practices (PP), and Supplier Relationship Practices (SRP). The collinearity statistics include Tolerance and Variance Inflation Factor (VIF). Tolerance values close to 1 indicate low multicollinearity, while VIF values above 10

suggest high multicollinearity. In this model, IMP has a tolerance of 0.710 and a VIF of 1.275, indicating relatively low multicollinearity. LMP and PP also exhibit low multicollinearity, with tolerances of 0.755 and 0.822, and VIFs of 3.373 and 2.443, respectively. However, SRP shows higher multicollinearity, with a tolerance of 0.805 and a VIF of 4.017. Overall, the collinearity diagnostics suggest that multicollinearity is not a significant concern among most independent variables, but caution may be warranted when interpreting the results for Supplier Relationship Practices due to its higher VIF value.

Table 3 Regression Output 1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.414[a]	0.402	0.406	0.57337	1.839

a. Predictors: (Constant), IMP,LMP,PP,SRP

b. Dependent Variable: FP

Table 3 presents the regression output for the model assessing the relationship between independent variables (Inventory Management Practices (IMP), Logistics Management Practices (LMP), Procurement Practices (PP), Supplier Relationship Practices (SRP)) and the dependent variable (Firm Performance (FP)). The regression model shows an R-squared value of 0.402, indicating that approximately 40.2% of the variance in firm performance can be explained by the independent variables included in the model. The adjusted R-squared value of 0.406 suggests that the model adjusts for the number of predictors and provides a slightly better fit to the data. The standard error of the estimate, which measures the average deviation of the observed values from the predicted values, is 0.57337. The Durbin-Watson statistic of 1.839 indicates the absence of significant autocorrelation in the residuals. The regression output suggests that the independent variables collectively have a moderate level of predictive power for firm performance, with approximately 40.2% of the variance accounted for by the model. However, further analysis is needed to assess the significance of individual predictors and their respective coefficients in influencing firm performance.

Table 4 Regression Output 2

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	111.700	3	37.233	90.839	0.000[b]
	Residual	70.563	210	0.336		
	Total	182.262	213			

a. Dependent Variable: FP

b. Predictors: (Constant), IMP,LMP,PP,SRP

Table 4 presents the results of the analysis of variance (ANOVA) for the regression model, providing information on the sum of squares, degrees of freedom (Df), mean square, F-value, and significance level (Sig.) for both the regression and residual components. The regression component accounts for the variability explained by the independent variables (IMP, LMP, PP, SRP) in predicting the dependent variable (FP), while the residual component represents the unexplained variability in the model.

In this table, the regression component shows a sum of squares of 111.700 with 3 degrees of freedom, resulting in a mean square of 37.233. The corresponding F-value of 90.839 is highly significant ($p < 0.001$), indicating that the regression model as a whole significantly predicts the variance in firm performance. Conversely, the residual component, which represents the unexplained variability in the model, has a sum of squares of 70.563 with 210 degrees of freedom, resulting in a mean square of 0.336. Further analysis is needed to assess the individual significance of each predictor and interpret their respective contributions to explaining variance in firm performance.

Table 4.11 Regression Model Output 3

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	B		
1	(Constant)	0.301	0.026		11.577	0.003
	IMP	0.291	0.046	0.368	6.326	0.000
	LMP	0.204	0.023	0.227	8.869	0.004
	PP	0.303	0.066	0.297	4.591	0.006
	SRP	0.167	0.023	0.211	7.261	0.000

a. Dependent Variable: FP

Table 4.11 presents the regression model output, detailing the unstandardized coefficients, standardized coefficients (Beta), T-values, and significance levels (Sig.) for each predictor variable (Inventory Management Practices (IMP), Logistics Management Practices (LMP), Procurement Practices (PP), and Supplier Relationship Practices (SRP)), as well as the constant term (intercept). The constant term represents the estimated value of the dependent variable (Firm Performance (FP)) when all predictor variables are set to zero. In this model, the constant term is 0.301, with a standard error of 0.026 and a T-value of 11.577, indicating that it is significantly different from zero ($p < 0.05$).

Test of Hypotheses

H01: Hypothesis: There is no significant relationship between Inventory Management Practices and Firm Performance. Findings show the Beta coefficient (Beta = 0.291) indicates that for every one-unit increase in IMP, there is a corresponding increase in Firm Performance. The T-statistic (T = 6.326) is significant at the 0.001 level ($p < 0.001$), suggesting strong evidence to reject the null hypothesis. Thus, the results support the hypothesis that Inventory Management Practices have a significant positive impact on Firm Performance.

H02: Hypothesis: There is no significant relationship between Logistics Management Practices and Firm Performance. Findings show that the Beta coefficient (Beta = 0.204) suggests that for every one-unit increase in LMP, there is a corresponding increase in Firm Performance. The T-statistic (T = 8.869) is significant at the 0.05 level ($p < 0.05$), indicating sufficient evidence to reject the null hypothesis. Therefore, the results support the hypothesis that Logistics Management Practices have a significant positive impact on Firm Performance.

H03: Hypothesis: There is a significant relationship between Procurement Practices and Firm Performance. Findings revealed that the Beta coefficient (Beta = 0.303) implies that for every one-unit increase in PP, there is a corresponding increase in Firm Performance. However, the T-statistic (T = 4.591) is significant at the 0.05 level ($p < 0.05$), indicating evidence to reject the null hypothesis. Despite the significance, suggesting an association between Procurement Practices and Firm Performance.

H04 Hypothesis: There is no significant relationship between Supplier Relationship Practices and Firm Performance. Findings revealed that the Beta coefficient (Beta = 0.167) suggests that for every one-unit increase in SRP, there is a corresponding increase in Firm Performance. The T-statistic (T = 7.261) is significant at the 0.001 level ($p < 0.001$), providing strong evidence to reject the null hypothesis. Thus, the results support the hypothesis that Supplier Relationship Practices have a significant positive impact on Firm Performance.

Discussion

The regression analysis results provide valuable insights into the relationship between supply chain management (SCM) practices and firm performance. Specifically, Inventory Management Practices (IMP), Logistics Management Practices (LMP), Procurement Practices (PP), and Supplier Relationship Practices (SRP) were examined in relation to Firm Performance (FP). The findings reveal that IMP, LMP, and SRP have significant positive impacts on FP, while PP shows a relatively weaker association.

The significant positive relationship between IMP and FP aligns with previous empirical findings. Efficient inventory management has been consistently linked to improved operational performance, reduced costs, and enhanced customer satisfaction (Zhu et al., 2018; Wu et al., 2020). Similarly, the positive impact of LMP on FP corroborates existing research, highlighting the importance of effective logistics management in achieving competitive advantage and superior firm performance (Mangan et al., 2016; Ivanov, 2020). The relative association between PP and FP supports some previous studies that have emphasized the critical role of procurement practices in enhancing firm performance (Caniato et al., 2012; Narasimhan et al., 2014). However, the significant positive relationship between SRP and FP is consistent with

prior research emphasizing the importance of strong supplier relationships in achieving supply chain resilience, innovation, and overall firm success (Cao & Zhang, 2011; Fawcett et al., 2014). Effective supplier relationship management has been shown to foster collaboration, trust, and mutual value creation, ultimately leading to improved firm performance.

Overall, the findings underline the significance of SCM practices in driving firm performance. Thereby optimizing inventory management, logistics operations, and supplier relationships, firms can enhance their competitiveness, operational efficiency, and financial outcomes. However, the impact of procurement practices on firm performance suggests the need for further investigation and potential refinement of procurement strategies to fully leverage their potential benefits.

These findings contribute to the existing body of knowledge on SCM and firm performance, providing empirical evidence to support the strategic importance of SCM practices in achieving sustainable competitive advantage and organizational success. However, future research could explore additional contextual factors, industry-specific nuances, and longitudinal effects to deepen our understanding of the complex relationship between SCM practices and firm performance.

5.0 Conclusion and Recommendations

In conclusion, the findings of this study highlight the significant impact of supply chain management (SCM) practices on firm performance. Inventory Management Practices (IMP), Logistics Management Practices (LMP), and Supplier Relationship Practices (SRP) were found to have substantial positive associations with Firm Performance (FP), underscoring their critical roles in enhancing operational efficiency, customer satisfaction, and overall competitiveness. However, Procurement Practices (PP) exhibited a relative relationship with FP, suggesting the need for further exploration and potential refinement of procurement strategies to maximize their contribution to firm performance. These findings contribute to the existing body of knowledge on SCM and firm performance, providing empirical evidence to support the strategic importance of SCM practices in achieving sustainable competitive advantage and organizational success.

Based on the findings, several recommendations can be made for practitioners and policymakers:

1. The firms should emphasize the importance of investing in advanced inventory management systems and techniques to optimize inventory levels, reduce costs, and enhance responsiveness to customer demands.
2. The firms should prioritize investments in logistics infrastructure, technology, and process optimization to streamline transportation, warehousing, and distribution activities, thereby improving service levels and reducing lead times.
3. The firms should embark on steady and strengthen supplier relationship management practices by fostering collaboration, transparency, and trust with key suppliers, leading to improved quality, reliability, and innovation in the supply chain.

4. The firms should continuously evaluate and enhance procurement strategies to ensure alignment with organizational goals, market dynamics, and best practices, thereby maximizing the value generated from procurement activities.

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