

The Mediating Role of Innovation Capability in the relationship between Supply Chain Management and Firm Performance

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Abstract

In today's dynamic and competitive business environment, organizations adopt supply chain management to boost innovation and improve performance. This study investigates the link between supply chain management and firm performance and the mediating role of innovation capability. A cross-sectional survey research design was employed; 5 textile firms in Lagos State were conveniently selected for the study. 353 structured questionnaires were administered to top-, middle-, and lower-level managers of the selected firms, of which only 328 were returned. After data screening, only 312 responses were valid for analysis. The study employed SPSS statistical software to perform both descriptive and inferential statistical analysis. The mediation aspect of the analysis was done using Model 4 of the SPSS PROCESS macro. The study found that supply chain management has a significant positive effect on firm performance and innovation capability. Also, innovation capability significantly influences firm performance and plays a mediating role in improving the relationship between supply chain management and firm performance. The study recommends that leaders from industry should prioritize investments in SCM practices that can bring supply chain partners together to build a strong IC for performance improvement.

Keywords: supply chain management; innovation capability; firm performance

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1. Introduction

Today, it is evident that the business environment is becoming more complex and competitive, exposing firms and industries to high levels of uncertainty that militate against their performance (Arogundade et al., 2023). The Nigerian textile industry is not an exception. The industry was once recognized as a thriving one for its contribution to national economic development for years (Ubi & Mohammed, 2025). Currently, the Nigerian textile industry is on the verge of collapsing due to challenges ranging from intense competition from imports, decreasing demand, market saturation, and high production costs. These challenges have weakened the industry's level of performance and sustainability beyond measure (Asogwa et al., 2024).

To confront the prevailing challenges, firms began to search for reliable modern management approaches or strategies capable of improving operational efficiency, competitive advantage, and overall performance. One

potent approach is the supply chain management (SCM). In the past, traditional managers considered SCM a tactical or operational function that focuses on cost reduction and logistic improvement. Modern managers not only see SCM as a cost-saving tool but also as a strategic approach that boosts efficiency (Afework et al., 2020; E-Vahdati et al., 2020), enhances product quality (Ding et al., 2023), and improves overall performance (Chowdhury & Islam, 2023).

While the existing literature acknowledged the role played by SCM in enhancing firm performance (FP), it is important to emphasize that such a relationship may not always be direct. There could be some underlying mechanisms that facilitate or strengthen this nexus. One prominent mechanism is innovation capability (IC). IC is the organization's ability to create new ideas, processes, and products (Purwati et al., 2021). It represents a firm's ability to respond to internal and external stimuli, which in the long run places a firm above others in the same industry. Firms processing these capabilities were able to develop new designs, introduce improved production techniques, respond quickly to market demands, and deliver superior value to customers. Therefore, IC is a crucial driver in a firm's competitiveness (Canbul & Çemberci, 2023).

Despite the growing recognition of the direct impact of SCM on FP, as documented in prior studies (Ayorinde, 2024; Chileshe & Phiri, 2022; Omigie & Kubeyinje, 2022; Jeresa et al., 2022; Vignesh & Gowthaman, 2022; Attia, 2023; and Ohue & Akhator, 2021), limited research has examined how IC mediates the relationship between SCM and FP. Having established this research gap, this study investigates the mediating role of IC in the relationship between SCM and the performance of selected firms in the Nigerian textile industry. Exploring this direction can provide a valuable understanding of how firms can adopt SCM not just for efficiency but also for innovation, which in turn enhances the firm's overall.

2. Literature Review

2.1. Theoretical Review

Two complementary theories (Resource-Based View and Dynamic Capabilities Theory) make a solid theoretical foundation for this study. These theories are briefly discussed below:

2.1.1. Resource -Based View Theory

Penrose (1959) highlighted the importance of firm-specific resources in achieving competitive advantage through her book titled "The Theory of the Growth of the Firm." Her interest lies in how firms grow to gain competitive advantage through their internal resources. Penrose's idea got the attention of scholars like Wernerfelt (1984) and Barney (1991). Wernerfelt was the first scholar to formally lay the foundation of Resource-Based View (RBV) theory. Wernerfelt (1984) built on the Penrose idea by shifting from a market-based to a resource-based view, emphasizing internal resources as drivers of FP. Barney, in 1991, refined the theory, emphasizing unique characteristics of resources that make firms achieve sustained competitive advantage.

The Resource-Based View (RBV) assumes that firms operate above others and achieve superior performance by possessing and utilizing resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). Within this framework, supply chain management (SCM) is considered as a strategic internal resource capable of enhancing firm performance. Also, innovation capability is considered as a valuable intangible resource through which firms develop new products, improve processes, and respond to market conditions. Thus, RBV is adopted to guide this study because the theory considered both supply chain management and innovation capability a strategic internal resource that contribute to firm performance.

2.1.2. Dynamic Capabilities Theory

Building on the RBV theory of the firm proposed by Barney (1991), Teece and Pisano (1994) developed the Dynamic Capabilities Theory (DCT) to address environmental and market changes, which RBV failed to acknowledge. DCT focuses on how firms can adapt their resources and capabilities in responding to changes

in market demands (Bleady et al., 2018). The major focus of DCT is maintaining a competitive edge in a dynamic and unpredictable environment (Solem et al., 2023). DCT assumes that SCM is not just a resource but a capability that continually fosters innovation, which in turn enhances adaptability and long-term performance. This study adopted DCT because it shows how firms adapt and reconfigure supply chain practices to build innovation capability in response to changing environments.

2.2. Conceptual Review

2.2.1. Supply chain management (SCM)

SCM is the integration of essential business operations throughout the supply chain to create value for stakeholders and customers (Emir & Sulistyowati, 2024). It is an action performed by an organization to enhance its supply chain effectiveness (Mehregan et al., 2023). Jeresa et al. (2022) opined that SCM creates opportunities for improved quality processes, attracts potential customers, minimizes costs (Jerese et al., 2022), and helps organizations gain a competitive advantage (Tukamuhabwa et al., 2021; Islam & Qamari, 2021). While SCM involves a broad set of practices, this study focuses specifically on supplier relationship management, customer relationship management, information sharing, and postponement.

Supplier relationship management (SRM) is a practice that facilitates effective interaction and relationships with suppliers for mutual benefit (Joshi, 2024). Effective SRM involves identifying strategic and less important suppliers for the organization (Opaleye et al., 2020). It is a collaborative initiative with suppliers to maximize supply chain effectiveness, reduce risk, and improve performance. Supplier relationship management practices include joint product development, knowledge sharing, trust, supplier development, and long-term collaboration, to name a few. Supplier relationship management increases production efficiency, customer value, market share, and productivity while reducing cycle time and inventory costs (Munyimi & Chari, 2018). Furthermore, maintaining strong relationships with suppliers reduces some transactional costs, such as the cost of finding new suppliers, as well as lower coordination costs (Komora & Kavale, 2020).

Customer relationship management (CRM) establishes, maintains, and effectively expands customer relationships (Rahman et al., 2021). The practice identifies the organization's most profitable customers and determines how the organization interacts with them to maximize both organizational goals and customer values. CRM aimed to understand and provide better customer value that surpasses that of competitors by integrating processes, technology, and personnel into value chain operations. This management approach increases efficiency, revenue, and overall productivity (Elmubasher & Alaraki, 2020). According to Hanaysha and Mehmood (2022), CRM is made up of four behavioral components (customer focus/orientation, CRM organizations, knowledge management, and technology-based CRM); these components must be integrated to improve performance.

Information sharing (IS) involves the ongoing exchange of communication among supply chain members (Doumbia et al., 2020). Through effective information sharing, organizations coordinate their activities in a better manner with their supply chain members, leading to improved performance. Gamini and Rajapaksa (2020) identified two dimensions of information sharing in SCM (information quantity and information quality). Information quantity is the extent to which data is exchanged among chain partners (Gamini & Rajapaksa, 2020). On the other hand, information quality is the subjective evaluation of users as to whether information quality matches their own needs and intended usage (Jiang et al., 2021). Its measures include accuracy, timeliness, adequacy, and credibility.

Postponement (PP) is recognized as a key SCM practice that involves deferring manufacturing and logistical operations. It is the act of intentionally delaying the final production of a product until a customer order is received (Prataviera et al., 2020). Relaying the importance of PP in SCM, Alim and Beullens (2022) pointed out that manufacturers were able to customize products based on the customer's needs at the final stage of sale. Furthermore, PP enhances demand transparency and reduces uncertainty (Jafari et al., 2023); lowers inventory levels; reduces the risk of unsold goods (Ferreira et al., 2015) and enhances efficiency and performance (Raj et al., 2022). Despite these benefits, PP as a practice has some shortcomings. Beyond carrying the risk of unmet

demand or stock-outs, the practice incurs potential costs associated with storing semi-finished products in various geographical locations closer to end customers (Jafari et al., 2023).

2.2.2. Innovation capability (IC)

Innovation, as described by Simuka (2024), is a forward-thinking mindset that considers future possibilities. It is all about generating ideas, creating inventions, and bringing valuable new products, processes, or services to the market. It is a critical component of business strategies that enable firms to enter new markets, expand market share, and enhance their reputation among customers, thereby gaining a competitive advantage (Al Kurdi et al., 2020). Therefore, a firm's ability to innovate is tied to its IC (Laforet, 2011).

IC has gotten global attention from scholars across various fields of specialization, resulting in diverse views and definitions. Ruiz-Ortega et al. (2021) define IC as a firm's ability to meet customer demands and create value by transforming ideas and knowledge into innovative products. It is the firm's potential to create and manage resources for the purpose of bringing forth new offerings, whether products or services (Ganguly et al., 2020). Differences in views and perspectives have led to the identification of multiple dimensions of IC. This study, however, measures IC using two dimensions: product and process innovation capability.

Product innovation capability describes a firm's ability to offer novel products or services that have unique features, functionality, specifications, and more, compared to those of rivals in the marketplace (Atalay et al., 2013). This capability positions organization in the best place to develop and offer a set of innovative products of value capable of satisfying customer desire (Aljanabi, 2020).

Process innovation capability, on the other hand, refers to a firm's ability to obtain, analyze, convert, and apply technical resources, procedures, and knowledge to improve processes, such as in manufacturing or service delivery (Frishammar et al., 2012). This capability helps organizations modify their existing methods and techniques of operation to present their offerings (Aljanabi, 2020).

2.2.3. Firm performance (FP)

Performance refers to an organization's ability to efficiently and effectively convert its resources to meet its objectives (Barasa et al., 2015). It is the outcome achieved through the implementation of comprehensive strategies or appropriate techniques (Sukati et al., 2020). Furthermore, performance denotes the completion of a designated task, evaluated against predetermined standards of accuracy, completeness, cost, and speed over a given period. Thus, it reflects the extent to which organizational objectives have been achieved or are being accomplished. Performance is a complex concept with various dimensions, such as efficiency, effectiveness, and adaptability, that cannot be sufficiently captured by a single performance measure (Mohammed et al., 2013). In this study, the performance of the firms under investigation is assessed using two indicators: firm efficiency and competitive advantage.

Efficiency is a primary focus within the industrial organizational domain (Ting et al., 2024). It refers to the degree of performance that characterizes a process using minimal inputs to generate maximal outputs. Efficiency signifies how an organization's internal components are optimally utilized (Mustaffa et al., 2023), and it is often used to assess the results produced by certain inputs over a period. This study, therefore, defines firm efficiency (FE) as a firm's ability to transform its inputs into output in a well-organized manner.

The survival of any business concern today lies in its ability to position itself above rivalries. Competitive advantage (CA) refers to the edge gained by a company over its rivals through providing enhanced value to customers, whether through lower prices or by delivering extra benefits and superior services (Attiany, 2014). Linda and Thabrani (2021) described CA as a firm's capacity to establish a distinctive, efficient, and enduring position in relation to its competitors. Maat et al. (2020) identify factors contributing to CA, including price/cost, quality, reliable delivery, product innovation, and speed to market. Ultimately, CA sets an organization apart, makes it compelling, and leads to greater success.

In line with the objectives of the study and the research hypotheses formulated above, figure 1 presents the framework of the study.

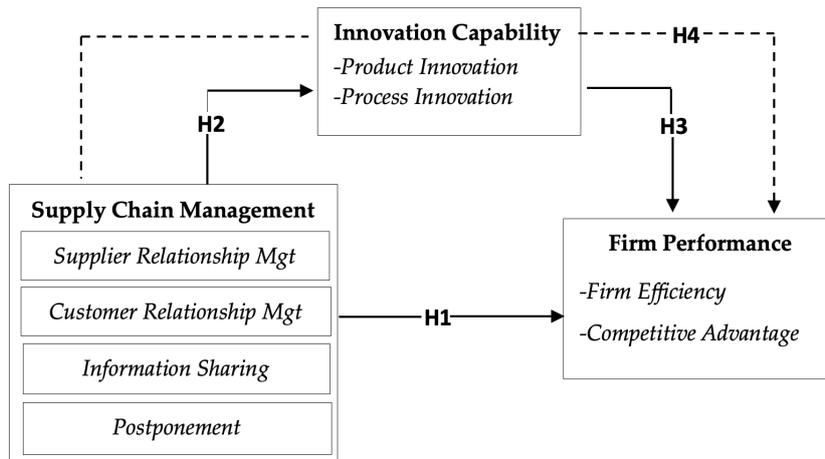


Figure 1. Framework of study.

2.3. Empirical Review

2.3.1. SCM and FP

Chileshe and Phiri (2022) studied how SCM practices affect the performance of small and medium enterprises (SMEs) in developing nations. According to PACRA there are 243 registered small and medium Agro-dealers in Lusaka, only 151 were selected for the study. Data for the study were gathered through questionnaires while analysis was done using regression analysis aided by SPSS. The findings affirmed that adopting SCM practices has an impact on performance, particularly concerning competitive advantage.

Omigie and Kubeyinje (2022) investigated how SCM influences the performance of manufacturing companies in Nigeria. The study adopted a survey research design via the administration of questionnaires to 200 employees across various departments such as production, procurement, warehouse, logistics, and marketing of two manufacturing firms in Edo State. 186 responses were presented using descriptive statistical tools such as mean and standard deviation, while inferential statistical tools such as correlation and regression were employed to investigate relationships and effects. The study found a statistically significant positive relationship between the identified SCM factors and the overall performance of manufacturing firms in Nigeria.

Jeresa et al. (2022) examined the impact of SCM on organizational productivity using Nigeria Bottling Company in the Federal Capital Territory-Abuja as a reference point. The study employed a cross-sectional survey design, and a questionnaire was the research instrument used for data collection. The study drew a sample size of 80 employees, but 88 questionnaires were administered. Using SPSS version 21.0, correlation and regression analysis were conducted, and the study found that SCM has a significant and positive influence on organizational productivity. Considering the above, the current study hypothesized that:

Hypothesis 1(H1): SCM has a significant positive effect on FP.

2.3.2. SCM and IC

Elfawal et al. (2021) conducted an empirical study on SCM practices, innovation capabilities, and operational performance using FMCG organizations. The study employed a quantitative research design, and questionnaire was the study primary data collection instrument. 800 questionnaires were administered, 566 (70.7%) were completed and returned, while 519 valid responses (65%) considered for analysis. Analysis based

on the valid responses were conducted using Structural equation modeling (SEM) Amos 26.0 software. The study found that SCM practices have a positive direct impact on IC.

Johono and Siagian (2022) assessed supply chain integration and its influence on operational performance through the mediating of supply chain responsiveness and IC. From the population of 266 food and beverage companies in East Java, a sample of 140 companies was drawn. A questionnaire formatted on a 7-point Likert scale, available both in Google Form and in printed copies, was administered via social media, email, WhatsApp, and postal mail to collect data. The analysis of the data was done through the partial least squares technique, and part of the results established that supply chain integration significantly influences IC.

Munawaroh et al. (2024) conducted a study to examine the impact of SCM on IC, supply chain performance, and organizational performance. A questionnaire, used as the research instrument, was distributed to the owners and managers of 91 Yogyakarta pottery SMEs. Using SmartPLS SEM for data analysis, the study established that SCM significantly influences IC. Considering the above, the current study hypothesized that:

Hypothesis 2 (H2): SCM has a significant positive effect on the IC.

2.3.3. IC and FP

Naala et al. (2017) studied to explore IC and its influence on the performance of Small and Medium Enterprises in North-western part of Nigeria. Data for the study was sourced through a self-structured questionnaire administered to 280 SMEs. The analysis of this data was done using Partial Least Squares Structural Equation Modeling (PLS SEM) technique and the results found that there was a significant positive relationship between IC and FP. This highlights the importance of IC as a critical factor for the success of SMEs.

Jalil et al. (2021) researched IC and SME performance, with a special focus on the mediating role of technology adoption. Using a stratified sampling technique, a sample of 800 SMEs was drawn from nine states in Malaysia. A self-structure questionnaire was used as a data collection instrument. Out of the total number of questionnaires returned, 611 questionnaires were valid for further analysis. The results of the analysis revealed the existence of a positive relationship between IC and SME performance.

Kareem et al. (2024) investigated how innovation capabilities mediate the relationship between dynamic capabilities and the competitive performance of Hungarian SMEs. Using a simple random sampling technique, the study included 250 micro firms, 180 small firms, and 70 medium-sized firms. Data were analyzed using Structural Equation Modelling (SEM). The findings revealed that innovation capabilities, particularly product and process capabilities, have a significant positive impact on the competitive performance of Hungarian SMEs. Considering the above, the current study hypothesized that:

Hypothesis 3 (H3): IC has a significant positive effect on FP.

2.3.4. Mediating effect of IC in the relationship between SCM and Performance

Tian et al. (2021) investigated the mediating roles of IC and stakeholder pressure in supply chain integration, interfirm value co-creation, and performance relationship among Ghanaian SMEs. The questionnaire which was the study instrument was administered to 645 SMEs via email and 473 copies were returned and processed for analysis using Structural Equation Model (SEM). The result of the analysis revealed that IC had a weak mediating effect in the relationship between supply chain integration and FP.

Al-Taweel and Al-Hawary (2021) examined IC as a mediator in the relationship between strategic agility and performance of listed corporations. A sample size of 370 senior managers was drawn and an electronic self-reported questionnaire was sent out via email. Out of 370 questionnaires sent out, 249 were returned while only 224 copies were considered valid for analysis. The study found IC playing a significant mediating role in the relationship between strategic agility and organizational performance.

Mehmood et al. (2024) examined the relationship between supply chain resilience (SCR) and organizational performance (OP) via innovation as a mediator and information sharing as a moderator. The study employed a quantitative research design; SMEs were drawn from three cities through convenience sampling. Data was sourced through a questionnaire administered via email and WeChat, while analysis was done using SmartPLS-4. The study found that innovation mediates the relationship between supply chain resilience and organizational performance. Considering the above, the current study hypothesized that:

Hypothesis 4 (H4): IC significantly mediates the relationship between SCM and FP.

3. Methodology

3.1. Research approach and design

This study adopted a quantitative research approach, and a cross-sectional research design survey. A quantitative research approach allows for systematic collection and analysis of data for understanding relationships. Also, a cross-sectional survey design allows for collection of data within a specific point in time. The adoption of this design aligns with the study by Paek and Lee (2017).

3.2. Area of study

The study was conducted in Lagos State, Southwest Nigeria. The state has been recognized as the nation's economic center and has the highest number of functioning manufacturing and servicing firms in Nigeria. Also, the state currently has the highest number of operational textile firms in Nigeria.

3.3. Population of the study

The population of the study comprised all 353 top-, middle- and lower-level managers of the five selected textile firms in Lagos State. The involvement of these categories of staff in the strategic and operational process of firms justifies their consideration as respondents to the study.

3.4. Sample size and sampling technique

The study selected five textile firms in Lagos State using a convenience sampling technique. This technique was adopted because it requires less effort, less time, and low cost and provides a wealth of qualitative data (Golzar et al., 2022). To preserve confidentiality and based on the agreement with participating firms, the names of the firms have not been disclosed in this publication. Furthermore, all top-, middle-, and lower-level managers of the selected firms, totaling 353, were respondents to the study using a total enumeration sampling technique. The researchers considered the adoption of this technique because it allows all individuals in the population to be included, providing complete and exhaustive data (Kumar, 2014), and strengthens the generalizability of findings (Creswell & Creswell, 2018).

3.5. Research instrument

The questionnaire remains the only research instrument used for data collection in this study. The questionnaire has four sections (A-D). Section A focused on the respondent's demographic profile; sections B, C, and D contain questions related to SCM and IC and FP, respectively. The instrument measures three main constructs (SCM, IC, and FP). Specifically, SCM has SRM, CRM, IS, and PP as its sub-constructs; IC has PRODIC and PROCIC as its sub-constructs; and OP has FE and CA as its sub-constructs. Items for SRM, CRM, and IS were adapted from Nawaz (2019), while items for PP were adapted from Al-Hakimi et al. (2022). Furthermore, items for PRODIC and PROCIC were adapted from Kafetzopo and Psoma (2015), while items for FE and CA were adapted from Arogundade et al. (2023). For contextual fit, every adapted item was reviewed, and minor adjustments were made to reflect the specific operational environment of the study.

Responses to all items used to measure SCM and IC follow Rensis Likert's 7-point scale (1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Neutral, 5 = Somewhat Agree, 6 = Agree, and 7 = Strongly Agree). Also, responses to all items used to measure FP follow a summated rating scale ranging from 1 to 7 points (1 = Very Low, 2 = Low, 3 = Somewhat Low, 4 = Moderate, 5 = Somewhat High, 6 = High, and 7 = Very High). This rating system was adopted to minimize statistical skewness. The outcome of the reliability and validity assessment is presented in Table 2.

3.6. Method of data collection

Since the study adopted a survey research design, the researcher emailed all selected firms to seek approval for questionnaire administration. Upon approval, the researcher's representatives, with support from one internal staff member per firm, administered the questionnaire in each selected firm between January and March 2025. Precisely, the data collection process lasted for five weeks, yielding a 92.9% response.

3.7. Method of data analysis

This study employed SPSS statistical software to perform both descriptive and inferential statistical analysis. The demographic characteristics of the respondents were analyzed using frequency and percentage, while a summary of data was done using mean and standard deviation. To ascertain the accuracy of the measurement scales, reliability and validity tests were conducted. Reliability was assessed using Cronbach's Alpha (≥ 0.7), while Composite Reliability ($CR \geq 0.7$) ensured construct reliability, and Average Variance Extracted ($AVE \geq 0.5$) measured convergent validity. However, since SPSS does not provide CR and AVE directly, they were therefore calculated manually using factor loadings (λ) obtained from a factor analysis.

Furthermore, correlation analysis was done to assess the strength of relationships among the variables under study, while mediation analysis was carried out using Model 4 of the SPSS PROCESS macro. Subconstructs were combined into composite scores to allow for more effective analysis. The study used $p < 0.05$ or a 95% confidence interval (CI) to determine significance.

4. Results

This section provides descriptive and inferential statistics for the study. Out of the 353 questionnaires distributed to the selected firms' top, middle, and lower managers, 328 were returned. After data screening, 16 out of the returned questionnaires were discarded due to blank responses, while 312 questionnaires were retained for analysis.

4.1. Respondent demographics profile

The respondent's demographic profile is captured using six items. Table 1 presents the demographic profile of respondents. Most of the participants were male (60.6%), and the largest age group was 40–59 years (59.9%). A good number of the participants held a bachelor's degree or higher national diploma (70.2%), indicating that respondents were highly educated. Most respondents (82.4%) had between 5 and 15 years of work experience, with 48.7% having 5–10 years and 33.7% having 11–15 years. This distribution indicates a pool of experienced professionals. Lower-level managers constitute the larger respondents (56.7%), followed by 24.7% at the middle level and 18.6% at the top level. The distribution suggests that most participants hold operational or entry-level positions. In addition, the highest number of respondents came from the production department (29.5%), followed by the procurement and supply chain department (19.8%) and the quality control department (13.8%). The sales and marketing department and research & development department had smaller representations (8.3% each). The remaining 9.6% of the respondents are from other departments. This indicates a fairly spread of participants across departments.

4.2. Reliability and Validity Assessment

This study conducted a thorough reliability and validity assessment of variables under study and their related items. Convergent validity was established through factor loadings while reliability was ascertained via Cronbach's alpha (CA), composite reliability (CR), and average variance extracted (AVE). Table 2 presents this in detail.

Table 1. Demographic profile of participants.

Categories		Frequency	Percentage
Gender	Male	189	60.6
	Female	123	39.4
	Total	312	100
Age group	Less than 20 years	0	0.0
	20 - 39 years	105	33.7
	40 – 59 years	187	59.9
	Above 60 years	20	6.4
	Total	312	100
Highest Educational qualification	WAEC/SSCE	0	0.0
ONDI/NCE	OND/NCE	0	0.0
	BSc/HND	219	70.2
	MSc/MBA	87	27.9
	PhD.	6	1.9
Total	312	100	
Year of Experience	Less than 5years	31	9.9
	5-10 years	152	48.7
	11-15 years	105	33.7
	16 years and above	24	7.7
Total	312	100	
Category of management Staff	Top Level	58	18.6
	Middle Level	77	24.7
	Lower Level	177	56.7
Total	312	100	
Department	Production Dept.	92	29.5
	Quality Control Dept.	43	13.8
	Sales and Marketing Dept.	62	8.3
	Procurement and Supply Chain Dept.	26	19.8
	Customer Service Dept.	33	10.6
	Research & Development Dept.	26	8.3
	Others	30	9.6
Total	312	100	

As shown in Table 2, all items have loading factors that exceed 0.7. Therefore, the instrument's validity is affirmed. Furthermore, with the lowest CA value of 0.851 and CR values of 0.894, which both exceed 0.7, the internal consistency and reliability of variables are established. In addition, the AVE value of 0.628 exceeds the 0.5 threshold, affirming the validity and reliability of the instrument in measuring the intended constructs.

4.3. Descriptive statistics and correlations analysis

The central tendency and variability of the data were determined through the mean and standard deviation, respectively. Also, correlation analysis was used to measure the variable's strength and direction of relationship. The relationship is presented in Table 3.

Table 3 presents the descriptive statistics and correlations among the eight constructs observed. The mean values range from 20.94 for PP and to 24.49 for IS, with standard deviations between 2.44 for PROCIC and 4.32 for CRM. By these results, IS is highly rated favorably by the respondents while the rating for PP is relatively low, indicating lower perceived importance in these areas.

Furthermore, PRODIC exhibits low variability (SD = 2.44), while CRM exhibits the highest variability (SD = 4.32). Lower standard deviations (SDs) signify greater agreement among respondents, whereas higher SDs mirror more diverse opinions.

Table 2. Reliability and validity analysis.

Item	Loading Factor (λ)	CA (>0.7)	CR (>0.7)	AVE (>0.5)
Supply Chain Management (SCM)				
SRM1: When choosing suppliers, quality is our top consideration.	0.855			
SRM2: Our firm frequently works with our vendors to resolve issues.	0.853			
SRM3: Our main suppliers are part of our ongoing improvement initiatives.	0.825	0.890	0.907	0.707
SRM4: Our primary suppliers are involved in our planning and goal-setting processes.	0.846			
SRM5: Our key suppliers are involved in developing new products.	0.844			
CRM1: Our firm's regular customer interactions shape standards for responsiveness.	0.849			
CRM2: Our firm assesses and quantifies customer satisfaction on a regular basis.	0.866			
CRM3: Our firm regularly identifies and assesses future customer expectations.	0.872			
CRM4: Our firm makes it easier for customers to ask for help from us.	0.881	0.901	0.924	0.752
CRM5: Our firm periodically evaluates our relationship with our customers.	0.846			
IS1: Our communicate evolving demands to trading partners beforehand.	0.844			
IS2: Our firm share proprietary information with our trading partners.	0.867			
IS3: We are fully informed about matters that impact our business by our trading partners.	0.868	0.904	0.938	0.742
IS4: Our firm shares information with partners to support business planning.	0.865			
IS5: Our trading partners communicate with one another on developments or occurrences that could impact the other partners.	0.864			
PP1: The firm's products are structured in a way that allows components to be completed in separate stages.	0.837			
PP2: The firm postpones final product completion until we receive actual customer orders.	0.839			
PP3: The firm carries out final assembly operations as late as possible in the supply chain	0.877	0.905	0.937	0.745
PP4: The firm orders raw materials only after confirming customer demand.	0.882			
PP5: Some value-adding steps are delayed until customer needs are clear.	0.878			
Innovation Capability (IC)				
PRODIC1: The firm introduces new and innovative products into the market.	0.798			
PRODIC2: Our firm has the capability to bring in new knowledge or technologies to develop new products.	0.715			
PRODIC3: Our firm could use new materials, new product functions, and a new design.	0.835	0.869	0.897	0.631
PRODIC4: The firm's products are modified and improved.	0.789			
PRODIC5: Our firm enhances the manufacturing technology of new products	0.829			
PROCIC1: Our firm has a pioneer disposition to introduce new processes.	0.736			
PROCIC2: Our firm improves existing machinery and equipment.	0.845			
PROCIC3: Our firm responds smartly to new processes from competitors.	0.797	0.885	0.894	0.628
PROCIC4: Our firm adapts machines and creates original processing solutions.	0.837			
PROCIC5: Our firm can adjust processes across production, inventory, distribution, etc.	0.741			
Firm Performance (FP)				
FE1: The extent to which time is saved when tasks are well organized in our firm is	0.788			
FE2: The extent to which effective planning helps our firm achieve its operational targets is ...	0.758			
FE3: The degree to which productivity improves when job responsibilities are clearly organized is	0.833	0.851	0.901	0.645
FE4: The degree to which productivity improves when tasks are properly planned in advance is ...	0.791			
FE5: The extent to which proper scheduling contributes to meeting our production targets is...	0.844			
CA1: When compared to our competitors, the price of our products is	0.855			
CA2: The rate at which the quality of our products has surpassed that of our rivals is	0.791			
CA3: The degree to which we have surpassed our rivals in terms of customer satisfaction is	0.842	0.884	0.929	0.725
CA4: Our firm's provision of dependable delivery is	0.911			
CA5: The speed at which customers' orders are fulfilled and delivered on schedule is ...	0.854			
N= 312				

Also, the correlation coefficients range from 0.592 to 0.851 ($p < 0.05$) reflects a strong positive relationship among constructs. There exists a strong interrelationship between SRM, CRM, and IS. Observably, SRM and CRM exhibit the strongest correlation (0.851) among SCM constructs. Also, the two constructs of IC (PRODIC and PROCIC) exhibit a strong correlation (0.803) reinforcing their synergistic nature. Performance indicators (FE and CA) are found to be highly correlated (0.829) establishing efficiency, a key driver of competitiveness. A moderate correlation (0.592–0.603) was found between PP and other constructs.

4.4. Mediation analysis

The PROCESS macro (Model 4) for SPSS, developed by Andrew F. Hayes for mediation, which uses ordinary least squares (OLS) regression, was employed to estimate the direct, indirect, and total effects of the relationship between SCM and FP, and through IC. The results of the relationship are summarized in Table 4 and depicted in figure 2.

Table 3. Descriptive statistics and correlation matrix.

Constructs	Mean	SD	Correlations ^b								
			SRM	CRM	IS	PP	PRODIC	PROCIC	CA	FE	
1. SRM	23.57	3.98	1								
2. CRM	24.10	4.32	0.851**	1							
3. IS	24.49	4.24	0.812**	0.837**	1						
4. PP	20.94	3.69	0.700**	0.709**	0.614**	1					
5. PRODIC	23.01	2.44	0.727**	0.647**	0.630**	0.599**	1				
6. PROCIC	21.63	2.91	0.742**	0.682**	0.679**	0.592**	0.803**	1			
7. FE	22.09	3.41	0.701**	0.678**	0.657**	0.603**	0.627**	0.624**	1		
8. CA	23.97	4.02	0.715**	0.720**	0.673**	0.595**	0.641**	0.630**	0.829**	1	

** . Correlation is significant at the 0.05 level (2-tailed).
b. Listwise N=312

Table 4 examined the effect of SCM (independent variable) on IC (mediator) to ascertain path a. The result of the OLS regression ($B = 0.267$, $p < 0.05$, $t = 21.128$) affirmed SCM a significant predictor IC. That is, for every 1-unit increase in SCM, IC increases by 0.267 units, holding other factors constant. The associated confidence interval (LLCI = 0.242, ULCI = 0.292) does not contain zero; therefore, the significance of the effect is affirmed. Also, the effect of IC (mediator) on FP (dependent variable) after controlling for the SCM (independent variable) was examined to establish path b. The coefficient for this path is $B = 0.332$. This means that for every 1-unit increase in IC, FP increases by 0.332 units, holding SCM constant. The effect was found to be statistically significant ($t = 4.361$, $p < 0.05$), revealing a strong relationship between CI and FP. In addition, the confidence interval (LLCI = 0.182, ULCI = 0.482), which does not include zero, statistically confirmed the significance of the effect.

Table 4. Mediation analysis results.

A	Effect	Path	Coefficient (B)	Standard Error (SE)	t-value	p-value	95% CI (Lower)	95% CI (Upper)
1	SCM → IC	Path a	0.267	0.013	21.218	0.000	0.242	0.292
2	IC → FP	Path b	0.332	0.076	4.361	0.000	0.182	0.482
3	SCM → FP (Total)	Path c	0.378	0.017	21.744	0.000	0.343	0.412
4	SCM → FP (Direct)	Path c'	0.289	0.026	10.927	0.000	0.237	0.341
B	Effect	Path	B (Coeff.)	Boot SE	Boot 95% CI (Lower)	Boot 95% CI (Upper)		
1	SCM → IC → FP (Indirect)	(a x b)	0.089	0.031		0.032		0.153

Furthermore, the direct influence of SCM (independent variable) on FP (dependent variable) without considering the indirect pathway through IC (mediator) was examined to establish path c. The coefficient (B) = 0.378 suggests that, for every 1-unit increase in SCM, FP increased by 0.378 units. Also, the t-value of 21.774 and $p < 0.05$ established that the total effect is statistically significant. The confidence interval (LLCI = 0.343, ULCI = 0.412) falls within the range and does not include zero. The effect is therefore considered statistically significant.

Path c' depicts the direct effect of SCM (independence variable) on FP (dependent variable) after the inclusion of IC (mediator). The path attempted to see if SCM still has a significant effect on FP once IC is included in the model. The OLS regression results ($B = 0.289$, $p < 0.05$, $t = 10.927$) established that with the inclusion of IC, the

effect of SCM on FP decreased and remain significant. The confidence interval (LLCI = 0.237, ULCI = 0.341) which falls within the range of 95% confidence and does not include zero, further confirmed the significant effect.

Lastly, the effect of SCM (independent variable) on FP (dependent variable) via IC (mediator) was examined. This indirect pathway considered paths 'a' and 'b' to assess the portion of the relationship between SCM and FP that is transmitted through IC. The indirect effect (B = 0.089) implies that SCM indirectly increases FP by 0.089 units through its effect on IC. The significance of the effect was confirmed by the Boot 95% confidence interval (LLCI = 0.032, ULCI = 0.153), which does not include zero.

Based on the above findings, it is obvious that SCM had both direct and indirect effects on FP significantly. However, the magnitude of the direct effect reduced (B = 0.289) compared to its total effect (B = 0.378). This implies that SCM indirectly increases FP by 0.089 units through its effect on IC. Therefore, IC partially mediates the relationship between SCM and FP.

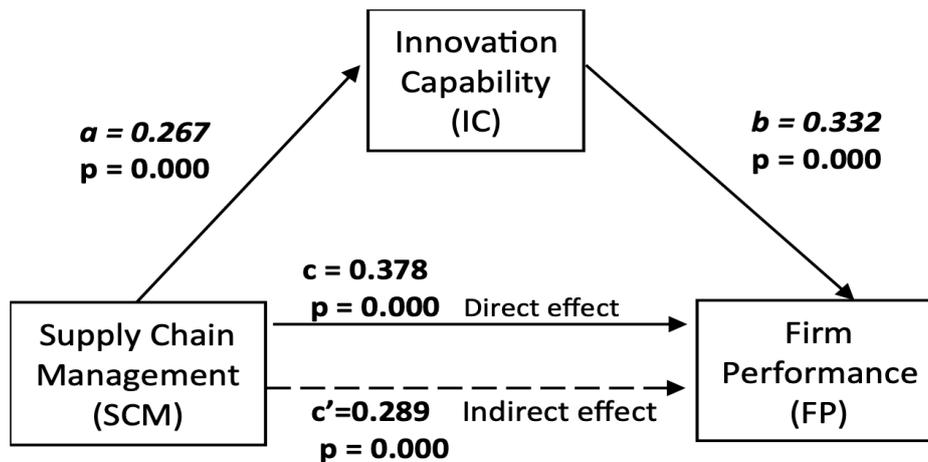


Figure 2. Dual-pathway relationship.

5. Discussion

Specifically, four objectives were formulated and hypothesized for the study. The first objective assessed the effect of SCM on FP; the second objective sought the effect of SCM on IC; the third objective assessed the effect of IC on FP, while the fourth objective sought the mediating role of IC in the relationship between SCM and FP. Findings are discussed below.

Firstly, the analysis revealed that SCM has a significant predictive value for FP. That is, effective SCM practices have a positive and measurable impact on the performance of the textile firms under study. These findings are consistent with those of Chileshe and Phiri (2022), Vignesh and Gowthaman (2022), and Jeresa et al. (2022), all of whom established that strong SCM practices contribute to better FP. The finding emphasizes the critical role that SCM plays in achieving firm efficiency and competitiveness in the textile industry. Therefore, based on the statistical evidence, hypothesis 1, which states that SCM has a significant positive effect on FP, is accepted.

Secondly, the analysis revealed that SCM predicts IC significantly. SCM, through its various practices, enhances product development and process improvement. These findings corroborate the findings of Munawaroh et al., (2024), Elfawal et al., (2021), and Johono and Siagian (2022), who earlier affirmed a strong positive relationship between SCM and IC in their study. Therefore, based on statistical evidence, hypothesis 2, which says SCM has a significant positive effect on the IC, is accepted.

Thirdly, the analysis revealed that IC significantly influenced FP. This finding underscores the role of IC in driving FP. A firm's capability to modify existing processes and turn out better offerings enhances a firm's

competitive advantage and overall performance. These findings are consistent with those of Kareem et al., (2024); Jalil et al., (2021); Naala et al., (2017); and Kafetzopoulos and Psoma (2015), all of whom found that IC plays an important role in improving organizational performance. Considering this, hypothesis 3, which states that IC has a significant positive effect on FP, is accepted.

Finally, IC was found to be a significant mediator of the relationship between SCM and FP. The direct effect of SCM on FP was significantly reduced after the inclusion of IC in the SCM-FP relationship. This implies that IC partially transmits the relationship. This is consistent with previous research by Tian, et al., (2021); Al-Taweel and Al-Hawary (2021); and Mehmood et al., (2024), which confirmed the mediating role of IC in the SCM-FP relationship. Thus, hypothesis 4, which states that IC significantly mediates the relationship between SCM and FP, is accepted.

Theoretical implications: This study advances theory by integrating the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT) to explain the direct and indirect influence of SCM on FP. The study supports RBV's perspective of SCM and IC as valued internal resources by showing that SCM improves innovation capability before improving performance. Also, it extends the application of DCT by showing that firms must adapt and reconfigure their SCM practices to develop innovation capabilities in dynamic environments. This dual-theoretical insight advances the understanding of how internal resources and dynamic processes interact to drive firm success.

Managerial implications: The findings of this study provide valuable guidance for business leaders aiming to improve firm performance. Managers should have the understanding that effective supply chain management practices alone are insufficient for improving performance; they must be complemented by strong innovation capabilities. Also, as a matter of priority, managers should build flexible and responsive systems capable of adapting quickly to changes in customer demands, market conditions, or disruptions. By integrating innovation into supply chain processes, firms can achieve greater efficiency, deliver better value to customers, and maintain a competitive edge in dynamic environments.

Policy Implications: For government and industry leaders, the study shows that supporting innovation within supply chains can be of help in growing organizations. Policies that encourage companies to work closely with stakeholders such as suppliers and customers, adopt new technologies, and improve supply chain systems can lead to better performance across industries.

6. Conclusions

This study examined the mediating role of IC in the relationship between SCM and the performance of selected textile firms in Nigeria. Based on the findings of the study, some conclusions were made. First, the study concluded that SCM directly and significantly enhances FP. In other words, firms with effective SCM stand to be operationally efficient and maintain a highly competitive advantage. Second, SCM exhibits a positive and significant effect on IC. That is, SCM enhances firms' innovative capability, leading to product development and process improvement. Third, IC plays a significant role in improving FP. Firms' innovative capability enhances the modification of existing processes and helps in turning out better offerings, all of which enhances a firm's competitive advantage and overall performance. Lastly, IC partially mediates the relationship between SCM and FP. This suggests that part of the effect of SCM on FP occurs indirectly through IC. The findings of the study highlight the need for firms to seek to embrace SCM as it promises to foster innovative capability by encouraging collaboration with suppliers and customers, exchanging communication among supply chain members, and delaying the final production of a product until a customer order is received. Policymakers and leaders from industry should prioritize investments in SCM practices that can bring supply chain partners together to build a strong IC for performance improvement. This study only explored a single mediating variable (IC), ignoring other pathways through which SCM influences FP. With this, the role of IC in the relationship between SCM and FP might be overestimated, distorting the true nature of the relationship between variables. Furthermore, the selection of firms engaged in the study using a convenience sampling technique limits the representativeness and the generalizability of the findings to the larger textile industry in Nigeria. However, it is pertinent to state that while the study acknowledges these limitations, they do not

jeopardize the reliability or significance of the findings. Based on the few limitations identified, it is suggested that future studies explore multiple mechanisms, including strategic agility and organizational learning, through which SCM influences FP. In addition, the inadequate representation issue can be addressed by considering a probability-based sampling technique such as simple random and stratified sampling. The adoption of these techniques will enhance the sample representation and generalization of findings.

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