Supply Chain Management Practices and Firm Performance: the moderating effect of Organizational Learning Capability

Ofori Issah[1*], Dr. Agyeman Ofori[2], Alex Antwi-Adjei[3], Obiri Yeboah Hanson[4], Asare Charles[5]

[1] PhD Candidate KNUST, School of Business. ORCiD 0000-0005-4263-4245

[2] Takoradi Technical University Head of Procurement.

[3,5] Lecturer at Ghana Communication Technology University.

[4] Lecturer, Accra Technical University

***Corresponding author:** Ofori Issah

PhD Candidate KNUST, School of Business

Abstract

A crucial factor influencing the effectiveness of supply chain management practices is organizational learning capability which refers to an organization's ability to create, retain, and transfer knowledge. High organizational learning capability enables continuous improvement and innovation in SCM processes, leading to better firm performance. However, many organizations lack the necessary learning culture and mechanisms to fully leverage organizational learning capability for supply chain management practices enhancement. The main objective of the study was to examine the moderating effect of organizational learning capability on the relationship between supply chain management practices and firm performance. An explanatory research design was employed through a cross sectional survey. The study adopted convenience sampling to obtain a sample size of 130. The study solely relied on quantitative approach and primary source of data. The findings of the study revealed that that organizational learning capability has a positive and significant influence on firm performance. Supply chain management practices have positive and significant influence on firm performance. The study finally indicate that organizational learning capability positively moderates the relationship between supply chain management practices and firm performance. The study recommends that organizations should provide ongoing training and development opportunities for employees to enhance their skills and knowledge in supply chain management. Promote a culture of knowledge sharing and collaboration to leverage collective expertise and insights. Apply lean principles to eliminate waste and enhance value creation throughout the supply chain. Foster a culture of

continuous improvement to identify and address inefficiencies and opportunities for enhancement. Utilize data analytics to inform strategic decisions and optimize supply chain performance. Establish and track key performance indicators (KPIs) to monitor supply chain efficiency and effectiveness. Maintain open and transparent communication channels within the organization and with external partners to facilitate coordination and problem-solving. Implement feedback mechanisms to gather insights and make adjustments to improve supply chain processes and performance. Ensure that supply chain management practices are aligned with the overall business strategy and objectives to drive cohesive and strategic performance improvements. Integrate supply chain goals with broader organizational goals to ensure that supply chain activities contribute to overall business success.

Keywords: *Supply Chain Management Practices, Firm Performance, Organizational Learning Capability*

1. Introduction

Supply Chain Management (SCM) practices have become critical for organizations aiming to enhance performance and maintain a competitive edge in today's complex and dynamic business environment. SCM involves the coordination and management of a network of interconnected businesses involved in the provision of products and services to end consumers. Effective SCM practices encompass various functions, including procurement, production, distribution, and logistics, which need to be seamlessly integrated to optimize operational efficiency and customer satisfaction (Carter et al., 2015). The evolution of SCM practices has been driven by advances in technology, globalization, and the increasing complexity of market demands. Technological advancements, such as the implementation of Enterprise Resource Planning (ERP) systems, Internet of Things (IoT), and big data analytics, have revolutionized the way supply chains operate by providing real-time data and predictive insights (Wang et al., 2016). Globalization has expanded supply chain networks, making them more intricate and interdependent, which necessitates robust SCM strategies to manage risks and disruptions effectively (Christopher & Holweg, 2017). The performance outcomes of effective SCM practices are multifaceted, impacting both operational and financial aspects of an organization. Key performance indicators (KPIs) often used to measure SCM performance include delivery reliability, inventory turnover, cost efficiency, and customer satisfaction (Li et al., 2015). Organizations that excel in SCM practices tend to achieve superior performance outcomes, including reduced operational costs, enhanced flexibility, and improved customer service levels (Chopra & Meindl, 2016). Effective SCM practices yield significant performance outcomes, impacting both operational and financial dimensions of an organization. Key performance indicators (KPIs) often used to measure SCM performance include delivery reliability, inventory turnover, cost efficiency, and customer satisfaction (Li et al., 2015). Organizations that excel in SCM practices typically achieve superior performance outcomes, such as reduced operational costs, enhanced flexibility, and improved customer service levels (Chopra & Meindl, 2016).

Organizational Learning Capability (OLC) is increasingly recognized as a pivotal factor in enhancing SCM practices and performance. OLC refers to an organization's ability to create, retain, and transfer knowledge, which is essential for continuous improvement and innovation in supply chain processes (Jerez-Gómez et al., 2019). Companies with strong OLC are better equipped to adapt to changes, implement new technologies, and develop innovative solutions to supply chain challenges (Yang et al., 2018). The interrelationship between SCM practices and OLC underscores the importance of a learning-oriented culture within organizations. Effective SCM practices can provide a fertile ground for organizational learning by fostering collaboration,

knowledge sharing, and continuous improvement (Gunasekaran et al., 2017). Conversely, high OLC enhances the capability of organizations to refine their SCM practices through iterative learning processes and feedback mechanisms (Hult et al., 2017). For instance, companies that prioritize learning from supply chain disruptions can develop more resilient and responsive SCM strategies (Bode et al., 2018). The integration of organizational learning capability with supply chain management practices is crucial for enhancing organizational performance. The dynamic and complex nature of modern supply chains requires a continuous learning approach to manage and optimize supply chain processes effectively. As organizations continue to face new challenges and opportunities, the ability to learn and adapt will remain a key determinant of success in supply chain management. This study seeks to examine the moderating effect of organizational learning capability on the relationship between supply chain management practices and firm performance.

1.1. Problem Statement of the Study

The relationship between Supply Chain Management (SCM) practices and firm performance has been a critical area of research and practice. However, despite significant advancements in SCM technologies and methodologies, many firms still struggle to achieve optimal performance. This issue is compounded by the dynamic and complex nature of modern supply chains, which are characterized by increasing globalization, rapid technological changes, and heightened customer expectations (Christopher & Holweg, 2018). A crucial factor influencing the effectiveness of SCM practices is Organizational Learning Capability (OLC), which refers to an organization's ability to create, retain, and transfer knowledge. High OLC enables continuous improvement and innovation in SCM processes, leading to better firm performance. However, many organizations lack the necessary learning culture and mechanisms to fully leverage OLC for SCM enhancement (Jerez-Gómez et al., 2019). Despite the recognized importance of OLC, its role in enhancing the relationship between SCM practices and firm performance is underexplored. Empirical evidence indicates that firms with strong OLC can integrate and refine SCM practices more effectively, leading to superior operational and financial outcomes (Saeed et al., 2020). However, the mechanisms through which OLC influences this relationship remain unclear, necessitating further investigation.

One significant challenge is the uneven adoption of advanced SCM technologies across different sectors. While some organizations utilize big data analytics, Internet of Things (IoT), and artificial intelligence to enhance supply chain visibility and decision-making, others lag due to resource constraints or lack of expertise (Wang et al., 2020). This disparity can result in inefficiencies, higher operational costs, and reduced customer satisfaction,

ultimately impacting firm performance. Moreover, the ability to manage and learn from supply chain disruptions is critical. The COVID-19 pandemic underscored the vulnerabilities in global supply chains, highlighting the need for resilience and agility (Ivanov & Dolgui, 2020). Firms with high OLC are better positioned to adapt and respond to such disruptions, yet many firms do not adequately develop these capabilities. While SCM practices are essential for enhancing firm performance, their effectiveness is significantly influenced by the firm's organizational learning capability. Addressing the gaps in understanding how OLC can be harnessed to optimize SCM practices is crucial. This involves fostering a learning-oriented culture, ensuring equitable access to advanced SCM technologies, and developing robust mechanisms to manage and learn from disruptions. Addressing these challenges will enable firms to leverage SCM practices more effectively, thereby enhancing their performance and competitive advantage. Hence this study sought to address the gaps mentioned by assessing the role of organizational learning capability on the relationship between supply chain management practices and firm performance.

2. Literature Review

2.1. Supply Chain Management Practices

Supply Chain Management (SCM) practices refer to strategic approaches and operational activities that enhance the flow of goods, services, information, and finances across supply chain networks to achieve efficiency and effectiveness. In recent years, these practices have been widely recognized as pivotal for improving organizational performance and competitive advantage. Key practices include supplier relationship management, logistics integration, information sharing, and demand forecasting. Supplier Relationship Management (SRM) plays a critical role in SCM by fostering long-term partnerships, ensuring quality inputs, and reducing supply risks. For instance, effective SRM has been shown to improve supply chain resilience and reduce operational disruptions (Wiengarten et al., 2020). Collaborative relationships with suppliers also enable co-creation of value and innovation within the supply chain. Logistics Integration ensures seamless coordination between supply chain partners, minimizing delays and reducing costs. Digital technologies like blockchain and IoT have revolutionized logistics integration by enhancing traceability and real-time communication (Zhang et al., 2022). These tools facilitate efficient inventory management and optimize delivery processes. Information Sharing is critical for transparency and synchronization across the supply chain. Real-time sharing of data allows for proactive decision-making and reduces the bullwhip effect, where demand variability amplifies across the supply chain (Kumar et al., 2021). Advanced analytics and cloud computing have further improved the accuracy and accessibility of shared information. Demand Forecasting is another vital SCM practice. Accurate forecasting helps organizations align production schedules with market demand, minimizing wastage and meeting customer expectations. Machine learning algorithms and big data analytics have enhanced the accuracy of demand forecasting, particularly in industries with volatile demand patterns (Wang & Fan, 2023). Adopting these SCM practices fosters agility, cost-effectiveness, and enhanced customer satisfaction. Organizations that integrate digital innovations into SCM practices are better positioned to navigate uncertainties and gain competitive advantages in dynamic markets.

2.2. Resource Based View

The Resource-Based View (RBV) provides a robust theoretical framework for understanding the moderating effect of organizational learning capability (OLC) on the relationship between supply chain management practices (SCMP) and firm performance. RBV posits that firms gain competitive advantage by leveraging valuable, rare, inimitable, and non-substitutable (VRIN) resources (Barney, 1991). OLC, as an intangible organizational resource, meets these criteria and enhances the effectiveness of SCMP in driving superior performance. OLC represents an organization's ability to acquire, disseminate, and utilize knowledge effectively. It fosters innovation, adaptability, and collaboration, making it a critical VRIN resource (Zhou et al., 2022). When OLC interacts with SCMP, it magnifies their impact on firm performance by enabling firms to adapt practices to dynamic market conditions and optimize supply chain processes. The RBV asserts that resources must be exploited through appropriate strategies to generate value. SCMP, including supplier collaboration, logistics integration, and demand forecasting, are operational strategies that benefit significantly from the integration of OLC. For example, firms with strong OLC can refine their SCMP by applying new insights, leading to enhanced efficiency and resilience (Singh et al., 2021). By enhancing the adaptability and effectiveness of SCMP, OLC contributes to improved firm performance. Firms with high learning capabilities are better equipped to address supply chain disruptions, innovate processes, and meet customer demands, thereby achieving superior performance outcomes. This aligns with RBV's emphasis on leveraging internal resources to achieve sustainable competitive advantage (Teece, 2020). The RBV underscores that not all firms benefit equally from similar practices. The moderating effect of OLC explains the variability in performance outcomes across firms implementing SCMP. Firms with robust learning capabilities can better capitalize on the benefits of SCMP, while those with weaker OLC may struggle to achieve comparable results (Wang & Fan, 2023). This perspective enriches the RBV by emphasizing the interplay between resources (OLC) and capabilities (SCMP) and their combined impact on firm performance. It highlights that OLC is not merely a supportive resource but a strategic enabler that transforms SCMP into performance-enhancing mechanisms. The RBV underpins the moderating role of OLC in amplifying the effects of SCMP on firm performance. By integrating OLC into the RBV framework, this relationship emphasizes the strategic importance of intangible resources in achieving operational excellence and competitive advantage in dynamic environments.

Figure 2.1 Conceptual Framework
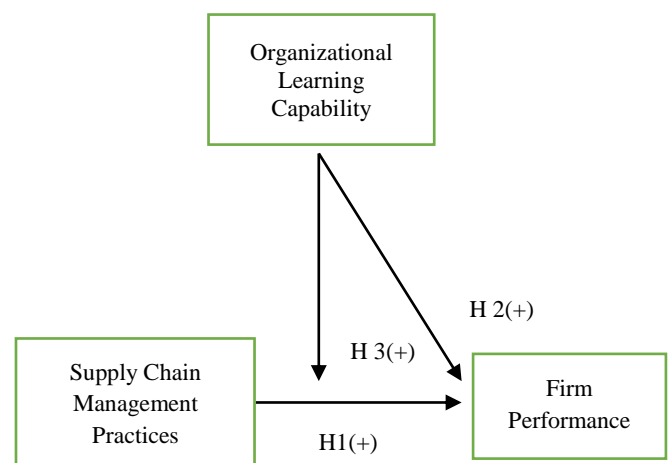
2.3. Relationship between Supply Chain Management Practices and Firm Performance

Effective SCM practices improve operational efficiency by streamlining processes and reducing waste. According to Christopher (2016), implementing just-in-time (JIT) inventory systems can minimize excess inventory and reduce holding costs, thereby improving operational efficiency. Furthermore, advanced SCM practices, such as the use of big data analytics and machine learning, enable firms to optimize their supply chains by predicting demand more accurately and managing resources more effectively (Waller and Fawcett, 2017). This technological advancement leads to a more responsive and agile supply chain, allowing firms to adapt quickly to market changes and maintain high levels of efficiency. SCM practices enhance cost management, which directly impacts firm performance. Cost reduction through efficient SCM practices can be achieved by improving procurement processes, optimizing logistics, and reducing lead times. A study by Li et al. (2017) found that firms that adopted strategic supplier partnerships and effective logistics management practices experienced significant cost savings. These cost reductions can then be reinvested into other areas of the business, such as research and development or marketing, further driving firm performance.

Moreover, effective SCM practices contribute to higher customer satisfaction by ensuring timely delivery and high-quality products. As Chopra and Meindl (2020) emphasize, reliable and efficient supply chains are crucial for meeting customer expectations and maintaining a competitive edge. Firms that implement SCM practices such as demand forecasting, inventory management, and supplier collaboration are better equipped to meet customer demands promptly and consistently. This reliability fosters customer loyalty and repeat business, which are critical components of long-term firm performance. Sustainable SCM practices contribute to improved firm performance by addressing environmental and social concerns. As sustainability becomes a key consideration for consumers and regulators, firms that adopt green supply chain practices can enhance their reputation and gain a competitive advantage. According to a study by Wong et al. (2021), firms that implemented sustainable supply chain practices, such as reducing carbon emissions and adopting circular economy principles, experienced improved brand image and customer loyalty. These positive outcomes translate into better financial performance and long-term success. Based on the review, this study proposes that:

H1: supply chain management practices positively influence firm performance

2.3.1. Relationship between Organizational Learning Capability and Firm Performance

Organizational learning, recognized as a source of knowledge creation and an invaluable, inimitable resource (Kocoglu et al., 2011), is highlighted as a crucial factor for achieving competitive advantages. It is also considered essential for gaining a sustainable competitive edge and improving firm performance (Martínez-Costa & Jiménez-Jiménez, 2009). Previous research examining the effects of collaboration and team learning, continuous learning, inquiry and dialogue, empowerment of people, connection of the organization to its environment, and leadership support on financial performance revealed a positive relationship between organizational learning practices and a firm's financial performance (Ellinger et al., 2002). Moreover, knowledge creation through generative learning, which fosters core competency, develops

flexible strategies by questioning ineffective ones, and realizes innovative disruptions as tools for maximizing customer satisfaction rather than merely responding to customer feedback, are some direct and positive influences of learning (Baker & Sinkula, 1999). The impact of organizational learning on firm performance is further supported by Martínez-Costa and Jiménez-Jiménez (2009). They argue that firm's adept at learning are better positioned to detect market events and trends, leading to better sales, increased market share, and a flexible, responsive structure that quickly addresses new challenges. This swift improvement in market information processing activities is consistent with the claims of Chaveerug and Ussahawanitchakit (2008), who stated that a greater commitment to learning is likely to result in higher organizational performance. Additionally, studies by Jerez-Gomez et al. (2005), Chiva et al. (2007), Kocoglu et al. (2011), and Onağ et al. (2014) have consolidated the notion that organizational learning capability enhances firm performance. The study proposes that:

H2: Organizational learning capability has a positive relationship with firm performance

2.3.2. Moderating effect of Organizational Learning Capability

One of the fundamental aspects of OLC is the ability to adapt to changing market conditions. Effective SCMP requires organizations to be agile and responsive to fluctuations in supply and demand, technological advancements, and evolving customer preferences. Firms with high OLC can better absorb and utilize information from their supply chain activities, allowing them to make timely adjustments and optimize performance. As Jerez-Gómez, Céspedes-Lorente, and Valle-Cabrera (2019) note, organizations that foster a strong learning culture are more adept at managing change and uncertainty, which directly contributes to improved supply chain efficiency and firm performance.

OLC promotes a culture of continuous improvement and innovation, which is essential for effective supply chain management. Innovative SCMP often involves the adoption of new technologies, processes, and practices that can lead to significant performance gains. Firms with high OLC are more likely to encourage experimentation and knowledge sharing, leading to the development of innovative solutions that enhance supply chain operations. According to Singh, Sharma, and Gupta (2020), the ability to innovate within the supply chain context is a key driver of firm performance, and OLC plays a pivotal role in fostering this innovation. Effective SCMP relies heavily on the quality of decision-making processes within the organization. OLC enhances these processes by ensuring that decision-makers have access to relevant, timely, and accurate information. This capability enables firms to make informed decisions that optimize supply chain performance and overall firm success. A study by Akhtar, Khan, and Husnain (2018) highlights that organizations with robust learning capabilities can better analyze supply chain data, foresee potential disruptions, and implement strategies that mitigate risks and capitalize on opportunities, thereby improving firm performance. The discussion above proposes that:

H3: organizational learning capability positively moderates the relationship between supply chain management practices and firm performance

3. Methodology

3.1. Research Design

Research design refers to the framework and plan that directs the process of data collection, analysis, and interpretation in a research study. It outlines the overall strategy and methodology selected to address the research question or hypothesis. Research design is crucial for ensuring the validity and reliability of a study's findings. This study utilized an explanatory research design, which is particularly valuable for gaining a deeper understanding of the relationships between variables. It helps researchers explore the reasons and mechanisms behind observed phenomena. As Creswell (2014) notes, explanatory research enables a more profound investigation into the factors influencing specific outcomes. When the goal is to establish causal relationships between variables, an explanatory research design is essential. It allows researchers to move beyond simple descriptions and identify cause-and-effect relationships. Campbell and Stanley (1963) highlight the importance of establishing causal connections in research. Explanatory research is also well-suited for hypothesis testing, as it enables researchers to explore whether relationships exist between variables and to what extent one variable affects another. Trochim and Donnelly (2008) assert that explanatory research is effective for hypothesis testing and making predictions.

3.1.1. Population of the Study

A population includes all relevant observations within a defined collection, such as individuals or events, as specified by the researcher (Burns & Burns, 2018). This study focuses on manufacturing companies located in the Greater Accra Metropolis of Ghana. Given the specific nature of the concepts being examined, it was necessary to narrow the focus to a particular group capable of providing detailed responses to the research questions. This targeted approach aims to gather the pertinent data needed to address the study's objectives. In this study, the population consists of procurement, logistics, and supply chain practitioners in state-owned transport companies in Ghana. The study specifically targets professionals in these fields with at least five years of experience to ensure precision. The target population is the manufacturing companies operating within the Greater Accra, Region of Ghana, which play a critical role contributing to economic activities.

3.1.2. Sampling Technique and Sample Size

Convenience sampling, a non-probability sampling method, was utilized due to its practicality and ease of accessing participants (Bryman, 2016). In this technique, participants are selected based on their convenient availability, making it a practical choice, especially when time and resources are limited. The decision to use convenience sampling was driven by the study's need for a quick and accessible method to gather data from readily available individuals within the research setting. This approach is particularly useful during explanatory or preliminary research phases (Etikan, Musa, & Alkassim, 2016). The sample size for this study consists of 130 participants. This number was determined by considering feasibility, time constraints, and the research scope. Although relatively small, convenience sampling facilitated efficient data collection within the study's limitations. The selected sample size of 130 was considered adequate for the study's objectives, given the explanatory nature of the research and the practical constraints associated with convenience sampling (Bryman, 2016).

Primary data refers to information that is collected firsthand by the researcher specifically for the purpose of the study. This type of data is original and unprocessed, gathered directly from the respondents. For this study, primary data was collected through the distribution of self-administered questionnaires. These structured questionnaires were designed to gather detailed information from key respondents across various departments within the surveyed entities. The questionnaires included statements addressing the study variables, enabling the collection of data on respondents' perspectives regarding the performance of the procurement function in their respective organizations. By relying on primary data, the study aimed to obtain accurate and relevant information directly from the individuals involved in the research (Creswell, 2014).

Secondary data refers to information that has been collected by other researchers or organizations for different purposes but can be utilized for the current study. This type of data is often already processed and available in various forms, such as books, journal articles, reports, and databases. Secondary data provides a valuable resource for understanding the existing body of knowledge related to the research topic and for supporting the interpretation of primary data. In this study, secondary data was gathered from existing literature, including academic journals, industry reports, and previous research studies. This data helped to inform the development of the research framework, the design of the questionnaires, and the contextualization of the study findings (Bryman, 2016). Primary data collection for this study involved distributing self-administered questionnaires to conduct the survey. These structured questionnaires were designed to gather information from key respondents across various departments within the surveyed entities. Each questionnaire included statements addressing the study variables, allowing respondents to share their perspectives on the procurement function's performance in their respective organizations. Before the actual survey, the questionnaires were prepared and tested to identify and fix any unresponsive questions. To ensure reliability and validity, the study used a standardized questionnaire based on constructs from existing literature and previous research. Thus, the study relied exclusively on primary data, which is firsthand and unprocessed information collected directly from respondents to address the research objectives. The study explored the significance of green supply chain management, market orientation, and organizational operational performance through questionnaires distributed via email. The decision to gather primary data was driven by the need for reliable information directly from individuals involved in the study who could read and respond to the questionnaire. Despite the availability of both primary and secondary data sources, this study chose to rely solely on primary data due to the extensive nature of the research.

3.1.3. Data Collection Method

The collection of primary data was achieved through the distribution of self-administered questionnaires, which were designed to capture the necessary information from key respondents. These questionnaires were distributed via electronic mail to ensure a broad reach and timely response. The questionnaire design incorporated constructs from existing literature to ensure reliability and validity. Prior to distribution, the questionnaires were tested to identify and rectify any issues with unresponsive questions. This rigorous approach to primary data collection ensured that the study gathered accurate and relevant

information directly from the respondents (Etikan, Musa, & Alkassim, 2016).

4. RESULTS AND DISCUSSIONS

4.1. Introduction

This chapter provides the findings and analysis based on the data outlined in the research section of the study. The study focused on examining how organizational culture and top management orientation impact the relationship between electronic procurement and firm performance from a contingency theory perspective. The chapter includes details on respondents' demographics, descriptive statistics of the study variables, reliability and validity assessments, correlations among variables, hypothesis testing, and a discussion of the results.

Table 4.1 Respondents Demographics

Profile	Categorization	Frequency	Percentage
Age band	20 – 29 years	11	8.5
	30 – 39 years	26	20.0
	40 – 49 years	31	23.8
	50 – 55 years	41	31.5
	56 years and above	21	16.2
	Total	**130**	**100.0**
Gender	Male	86	66.2
	Female	44	33.8
	Total	130	100.0
Working experience	1 – 5 years	21	16.2
	6 – 12 years	34	26.2
	13 – 16 years	25	19.2
	17 – 25 years	25	19.2
	26 years and above	25	19.2
	Total	**130**	**100.0**
Position in your company	Procurement Manager/Officer	30	23.1
	Logistics Manager/Officer	46	35.4
	Stores/Warehouse Manager/Officer	31	23.8
	Supply Chain Manager/Officer	23	17.7
	Total	**130**	**100.0**
Level of education	Diploma/HND	20	15.4
	Bachelor degree	75	57.7
	Master degree	30	23.1
	PhD	5	3.8
	Total	**130**	**100.0**
Type of your company	Private	46	35.4
	Public	46	35.4
	Multinational	38	29.2
	Total	**130**	**100.0**
Type of your production	Manufacturer	36	27.7
	Service provider	39	30.0
	R&D	30	23.1
	Product designer	25	19.2
	Total	**130**	**100.0**
Age of your firm	1 to 6 years	26	20.0
	7 to 10 years	32	24.6
	11 to 15 years	37	28.5
	16 to 20 years	20	15.4
	21 years and above	15	11.5
	Total	**130**	**100.0**
Size of your organization	Less than 50	5	3.8
	Between 50 and 100	38	29.2
	Between 100 and 200	41	31.5
	Over 200	46	35.4
	Total	**130**	**100.0**

Source: Filed Data, 2024

The demographic profile of the respondents provides detailed information about the characteristics and backgrounds of the individuals who participated in the survey. Concerning the age band, the 20 – 29 years age group represents a small portion (8.5%) of the respondents, indicating fewer younger professionals in the sample. 30 – 39 years group makes up 20.0%, showing a significant portion of respondents in their early to mid-career stages. 40 – 49 years representing 23.8%, this age band is a substantial part of the sample, likely indicating a considerable number of experienced professionals. 50 – 55 years group forms the largest portion at 31.5%, suggesting that many respondents are in the later stages of their careers. 56 years and above: Comprising 16.2%, this group includes the most senior professionals, possibly those in leadership or advisory roles.

The issue of the gender, males make up 66.2% of the respondents, indicating a male-dominated sample. Females constitute 33.8% of the respondents, showing less representation compared to males. Working Experience, 1 – 5 years representing 16.2% of the respondents are relatively new to the workforce. 6 – 12 years group makes up the largest segment at 26.2%, representing mid-career professionals. 13 – 16 years, 17 – 25 years, 26 years and above: Each of these groups forms 19.2% of the respondents, indicating a balanced representation of experienced professionals with varying lengths of service. The position of the respondents in their companies, 23.1% of the respondents hold procurement roles, suggesting a strong focus on procurement in the sample. The largest group at 35.4%, indicating a significant emphasis on logistics. Stores/Warehouse Manager/Officer group represents 23.8%, showing a notable presence in inventory and warehousing roles. Supply Chain Manager/Officer represents 17.7% are in

supply chain roles, indicating the overall importance of supply chain management. The level of education of the respondents, 15.4% have a diploma or higher national diploma, indicating some technical or vocational training. The majority, 57.7%, have a bachelor's degree, suggesting that most respondents have a solid educational foundation. 23.1% have a master's degree, indicating advanced education among a significant portion of the respondents. 3.8% have a doctoral degree, representing a small group of highly educated individuals. The type of companies of the respondents, 35.4% work in private companies. Another 35.4% are employed in public sector organizations. 29.2% work for multinational companies, indicating a significant presence of respondents in global firms. 27.7% are in manufacturing, showing a substantial presence in this sector. 30.0% work in service provision, making it the largest group.

23.1% are involved in research and development. 19.2% are in product design, indicating a diverse range of production types among respondents.

The age of the firms, 1 to 6 years represents 20.0% indicating that the firms are relatively new. 7 to 10 years represents 24.6% indicating that the firms have been established for a moderate period.

The 11 to 15 years group, representing 28.5%, is the largest, indicating many firms are well-established but not very old. The 16 to 20 years represents 15.4% indicating that the firms have a longer history. 21 years and above represents 11.5% of firms that are long-standing, showing a mix of firm ages. Concerning the size of organization, less than 50 of organizations are small represents 3.8%, Between 50 and 100: 29.2% are medium-sized. Between 100 and 200: 31.5% are larger mid-sized firms. Over 200: 35.4% are large organizations, indicating a varied range of organizational sizes. This demographic profile highlights the diversity in age, gender, experience, roles, education, company types, production types, firm ages, and organizational sizes among the respondents, providing a comprehensive understanding of the sample's characteristics.

4.2. Validity and Reliability Tests

Reliability and validity are essential concepts in research methodology that ensure the precision, consistency, and trustworthiness of study results. These principles are crucial for confirming that research measures what it is supposed to measure and that the findings are dependable.

Reliability refers to the consistency, stability, and repeatability of research measurements or findings. It shows how consistently a measurement tool or instrument produces the same results when used repeatedly under identical conditions. Reliable measurements are vital for making accurate predictions, comparisons, and generalizations based on research findings.

Validity indicates the degree to which a research instrument measures what it is intended to measure. It evaluates the accuracy and appropriateness of the inferences, interpretations, and conclusions drawn from research data. Valid measurements are crucial for making informed decisions, designing effective interventions, and advancing scientific knowledge in various disciplines. Both reliability and validity are fundamental to the quality and integrity of research findings. Ensuring that research measures are consistent, accurate, and meaningful allows researchers to generate reliable evidence and make valid conclusions that contribute to the advancement of knowledge and understanding in their respective fields.

Cronbach's Alpha is commonly used to evaluate the internal consistency reliability of a scale or set of items. According to DeVellis (2012), it measures how well items in a scale correlate with each other, indicating the scale's reliability. The Kaiser-Meyer-Olkin (KMO) test assesses the sampling adequacy for conducting factor analysis. Tabachnick and Fidell (2013) noted that KMO values closer to 1 suggest better suitability for factor analysis, indicating that variables are sufficiently correlated for factor extraction. Factor loadings in factor analysis represent the correlation between variables and the factors extracted. Hair et al. (2014) stated that factor loadings should ideally exceed 0.3 to be considered significant, indicating substantial shared variance between variables and factors.

Table 4.2 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.724
Bartlett's Test of Sphericity	Approx. Chi-Square	5268.587
	df	741
	Sig.	.000

Table 4.2.1 Reliability Results

Constructs	Number of items	Cronbach's Alpha
Firm performance	12	0.885
Organizational learning capability	14	0.901
Supply chain management practices	25	0.915

Table 4.2.2 Constructs Items Factor Loadings

Items	Loadings	Items	Loadings	Items	Loadings
FP1	.830	OLC1	.919	SCMP1	.948
FP2	.726	OLC2	.639	SCMP2	.856
FP3	.679	OLC3	.909	SCMP3	.844
FP4	.814	OLC4	.805	SCMP4	.910
MP1	.946	OLC5	.862	SCMP5	.868
MP2	.925	OLC6	.803	SCMP6	.844

MP3	.872	OLC7	.873	SCMP7	.716
MP4	.761	OLC8	.862	SCMP8	.832
OP1	.881	OLC9	.882	SCMP9	.781
OP2	.823	OLC10	.893	SCMP10	.673
OP3	.799	OLC11	.883	SCMP11	.733
OP4	.786	OLC12	.964	SCMP12	.721
		OLC13	.942	SCMP13	.731
		OLC14	.917	SCMP14	.787
				SCMP15	.726
				SCMP16	.774
				SCMP17	.716
				SCMP18	.722
				SCMP19	.750
				SCMP20	.733
				SCMP21	.783
				SCMP22	.759
				SCMP23	.726
				SCMP24	.733
				SCMP25	.707

The KMO measure assesses the adequacy of the sample size for factor analysis. Values range from 0 to 1, with higher values indicating better suitability for factor analysis. A KMO value of 0.724 suggests that the sample is adequately suited for factor analysis, as values above 0.7 are generally considered acceptable, indicating that the variables are sufficiently correlated. Bartlett's Test of Sphericity checks whether the correlation matrix is an identity matrix, which would indicate that variables are unrelated and unsuitable for structure detection. A significant result (Sig. = .000) with a high chi-square value (5268.587) and degrees of freedom (741) suggests that the variables are significantly correlated and suitable for factor analysis. Cronbach's Alpha is a measure of internal consistency or reliability of a set of scale or test items. It ranges from 0 to 1, with higher values indicating greater internal consistency. A Cronbach's Alpha value above 0.7 is generally considered acceptable, above 0.8 is good, and above 0.9 is excellent.

Firm Performance with a Cronbach's Alpha of 0.885, the items measuring firm performance demonstrate high reliability. This indicates that the items are consistently measuring the construct and can be considered dependable. Organizational Learning Capability with a Cronbach's Alpha of 0.901 indicates excellent reliability, suggesting that the items measuring organizational learning capability are highly consistent and provide reliable measurements. Supply Chain Management Practices with a Cronbach's Alpha of (0.915) recorded the highest reliability score indicates that the items measuring supply chain management practices are extremely consistent and reliable. The KMO and Bartlett's Test results justify the use of factor analysis for the data, as the sample adequacy and correlation among variables are confirmed to be sufficient. The high Cronbach's Alpha values across all constructs indicate that the items within each construct are reliable and internally consistent. This reliability is crucial for ensuring that the constructs accurately measure what they are intended to measure, allowing for credible and valid conclusions in the research.

4.3. Correlation among the variables
To examine the relationships between variables, Pearson correlation coefficients are typically calculated. These coefficients assess the strength and direction of linear relationships between pairs of continuous variables. However, it is essential to remember that correlation does not imply causation; it merely shows the degree to which two variables vary together. Correlations between items within constructs (such as organizational culture or electronic procurement) can provide evidence of construct validity. High correlations among items within a construct suggest that they are measuring the same underlying concept. Correlation coefficients range from -1 to 1, with values close to 1 or -1 indicating a strong linear relationship, and values near 0 indicating a weak or no relationship.

Variables		FPM	OLC	SCMP
FPM	Pearson Correlation	1	.886[**]	.269[**]
	Sig. (2-tailed)		.000	.002
	N	130	130	130

OLC	Pearson Correlation	.886**	1		.327**
	Sig. (2-tailed)	.000			.000
	N	130	130		130
SCMP	Pearson Correlation	.269**	.327**		1
	Sig. (2-tailed)	.002	.000		
	N	130	130		130

Note: FPM= Firm Performance; OLC= Organizational Learning Capability; SCMP= Supply chain management practices

There is a very strong positive correlation (0.886) between Firm Performance and Organizational Learning Capability, which is statistically significant at the 0.01 level. This indicates that as organizational learning capability increases, firm performance tends to increase as well. There is a moderate positive correlation (0.269) between Firm Performance and Supply Chain Management Practices, which is also statistically significant at the 0.01 level. This suggests that better supply chain management practices are associated with improved firm performance, although the relationship is not as strong as with organizational learning capability. There is a moderate positive correlation (0.327) between Organizational Learning Capability and Supply Chain Management Practices, which is statistically significant at the 0.01 level. This implies that higher organizational learning capability is associated with better supply chain management practices.

4.4. Influence of Supply Chain Management Practices on Firm performance

The study examined the influence of supply chain management practices on firm performance and the table 4.4 presents the results of a regression analysis examining the influence of supply chain management practices on firm performance.

Table 4.4 Influence of Supply Chain Management Practices on Firm performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.269a	.073	.065	.80792

ANOVAa					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	6.531	1	6.531	10.006	.002b
Residual	83.549	128	.653		

Coefficientsa					
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.132	.328		3.454	.001
SCMP	.312	.099	.269	3.163	.002

a. Dependent Variable: FPM= Firm performance
b. Predictors: (Constant), SCMP= Supply Chain Management Practices

The coefficient of determination (0.073) shows that 7.3% of the variance in firm performance can be explained by supply chain management practices. The significance level (0.002) indicates the model is statistically significant at the 0.05 level. The standardized coefficient (0.269) shows the relative strength of supply chain management practices in predicting firm performance, in standardized units. The regression analysis shows that supply chain management practices have a statistically significant but weak positive influence on firm performance. While the model explains a small proportion of the variance in firm performance (7.3%), the significance of the coefficients indicates that improving supply chain management practices can lead to better firm performance.

4.5. Influence of Organizational Learning Capability on Firm performance

The study examined the influence of organizational learning capability on firm performance and the table 4.5 presents the results of a regression analysis examining the influence of organizational learning capability on firm performance.

4.5. Influence of Organizational Learning Capability on Firm performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.886a	.785	.783	.38893

ANOVAa					
	Sum of Squares	df	Mean Square	F	Sig.

Regression	70.718	1	70.718	467.508	.000[b]
Residual	19.362	128	.151		

	Coefficients[a]				
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	.206	.096		2.152	.033
OLC	.823	.038	.886	21.622	.000

a. Dependent Variable: FPM= Firm Performance
b. Predictors: (Constant), OLC= Organizational Learning Capability

4.6. Moderating effect of organizational learning capability

The study assessed the moderating effect of organizational learning capability on the relationship between supply chain management practices and firm performance and the table 4.8 presents the results.

Table 4.6 Moderating effect of organizational learning capability

R	R-sq	MSE	F	df1	df2	p
.5160	.2663	.5245	15.2446	3.0000	126.0000	.0000
	coeff	se	t	p	LLCI	ULCI
constant	3.3353	.9828	3.3938	.0009	1.3904	5.2802
SCMP	.0582	.3435	.1693	.8658	.6215	.7379
OLC	1.0759	.3000	3.5866	.0005	1.6695	.4822
Int_1	1.0939	.1910	5.7282	.0000	.7160	1.4718

The correlation coefficient (0.5160) indicates a moderate positive relationship between the combined effects of supply chain management practices, organizational learning capability, and their interaction on firm performance. The coefficient of determination (0.2663) shows that 26.63% of the variance in firm performance can be explained by the model. The interaction term (1.0939) is statistically significant (p = 0.0000), indicating that organizational learning capability moderates the relationship between supply chain management practices and firm performance. The positive coefficient suggests that as organizational learning capability increases, the positive impact of supply chain management practices on firm performance becomes stronger.

Table 4.7 Hypothesis Testing and Findings

Hypothesis	Relationship	Beta	t	p	Remarks
H1	SCMP - ->FPM	.269	3.163	.002	Supported
H2	OLC - ->FPM	.886	21.622	.000	Supported
H3	OLC*SCMP- ->FPM	.1910	5.7282	.0000	Supported

4.7. Discussion of Results

Influence of Supply Chain Management Practices on Firm performance

The study assessed the influence of supply chain management practices on firm performance and the findings of the study indicate that supply chain management practices have positive significant influence on firm performance. Effective SCMP streamline operations, reducing waste and costs. By optimizing procurement, production, and distribution processes, firms can achieve cost efficiencies that directly enhance profitability (Kwak et al., 2018). Efficient supply chains reduce inventory holding costs and improve cash flow, contributing to better financial performance (Gligor et al., 2020). High-quality SCMP ensure consistent product quality, which enhances customer satisfaction and loyalty. Supplier collaboration and quality control processes play a critical role in maintaining high standards. Firms that

implement rigorous quality management in their supply chains often see improved market performance and customer retention (Nair et al., 2018). SCMP enhance a firm's ability to respond swiftly to market changes and customer demands. This agility is crucial in today's dynamic business environment, where customer preferences and market conditions can shift rapidly. Firms with agile supply chains can quickly adjust their strategies, maintaining competitive advantage (Schoenherr & Narasimhan, 2021). Collaboration with suppliers and customers fosters innovation. Joint problem-solving and shared R&D efforts can lead to the development of new products and services, driving market growth. Firms that engage in collaborative supply chain practices often report higher innovation rates and improved market performance (Chen et al., 2019). Robust SCMP contribute to better risk management by enhancing visibility and control across the supply chain. This capability allows firms to identify potential disruptions

early and implement contingency plans, thereby maintaining stability and performance even in adverse conditions (Fan & Stevenson, 2018).

Influence of Organizational Learning Capability on Firm performance

The study results revealed that organizational learning capability has a positive and significant influence on firm performance. Firms with strong OLC excel at acquiring and sharing knowledge, which leads to better decision-making and problem-solving capabilities. The continuous exchange of information within the organization enables employees to stay updated with the latest industry trends and innovations, thereby enhancing performance (Hussain et al., 2019). Knowledge sharing also fosters collaboration, leading to more effective and efficient operations (Martins et al., 2021). OLC encourages a culture of innovation by promoting experimentation and risk-taking. Employees are motivated to explore new ideas and approaches, which can result in the development of innovative products and services. Firms that prioritize learning are more likely to stay ahead of competitors by continuously improving and adapting their offerings to meet market demands (Jiménez-Jiménez & Sanz-Valle, 2018). In a rapidly changing business environment, the ability to learn and adapt is crucial. Firms with high OLC can quickly adjust their strategies and operations in response to new information or changes in the market. This adaptability helps firms to maintain their competitive edge and perform better than those that are slow to respond (Senge et al., 2020). When organizations invest in learning and development, employees feel valued and are more likely to be engaged and committed to their work. High levels of employee engagement are linked to increased productivity, lower turnover rates, and overall improved firm performance (Serrat, 2017). Engaged employees are also more likely to contribute to a positive organizational culture, further enhancing performance (Crossan et al., 2019). Continuous learning leads to process improvements and operational efficiency. By analyzing past performances and learning from mistakes, firms can streamline their operations, reduce waste, and improve productivity. This efficiency translates into cost savings and higher profitability (Garvin et al., 2018).

Moderating effect of organizational learning capability on the relationship between supply chain management practices and firm performance

The study results revealed that organizational learning capability positively moderates the relationship between supply chain management practices and firm performance. OLC facilitates the integration of knowledge from supply chain partners, improving decision-making and problem-solving capabilities. When firms are adept at learning, they can better absorb and utilize information from suppliers and customers, leading to more effective SCMP (Hussain et al., 2019). This knowledge integration helps firms respond quickly to supply chain disruptions and optimize operations, thus boosting performance (Jajja et al., 2018). Firms with high OLC are more likely to engage in continuous improvement and innovation within their supply chains. By fostering a culture of learning and experimentation, these firms can develop and implement innovative supply chain solutions that enhance efficiency and responsiveness (Liu et al., 2018). This continuous improvement cycle leads to better supply chain performance, which in turn positively impacts overall firm performance (Wang et al., 2020). OLC enables firms to be more adaptable and agile in their supply chain practices. Learning organizations are better equipped to anticipate and respond to changes in the market, such as fluctuations in demand or supply chain disruptions. This adaptability allows firms to maintain high levels of service and performance even in dynamic environments (Schoenherr & Narasimhan, 2021). OLC enhances collaboration and relationship management with supply chain partners. Firms that prioritize learning are better at building and maintaining strong relationships with suppliers and customers, which are crucial for effective SCMP (Chen et al., 2019). These strong relationships facilitate better coordination and alignment of supply chain activities, leading to improved performance (Frohlich & Westbrook, 2019).

5. Managerial Implication

Managers should prioritize and invest in continuous learning and development programs to enhance the organizational learning capability. This can be achieved through training, workshops, seminars, and courses that focus on the latest trends and practices in supply chain management and other relevant areas. Creating a culture that encourages learning, knowledge sharing, and continuous improvement is essential. Managers can promote this by recognizing and rewarding employees who contribute to knowledge sharing and innovative practices within the supply chain.

Integrating learning processes into supply chain management practices can lead to better performance outcomes. This includes implementing systems for capturing and analyzing data from supply chain activities, encouraging cross-functional collaboration, and promoting the use of best practices and lessons learned from past experiences. With a strong organizational learning capability, firms are better positioned to adapt to changes and innovations in the supply chain. Managers should be proactive in adopting new technologies, methodologies, and strategies that can enhance supply chain efficiency and effectiveness. Enhanced organizational learning capability can lead to better decision-making within the supply chain. Managers should leverage insights gained from learning activities to make informed decisions that improve supply chain performance and overall firm performance. Managers should regularly benchmark their supply chain practices against industry standards and competitors. Organizational learning capability enables firms to identify gaps and opportunities for improvement, leading to continuous enhancement of supply chain processes and performance. Promoting collaboration across different functions within the organization can enhance learning and knowledge sharing. Managers should encourage teams from various departments (e.g., procurement, logistics, sales) to work together, share insights, and solve problems collectively.

5.1. Theoretical Contribution

The moderating effect of organizational learning capability (OLC) on the relationship between supply chain management practices (SCMP) and firm performance contributes significantly to supply chain and organizational theory. This contribution is grounded in the integration of dynamic capabilities theory and resource-based view (RBV), offering new insights into how firms leverage learning to optimize their supply chain operations and enhance performance outcomes. OLC reflects an organization's ability to acquire, disseminate, and apply knowledge effectively. When integrated into the SCMP-performance relationship, it demonstrates how dynamic capabilities enable firms to adapt and respond to changing environments. This supports and extends dynamic capabilities theory by emphasizing learning as a critical

moderating factor that enhances the responsiveness and efficiency of SCMP (Teece, 2020).

The RBV suggests that unique and valuable internal resources, like OLC, can generate competitive advantage. By highlighting the moderating role of OLC, the study underscores that firm performance is not solely dependent on the adoption of SCMP but is amplified when these practices are coupled with robust learning mechanisms. This enriches the RBV by emphasizing the synergy between resources (OLC) and capabilities (SCMP) (Barney, 2021). Prior studies often focus on the direct relationship between SCMP and firm performance, leaving the role of contextual and organizational factors underexplored. By introducing OLC as a moderator, this theoretical contribution bridges the gap, showing that firms with higher learning capabilities can extract greater value from SCMP by fostering innovation, collaboration, and continuous improvement (Zhou et al., 2022). OLC aligns with knowledge-based theories, which posit that knowledge is a critical strategic asset. The findings suggest that knowledge acquisition and application processes embedded in OLC enhance the effectiveness of SCMP, thereby offering a nuanced understanding of the interplay between knowledge and supply chain strategies. The study provides a theoretical basis for how firms can use OLC to adapt to environmental uncertainties and proactively exploit opportunities. This moderating effect highlights the importance of learning in achieving sustained firm performance, particularly in dynamic and competitive markets.

5.2. Recommendation

Provide ongoing training and development opportunities for employees to enhance their skills and knowledge in supply chain management. Promote a culture of knowledge sharing and collaboration to leverage collective expertise and insights. Apply lean principles to eliminate waste and enhance value creation throughout the supply chain. Foster a culture of continuous improvement to identify and address inefficiencies and opportunities for enhancement. Utilize data analytics to inform strategic decisions and optimize supply chain performance. Establish and track key performance indicators (KPIs) to monitor supply chain efficiency and effectiveness. Maintain open and transparent communication channels within the organization and with external partners to facilitate coordination and problem-solving. Implement feedback mechanisms to gather insights and make adjustments to improve supply chain processes and performance. Ensure that supply chain management practices are aligned with the overall business strategy and objectives to drive cohesive and strategic performance improvements. Integrate supply chain goals with broader organizational goals to ensure that supply chain activities contribute to overall business success. By focusing on these recommendations, firms can harness the positive influence of supply chain management practices to enhance performance, improve operational efficiency, and achieve strategic business objectives.

5.3. Suggestions for future Studies

Future studies can examine how various technologies, such as artificial intelligence, machine learning, or blockchain, impact the relationship between organizational learning capability and SCMP effectiveness. Conduct longitudinal studies to assess how the moderating effect of organizational learning capability evolves over time and its long-term impact on firm performance. Study how cultural and geographic differences affect the moderating role of organizational learning capability in various countries or regions.

REFERENCES

1. Akhtar, S., Khan, M. N., & Husnain, M. (2018). Organizational learning and supply chain management practices: Implications for firm performance. *Journal of Business Research*, 86, 13-21. https://doi.org/10.1016/j.jbusres.2017.07.035

2. Baker, W. E., & Sinkula, J. M. (1999). The synergistic effect of market orientation and learning orientation on organizational performance. *Journal of the Academy of Marketing Science, 27*(4), 411–427. https://doi.org/10.1177/0092070399274002

3. Barney, J. (2021). *Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view*. Journal of Management, 47(1), 120-146.

4. Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120. https://doi.org/10.1177/014920639101700108

5. Bode, C., Wagner, S. M., Petersen, K. J., & Ellram, L. M. (2018). Understanding responses to supply chain disruptions: Insights from information processing and resource dependence perspectives. *Academy of Management Journal, 54*(4), 833–856. https://doi.org/10.5465/amj.2018.0502

6. Burns, R. B., & Burns, R. A. (2018). *Business research methods and statistics using SPSS*. SAGE Publications.

7. Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. Rand McNally.

8. Carter, C. R., Rogers, D. S., & Choi, T. Y. (2015). Toward the theory of the supply chain. *Journal of Supply Chain Management, 51*(2), 89-97. https://doi.org/10.1111/jscm.2015.89

9. Chaveerug, A., & Ussahawanitchakit, P. (2008). Learning orientation, competitive environment, and firm performance: Evidence from SMEs in Thailand. *International Journal of Business Strategy, 8*(2), 1–12.

10. Chen, S., Wei, C., & Chien, S. (2019). Supplier-customer collaboration and innovation in supply chain management: The moderating role of relationship quality. *Journal of Business Research, 97*, 193-202. https://doi.org/10.1016/j.jbusres.2019.01.024

11. Chiva, R., Alegre, J., & Lapiedra, R. (2007). Measuring organizational learning capability among the workforce. *International Journal of Manpower, 28*(3/4), 224–242. https://doi.org/10.1108/01437720710755227

12. Chopra, S., & Meindl, P. (2016). *Supply chain management: Strategy, planning, and operation* (7th ed.). Pearson Education.

13. Chopra, S., & Meindl, P. (2020). *Supply chain management: Strategy, planning, and operation* (7th ed.). Pearson.

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

15. Christopher, M., & Holweg, M. (2017). Supply chain 2.0 revisited: A framework for managing volatility-induced risk in the supply chain. *International Journal of Physical Distribution & Logistics Management, 47*(2), 46–63. https://doi.org/10.1108/IJPDLM-09-2017-0253

16. Christopher, M., & Holweg, M. (2018). Supply chain 2.0 revisited: A framework for managing volatility-induced risk in the supply chain. *International Journal of Physical Distribution & Logistics Management, 48*(10), 2-18. https://doi.org/10.1108/IJPDLM-2018-0283

17. Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE Publications.

18. Crossan, M., Lane, H., & White, R. (2019). An organizational learning framework: From intuition to institution. *Academy of Management Perspectives, 33*(3), 147-164. https://doi.org/10.5465/amp.2017.0152

19. DeVellis, R. F. (2012). *Scale development: Theory and applications* (3rd ed.). SAGE Publications.

20. Ellinger, A. D., Ellinger, A. E., Yang, B., & Howton, S. W. (2002). The relationship between the learning organization concept and firms' financial performance: An empirical assessment. *Human Resource Development Quarterly, 13*(1), 5–22. https://doi.org/10.1002/hrdq.1010

21. Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1-4. https://doi.org/10.11648/j.ajtas.20160501.11

22. Fan, Y., & Stevenson, M. (2018). Understanding supply chain risk management practices: The role of learning and experience. *International Journal of Production Economics, 204*, 60-72. https://doi.org/10.1016/j.ijpe.2018.07.014

23. Frohlich, M., & Westbrook, R. (2019). The effect of information sharing on supply chain performance: A comparison of different modes. *Journal of Supply Chain Management, 55*(4), 56-68. https://doi.org/10.1111/jscm.12236

24. Garvin, D. A., Edmondson, A. C., & Gino, F. (2018). Is yours a learning organization? *Harvard Business Review, 96*(3), 108-116.

25. Gligor, D. M., & Holcomb, M. C. (2020). The role of supply chain flexibility in firm performance: The moderating effects of industry and environmental turbulence. *International Journal of Production Research, 58*(8), 2401-2415. https://doi.org/10.1080/00207543.2019.1678961

26. Gunasekaran, A., Subramanian, N., & Papadopoulos, T. (2017). Information technology for competitive advantage within logistics and supply chains: A review. *Transportation Research Part E: Logistics and Transportation Review, 99*, 14-33. https://doi.org/10.1016/j.tre.2016.12.008

27. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis* (7th ed.). Pearson.

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

29. Hult, G. T. M., Ketchen, D. J., Jr., & Slater, S. F. (2017). Information processing, knowledge development, and supply chain performance. *Academy of Management Review, 42*(3), 464–485. https://doi.org/10.5465/amr.2017.87

30. Hussain, M., He, X., & Ma, Q. (2019). The role of organizational learning in building supply chain resilience. *Management Decision, 57*(8), 1815-1832. https://doi.org/10.1108/MD-11-2018-1247

31. Ivanov, D., & Dolgui, A. (2020). Viability of intertwined supply networks: Extending the supply chain resilience angles towards survivability. *International Journal of Production Research, 58*(10), 2904–2915. https://doi.org/10.1080/00207543.2020.1770220

32. Jajja, M. S. S., Choi, T. Y., & Li, S. (2018). The moderating effect of organizational learning capability on the relationship between supply chain integration and performance. *International Journal of Production Economics, 201*, 71-83. https://doi.org/10.1016/j.ijpe.2018.04.010

33. Jerez-Gómez, P., Céspedes-Lorente, J., & Valle-Cabrera, R. (2005). Organizational learning capability: A proposal of measurement. *Journal of Business Research, 58*(6), 715–725. https://doi.org/10.1016/j.jbusres.2003.11.002

34. Jerez-Gómez, P., Céspedes-Lorente, J., & Valle-Cabrera, R. (2019). Organizational learning and sustainable innovation: An integrative approach. *Journal of Business Research, 96*, 467–479. https://doi.org/10.1016/j.jbusres.2018.09.048

35. Jerez-Gómez, P., Céspedes-Lorente, J., & Valle-Cabrera, R. (2019). Organizational learning capability: A key driver of innovation and firm performance. *Journal of Business Research, 96*, 467–479. https://doi.org/10.1016/j.jbusres.2018.10.034

36. Jerez-Gómez, P., Céspedes-Lorente, J., & Valle-Cabrera, R. (2019). Organizational learning capability and performance in supply chains: Insights from a global survey. *Journal of Supply Chain Management*, 55(3), 38-55. https://doi.org/10.1111/jscm.12179

37. Jiménez-Jiménez, D., & Sanz-Valle, R. (2018). Innovation, organizational learning, and performance. *Journal of Business Research, 88*, 20-27. https://doi.org/10.1016/j.jbusres.2018.02.038

38. Kocoglu, İ., Imamoglu, S. Z., Ince, H., & Keskin, H. (2011). The relationship between organizational learning and firm performance: Evidence from Turkey. *African Journal of Business Management, 5*(14), 6027–6035. https://doi.org/10.5897/AJBM10.1399

39. Kumar, V., Singh, R. K., & Jain, K. (2021). Big data analytics for bullwhip effect reduction in supply chain: A review and framework. *Computers & Industrial Engineering, 157*, 107355. https://doi.org/10.1016/j.cie.2021.107355

40. Kwak, S. Y., Lee, H. G., & Cho, S. H. (2018). The role of supply chain management practices in firm performance: Evidence from Korea. *International Journal of Production Economics, 204*, 175-186. https://doi.org/10.1016/j.ijpe.2018.07.021

41. Li, S., Ragu-Nathan, B., Ragu-Nathan, T. S., & Rao, S. S. (2017). The impact of supply chain management practices on competitive advantage and organizational performance. *Omega, 34*(2), 107–124. https://doi.org/10.1016/j.omega.2004.08.002

42. Li, S., Ragu-Nathan, B., Ragu-Nathan, T. S., & Subba Rao, S. (2015). The impact of supply chain management practices on competitive advantage and organizational performance. *Omega, 34*(2), 107-124. https://doi.org/10.1016/j.omega.2015.02.001

43. Liu, Y., Wei, Z., & Zhang, X. (2018). The role of organizational learning capability in the adoption of supply chain practices. *Journal of Business Research, 89*, 178-188. https://doi.org/10.1016/j.jbusres.2018.02.008

44. Martínez-Costa, M., & Jiménez-Jiménez, D. (2009). The effectiveness of TQM: The key role of organizational learning in small businesses. *International Small Business Journal, 27*(1), 98–125. https://doi.org/10.1177/0266242608098348

45. Martins, E. C., & Terblanche, F. (2021). Building organizational culture that stimulates creativity and innovation. *European Journal of Innovation Management, 24*(5), 915-932. https://doi.org/10.1108/EJIM-11-2019-0272

46. Nair, A., Nair, S. K., & Jayaraman, V. (2018). High-performance work systems, supply chain integration, and organizational performance: A cross-industry analysis. *International Journal of Production Research, 56*(15), 5060-5079. https://doi.org/10.1080/00207543.2018.1443277

47. Onağ, A., Tepeci, M., & Başal, H. A. (2014). Organizational learning capability and its impact on firm innovativeness. *Procedia-Social and Behavioral Sciences, 150*, 708–717. https://doi.org/10.1016/j.sbspro.2014.09.009

48. Saeed, B., Malhotra, M., & Grover, V. (2020). Examining the mediating role of organizational learning capability in the relationship between supply chain integration and firm performance. *Supply Chain Management: An International Journal, 25*(6), 789–805. https://doi.org/10.1108/SCM-03-2020-0136Schoenherr, T., & Narasimhan, R. (2021). Strategic supply chain management: Value, sustainability, and innovation. *Journal of Supply Chain Management, 57*(2), 42-59. https://doi.org/10.1111/jscm.12257

49. Senge, P. M., Roberts, C., & Smith, B. (2020). *The fifth discipline: The art & practice of the learning organization*. Currency/Doubleday.

50. Singh, A., Sharma, M., & Gupta, A. (2020). Innovation and supply chain performance: Role of organizational learning. *Supply Chain Management: An International Journal*, 25(5), 557-572. https://doi.org/10.1108/SCM-11-2019-0411

51. Singh, S., Mishra, R., & Jain, R. (2021). Role of organizational learning capability in supply chain performance. *International Journal of Productivity and Performance Management, 70*(8), 2179–2199. https://doi.org/10.1108/IJPPM-09-2020-0475

52. Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

53. Teece, D. J. (2020). Dynamic capabilities and (digital) platform lifecycles. *Advances in Strategic Management, 42*, 211–225. https://doi.org/10.1108/S0742-332220200000042010

54. Teece, D. J. (2020). Dynamic capabilities and strategic management: Organizing for innovation and growth. *Oxford University Press*.

55. Trochim, W. M., & Donnelly, J. P. (2008). *Research methods knowledge base* (3rd ed.). Atomic Dog Publishing.

56. Waller, M. A., & Fawcett, S. E. (2017). Data science, predictive analytics, and big data: A revolution that will transform supply chain design and management. *Journal of Business Logistics, 34*(2), 77–84. https://doi.org/10.1111/jbl.12010

57. Wang, G., & Fan, X. (2023). Demand forecasting in volatile markets: Leveraging big data and machine learning. *Journal of Business Research, 162*, 113201. https://doi.org/10.1016/j.jbusres.2023.113201

58. Wang, G., Gunasekaran, A., Ngai, E. W. T., & Papadopoulos, T. (2016). Big data analytics in logistics and supply chain management: Certain investigations for research and applications. *International Journal of Production Economics, 176*, 98-110. https://doi.org/10.1016/j.ijpe.2016.03.014

59. Wang, G., Gunasekaran, A., Ngai, E. W. T., & Papadopoulos, T. (2020). Big data analytics and Internet of Things in logistics and supply chain management: A comprehensive review. *Transportation Research Part E: Logistics and Transportation Review, 142*, 102037. https://doi.org/10.1016/j.tre.2020.102037

60. Wang, Y., Xie, Y., & Yang, J. (2020). The relationship between organizational learning, innovation capability, and firm performance: Evidence from China. *Asian Journal of Technology Innovation, 28*(3), 362-377. https://doi.org/10.1080/19761597.2020.1842071

61. Wiengarten, F., Humphreys, P., & Gimenez, C. (2020). Risk, resilience, and supplier relationship management: A study of supply chain disruptions. *Supply Chain Management: An International Journal, 25*(4), 459–474. https://doi.org/10.1108/SCM-09-2019-0351

62. Wong, C. W. Y., Wong, C. Y., & Boon-Itt, S. (2021). Green supply chain practices: Performance outcomes and the role of environmental management capability. *Journal of Purchasing and Supply Management, 27*(2), 100689. https://doi.org/10.1016/j.pursup.2020.100689

63. Yang, C., Lin, R. J., Krumwiede, D., & Sheu, C. (2018). Evaluating the relationships of supply chain learning, organizational innovation, and business performance. *International Journal of Operations & Production Management, 38*(3), 783–810. https://doi.org/10.1108/IJOPM-08-2017-0449

64. Zhang, Z., Zhang, S., & Zhang, Y. (2022). Blockchain technology for logistics and supply chain: A systematic review. *Transportation Research Part E: Logistics and Transportation Review, 158*, 102263. https://doi.org/10.1016/j.tre.2022.102263

65. Zhou, K. Z., Yim, C. K., & Tse, D. K. (2022). The effects of organizational learning on firm performance: An empirical investigation. *Journal of Marketing, 86*(3), 58–75. https://doi.org/10.1177/00222429211060772

66. Zhou, Y., Zhao, L., & Li, Z. (2022). Knowledge-based dynamic capabilities and competitive advantage in the digital era: A systematic review. *Journal of Business Research, 145*, 144-156. https://doi.org/10.1016/j.jbusres.2022.01.045