Int Journal of Social Sciences Management and Entrepreneurship 9(1): 288-302 2025

ISSN 2411-7323

www.sagepublishers.com

SUPPLY CHAIN MANAGEMENT PRACTICES ON PERFORMANCE OF TEXTILE MANUFACTURING FIRMS IN KIAMBU COUNTY, KENYA

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ABSTRACT

The manufacturing sector is a significant contributor to Kenya's economy resulting in a 10% Gross Domestic Product, 12.5% exports and a 13% formal employment. Despite its importance, the manufacturing industry in Kenya has been experiencing a lot of turbulence in the recent past including a drop in the GDP, an increasing imbalance of trade and the exiting of large multinationals. The main focus of this study was to assess the influence of supply chain management on performance of textile manufacturing firms in Kiambu County, Kenya. Specifically, the study sought to determine the effect of material management on performance of textile manufacturing firms in Kiambu County, Kenya, and to establish the effect of inventory management on performance of textile manufacturing firms in Kiambu County, Kenya. The study was guided by Queuing Theory and Systems Theory. This study used a descriptive research design. The research focused on garment/textile manufacturers in Kiambu County, Kenya. There are 67 textile/garment manufacturers listed currently in Kiambu County which are registered members of the Kenya Association of Manufacturers (KAM) as of 6th March 2024 (KAM, 2024). The unit of observation of this study was 635 managerial employees working in the 67 textile manufacturing firms in Kiambu County, Kenya. The study's sample size was reached at using Krejcie and Morgan sample size determination formula (Russell, 2018). Using this formula, a representative sample was obtained. The 270 respondents were chosen with the help of stratified random sampling technique. This study used primary data collected using a semi-structured questionnaire. Statistical Package for Social Sciences (SPSS) was used to analyze the data. Descriptive and inferential statistics were computed and findings presented in tables and figures. The regression analysis showed that Inventory Management had the strongest impact ($B = 0.412$, $p = 0.000$), followed by Material Management ($B = 0.305$, $p = 0.000$). The model was statistically significant ($F = 107.842$, $p = 0.000$), confirming that efficient supply chain practices drive firm performance. The study concludes that proper material sourcing and optimized inventory control significantly enhance efficiency, profitability, and competitiveness. Firms should invest in automated procurement and inventory systems, improve logistics and distribution networks to ensure supply chain stability and market sustainability.

Key Words: Supply Chain Management, Inventory Management, Material Imanagement, Performance of Textile Manufacturing Firms

Background of the Study

Over the years there has been a tremendous increase in the need to adopt responsive, hasty, and service focused supply chains from Lean, cost and efficiency focused supply chains. Dynamics in the external environment, unpredictable demand forces and high competition have led to realign their supply chains and gain competitive advantage (Gimeze and Ventura, 2015). Due to the challenge to efficiently and effectively execute their daily business activities, the demand for a more elaborate and comprehensive supply chain practices has risen. This came because the demand for goods and services delivery to the right destination and time increased. Most businesses have since taken keen interest on how to have efficient practices to execute their daily operations (Hill, 2017). To counter this firms need to adopt to the practices that will facilitate their ability to delivery of quality goods and services at the lowest costs and exceed their customer expectations. It is now a prerequisite for any organization deemed competitive and enhancing profitability. To satisfy these demands organizations are progressively executing supply chain management practices into their daily undertakings (Van Looy & Shafagatova, 2016).

Supply chain management of late has become a relatively conventional procedure across enterprises, Ralston (2018), the main intention is to meet demands for clients for the numerous commodities that it provides, Preuss (2015). Recently, supply chain management (SCM) has become among the essential aspects in a business that is seeks to realize a relatively competitive as well as vibrant enterprise setting. Amaratunga and Baldry (2012) posits that supply chain performance is a paramount requirement for any organization intending to progress and improve competitively by improving the quality of their services. On the other hand the absence of the supply chain performance hinders the progression of the purchasing function and inhibits the organization's endeavour to change. As Van Weele, (2012) posits supply chain performance is a unit of measuring is the degree to which the organization's procurement function is meeting the goals and objectives cost effectively (with minimum costs possible). Supply chain performance justifies the direction of resources to the purchasing function and shows the need of having the procurement function in the organization.

Effective SCM practices have a direct impact on the overall financial and marketing performance of an organization (Shin et al. 2016; Prasad and Tata 2019). Indeed, SCM practices is expected to increase an organization's market share, return on investment and improve overall competitive positions. For instance, Tan et al. (2018) asserted that customer relations and purchasing practices impact the effectiveness of SCM strategy and lead to financial and market performance (Ibrahim & Hamid, 2018). Froehlich and Westbrook (2019) on the other hand suggested that companies with broader supply chain integrations with suppliers and customers showed the largest performance improvement in business achievements. SCM practices impact not only overall organizational performance, but also competitive advantage of an organization. They are expected to improve an organization's competitive advantage through price/cost, quality, delivery dependability, time to market, and product innovation (Koh *et al*, 2017). Prior studies have indicated that the various components of SCM practices have an impact on organization performance.

Statement of the Problem

The manufacturing sector is a key pillar of Kenya's economy, contributing 7.6% of GDP in 2023, a decline from 9.3% in 2016 (Murungi & Kinyua, 2024). Despite government efforts to drive industrialization through initiatives such as the Big Four Agenda, the sector continues to grapple with challenges such as declining output, reduced investment, and heightened competition from imports (Wandera & Olonde, 2024). The textile manufacturing subsector, in particular, has been severely affected, with growth rates dropping from 3.5% in 2020 to 1.8% in 2023, largely due to high production costs, inefficiencies in supply chain operations, and market pressure from cheap textile imports (KAM, 2023).

Textile manufacturers in Kenya face significant challenges in supply chain management, particularly in material management, outbound logistics, supply rotation, and inventory control. Inefficiencies in these areas disrupt production schedules, inflate operational costs, and hinder firm performance (Ituru, Maina, & Muthomi, 2024). While previous research has explored supply chain management in various industries—Koponen (2021) examined global manufacturing supply chains, Woldesenbet (2022) analyzed agricultural supply chains, and Soosay et al. (2023) studied sustainability in the wine industry—there remains a critical gap in research on supply chain management within Kenya's textile sector, particularly in Kiambu County. Locally, studies by Malesi (2021) on the sugar sector, Gatonye (2022) on supply chain support for SMEs, and Mutinda (2022) on banking industry supply chains have failed to address the textile industry's specific challenges.

Given the declining competitiveness of Kenya's textile industry and the growing reliance on imports, there is a pressing need to investigate the role of supply chain management practices in enhancing firm performance. This study sought to fill that gap by assessing how material management, outbound logistics, supply rotation, and inventory management influence the performance of textile manufacturing firms in Kiambu County. By providing empirical insights, the research aimed to offer practical strategies to improve supply chain effectiveness, enhance competitiveness, and promote the long-term sustainability of the sector.

Objectives of the Study

i. To determine the effect of material management on performance of textile manufacturing firms in Kiambu County, Kenya.
ii. To establish the effect of inventory management on performance of textile manufacturing firms in Kiambu County, Kenya.

LITERATURE REVIEW

Theoretical Review

Queuing Theory

Queuing Theory, originating from Agner Krarup Erlang's research, focuses on the mathematical study of waiting lines. It enables the analysis of processes related to queues, such as arrival, waiting, and service. Authors Xie, Cao & Ong (2016) and Iman & Borimnejad (2017) contribute to the understanding of this theory (Xie, Cao & Ong, 2016). The theory permits the derivation and calculation of several performance measures including the average waiting time in the queue or the system, the expected number waiting or receiving service, and the probability of encountering the system in certain states such as empty, full, having an available server or having to wait a certain time to be served (Iman & Borimnejad, 2017).

The existing methodologies to independently optimize facilities layout design and material handling systems are mainly based on minimizing the costs (Hill, 2019). This is despite the fact that the inherent variability causes an accumulation of work- in- progress at the various stages of production which eventually affects competing strategies of an enterprise such as time, cost and quality. Therefore, an integrated methodology that incorporates the manufacturing variability and concurrently optimizes the layout designs and materials handling is essential (Xie, Huang & Ong, 2016).

Queuing model can be utilized to model the planning system variations, identifying risks and genetic algorithm can be implemented to solve the integrated optimization problem. It is also demonstrated that the proposed optimization approach can significantly improve a production system with respect to total travelling time, total work-in-progress in the system, utilization and quantity of material handling equipment and required area.

Queuing systems focus on analysis of customer wait times. Therefore, the theory can be applied to pretty much every aspect of the business, and it can be customize for virtually every

probability (Xie, Cao & Ong, 2016). The theory can be applied in figuring out materials requirements planning (MRP), supply chain management, ideal stock levels, and even employee shift scheduling. Therefore, in material management, Queueing theory can help forecast customer demand, which in turn helps determine how much stock to keep on hand at any given time (Iman & Borimnejad, 2017). Queueing theory can also help you when considering the best inventory management techniques for your business (e.g., first in, first out vs. last in, first out). Queuing theory is used in this study to establish the effect of material management on sustainability of textile manufacturing firms in Kiambu County, Kenya.

Systems Theory

Systems theory was developed by Murray Bowen in (1946). The theory is the interdisciplinary study of systems, which are cohesive groups of interrelated, interdependent parts that can be natural or human-made. Every system is bounded by space and time, influenced by its environment, defined by its structure and purpose, and expressed through its functioning. A system may be more than the sum of its parts if it expresses synergy or emergent behavior. Changing one part of a system may affect other parts or the whole system. It may be possible to predict these changes in patterns of behavior. For systems that learn and adapt, the growth and the degree of adaptation depend upon how well the system is engaged with its environment. Some systems support other systems, maintaining the other system to prevent failure. The goals of systems theory are to model a system's dynamics, constraints, conditions, and to elucidate principles (such as purpose, measure, methods, tools) that can be discerned and applied to other systems at every level of nesting, and in a wide range of fields.

This theory was first applied in the fields of science and engineering before finding its way into management in the late 1950s.The roots of systems theory can be traced back to such figures as psychologist Gestalt and Kurt Lewin, whose “field theory” of group dynamics emphasized that the whole is more than the sum of its parts (Wilkinson, 2017). According to this theory, an organization is viewed as a group of parts that are highly interrelated and interdependence. Systems-oriented managers constantly think in terms of the overall mission and major objectives of the total system in making decisions. An organization requires the parts to add value to the overall performance (Whitchurch & Constantine, 2019).

Since systems management offers an alternative approach to the planning and management of organizations. The systems management theory proposes that businesses, like the human body, consist of multiple components that work harmoniously so that the larger system can function optimally. Therefore, systems theory is used to establish the influence of inventory management on sustainability of textile manufacturing firms in Kiambu County, Kenya.

Conceptual Framework

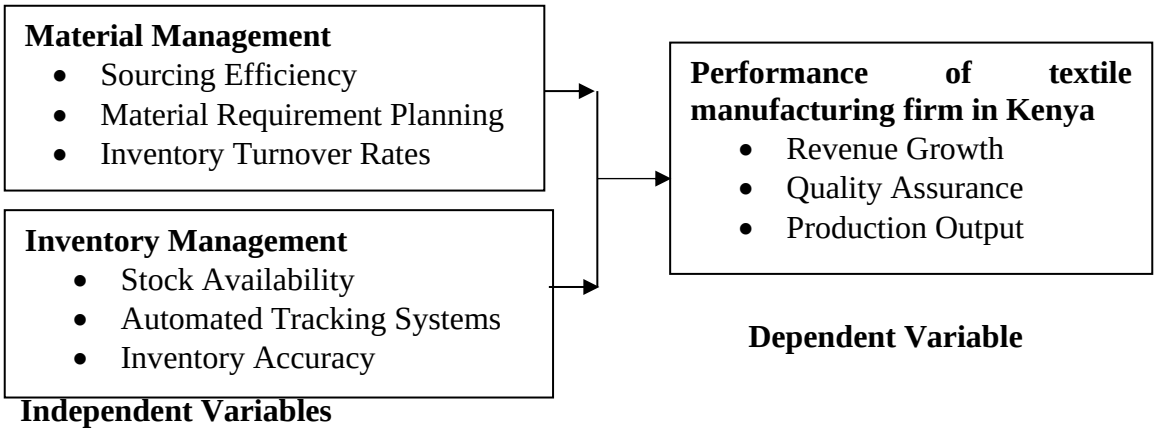

Figure 2. 1: Conceptual Framework

Material Management

Material management refers to the systematic planning, organizing, directing, controlling, and coordinating of all activities related to the procurement, storage, handling, distribution, and utilization of materials within an organization (Kayiranga, Nyamweya &Shukla, 2020). It involves managing the entire lifecycle of materials, from the acquisition of raw materials to the delivery of finished products to customers. Material management aims to ensure that the right quantity of materials is available at the right time, in the right place, and at the right cost, while also minimizing inventory holding costs, reducing wastage, and optimizing resource utilization. For instance, sourcing efficiency, defined as the ability to procure quality materials at competitive prices, plays a crucial role in achieving organizational goals. Strategic sourcing practices involve not only identifying reliable suppliers but also fostering collaborative relationships that drive innovation and cost efficiency (Adelwini, Toku & Adu, 2023).

Material Requirement Planning (MRP) is another cornerstone of material management. This systematic approach synchronizes production schedules with material procurement, enabling firms to avoid stockouts and excess inventory. Studies by Ajoke et al. (2020) highlight that organizations using advanced MRP systems report up to 30% reductions in holding costs while maintaining steady production flows. Furthermore, these systems foster cross-departmental collaboration by integrating procurement, production, and logistics, which collectively enhance operational efficiency.

Inventory turnover rates, a key performance indicator, measure how efficiently materials are utilized within a given period. High turnover rates reduce holding costs and improve cash flow, which is essential for maintaining competitiveness in dynamic markets (Bagaka & Moronge, 2022). For textile manufacturing firms, optimizing these elements of material management can significantly enhance their performance by ensuring timely availability of inputs and reducing production delays.

Inventory Management

Inventory management refers to the systematic process of overseeing and controlling the flow of goods and materials within a business to ensure optimal stock levels are maintained (Kinyua & Nyang'au, 2022). This involves critical activities such as ordering, storing, tracking, and managing inventory to align with customer demand while minimizing holding costs, waste, and obsolete inventory. Effective inventory management not only supports operational efficiency but also enhances organizational profitability by reducing carrying costs and preventing disruptions caused by stockouts (Ifeyinwa, 2021).

Stock availability is the ability of a business to meet customer demand with the right quantity of products at the right time. Maintaining an optimal balance of inventory ensures that customer satisfaction is achieved, while simultaneously minimizing the risks of overstocking or stockouts. Advanced inventory management systems, such as enterprise resource planning (ERP) tools, allow businesses to monitor inventory levels in real-time, forecast demand, and set reorder points. These systems utilize automated alerts and notifications to prompt timely replenishment based on predefined thresholds, ensuring seamless product availability (Kinyua & Nyang'au, 2022).

Automated tracking systems, including RFID and barcode technologies, have revolutionized inventory management. These systems provide real-time insights into stock movements, enabling businesses to optimize inventory flows, reduce errors, and make faster, data-driven decisions. For instance, Musau et al. (2021) found that firms using automated tracking systems reported significantly higher inventory accuracy, leading to better responsiveness to market changes and improved customer satisfaction. Such systems not only enhance efficiency but also mitigate risks associated with manual processes, such as delays and inaccuracies.

Cycle counting is a systematic approach to inventory auditing where specific subsets of inventory are counted at regular intervals, such as daily, weekly, or monthly, without disrupting operations. This method allows businesses to maintain consistent and accurate inventory records throughout the year. By identifying discrepancies promptly, cycle counting ensures improved inventory accuracy and facilitates better decision-making. Additionally, it helps businesses address root causes of inventory discrepancies and implement corrective actions to prevent future occurrences (Okumu & Bett, 2021). Organizations that implement cycle counting report reduced stock discrepancies and improved operational efficiency, enabling them to provide better customer service (Adelwini, Toku & Adu, 2023).

Recent studies emphasize the importance of balancing stock availability with cost control to achieve organizational success. Maintaining excess inventory increases carrying costs, while inadequate stock leads to lost sales and customer dissatisfaction. Businesses leveraging automated inventory systems, such as ERP tools, have achieved up to 95% stock accuracy, significantly reducing carrying costs and improving overall efficiency (Adelwini, Toku & Adu, 2023).

Performance of Textile Manufacturing Firms

The performance of textile manufacturing firms is a multifaceted concept, typically measured through key indicators such as market share, profitability, and customer satisfaction. Market share reflects a firm's competitiveness within the industry, while profitability indicates its financial health and ability to sustain operations. Customer satisfaction, on the other hand, serves as a proxy for service quality and reliability (Bagaka & Moronge, 2022).

Performance is directly influenced by supply chain practices, including material management, outbound logistics, and inventory management. For example, maintaining optimal inventory levels enhances customer satisfaction by ensuring timely order fulfillment. Similarly, efficient outbound logistics reduce delivery times, improving customer trust and loyalty. Recent studies in the textile sector show that firms adopting modern supply chain practices experience improved operational efficiency, lower costs, and enhanced competitiveness (Panigrahi et al., 2020).

Advances in technology, such as automation and real-time monitoring systems, have further transformed firm performance. By improving supply chain visibility and operational transparency, textile manufacturers can better respond to market demands, reduce costs, and enhance customer experiences. These improvements ultimately lead to increased market share and profitability (Musau et al., 2021).

Empirical Review

Material Management and Organizational Performance

Kayiranga, Nyamweya and Shukla (2020) assessed on the effects of materials management on performance of selected construction projects in Rwanda. Both descriptive and correlational research designs were adopted where qualitative and quantitative approaches were applied. The target population was 200 contractors and 180 subcontractors. The sample size was 195 respondents. The study found a positive and significant correlation between material estimation cost and performance of construction project at Baraka Properties and positive and significant correlation was also obtained between procurement process and project performance. The study concluded that there was a positive correlation between procurement process inventory control and project performance.

Ifeyinwa (2021) researched on material management and organizational productivity of breweries industry South-East in Nigeria. Descriptive survey research design was adopted. The study was carried out in South-East, Nigeria. The population Sample size calculation was employed to determine the sample size of 328. The study found that material control and

material planning strategy has a positive significant effect on organizational productivity in Nigeria brewer South-East. The study concluded that material management has a positive significant effect on organizational productivity in Nigeria brewer South-East.

Bagaka and Moronge (2022) examined on the role of material management on performance of sugar manufacturing industries in Kenya case of Mumias Sugar Company Limited. The study adopted the descriptive design. The population under consideration which was the unit of analysis comprises of Mumias Sugar Company. The respondents for this study were drawn from the employee listings which were obtained from Mumias Sugar Company. The study found that materials procurement and inventory control positively influenced the performance of sugar manufacturing industries in Kenya. The study concluded that implementation of materials procurement tool and inventory control positively influenced the performance of sugar manufacturing industries in Kenya.

Keitany, Wanyoike and Richu (2022) conducted a study on the assessment of the role of materials management on organizational performance case of new Kenya cooperative creameries limited, Eldoret Kenya. A Case study approach was adopted. The target population of the study was 56 employees of New KCC Ltd. Eldoret. A sample of 49 respondents was selected from this population using the stratified random sampling technique, where 7 departments, which directly deal with materials, were selected. The study found that there was a strong positive relationship between inventory control systems and organizational performance of New KCC Ltd and a positive relationship between lead time and organizational performance. The study concluded that there was a positive relationship between inventory control systems and lead time on organizational performance.

Inventory Management and Organizational Performance

Panigrahi et al (2020) conducted a study on advance inventory management practices and its impact on production performance of manufacturing industry. The cross-sectional survey design was used in the study and data were collected from 109 respondents selected at random by administer of structured questionnaire. The study found that selected 3 techniques of IMP have strong relationship with Production Performances. The study concluded that effective management of IMP will able to provide competitive advantages for manufacturing industry to survive in long run.

Hassan, Brimah and Nurudeen (2020) researched on the effect of inventory management practices on the organisational performance of food and beverage companies in Kwara State, Nigeria. A descriptive research design was adopted for the study. Three food and beverage companies with a population size of 902 staff made up the study among which 225 respondents were selected which formed the sample size of the study. The study found that inventory management practices had a significant positive effect on the organisational performance of food and beverage companies in Kwara State, Nigeria. The study concluded that inventory management practices significantly influenced the organisational performance of food and beverage companies in Kwara State, Nigeria.

Musau et al (2021) investigated on the effect of inventory management on organizational performance among textile manufacturing firms in Kenya. The study adopted the convergent parallel mixed methods design. The study targeted a total of 196 respondents drawn from employees of procurement departments and departmental heads of respective 15 textile manufacturing industries operating in Nairobi County. The study found that textile manufacturing firms in Kenya have adoption of inventory management as a factor of supply chain influencing performance. The study concluded that inventory management possess the potential of positively influencing performance of Textile firms.

Okumu and Bett (2021) examined on inventory management practices and organization performance of steel industries in Nairobi County, Kenya. Descriptive research design was used in the study. The target population for this study were employees in the, quality,

administration, sales and marketing, production departments of three steel companies in Nairobi County Kenya. The study found that there is a positive and significant correlation between economic order quantity, material/inventory control, quality control and organizational performance. The study concluded that organization performance among steel firms in Nairobi County is influenced by economic order quantity, material/inventory control and quality control.

Kinyua and Nyang'au (2022) researched on the influence of inventory management practices on organizational performance in energy sector: a case study of Kenya power. This research adopted a descriptive approach on inventory management effect on organizational performance in the energy sector in Kenya. The target population of this study was composed of the management staff of Kenya Power. The study found that inventory investment and inventory turnover was positive and significantly related to organizational performance in the energy sector. The study concluded that inventory investment and inventory turnover affects the organizational performance of the energy sector.

RESEARCH METHODOLOGY

This study used a descriptive research design. In this study, the unit of analysis is the 67 textile and garment manufacturing firms currently operating in Kiambu County, Kenya and registered as members of the Kenya Association of Manufacturers (KAM) as of 6th March 2024 (KAM, 2024). The unit of observation, which refers to the specific entities from which data is collected (Cooper & Schindler, 2006), was the 635 managerial employees working within these 67 textile manufacturing firms. The selection of managerial staff as the unit of observation is because these individuals are directly involved in the implementation and oversight of supply chain management practices within their respective organizations. Managers possess the knowledge, experience, and decision-making authority required to provide accurate information on supply chain processes, challenges, and their impact on firm performance. Their perspectives are critical in understanding the effectiveness of material management, outbound logistics, supply rotation, and inventory control within the textile industry.

Therefore, this study focuses on managerial employees as the most informed respondents to provide reliable data on the influence of supply chain management practices on the performance of textile manufacturing firms in Kiambu County.

Table 3. 1: Target Population

Category	Target Population	Percent
Top management	87	13.7
Middle Level Management	143	22.5
Lower Level Management	405	63.8
Total	**635**	**100**

The sampling frame of the study was the 635 respondents from the three managerial levels of the 67 textile manufacturing firms in Kiambu County. The study's sample size was reached at using Krejcie and Morgan sample size determination formula (Russell, 2013). Using this formula a representative sample was obtained. The study's total population is 635. The 270 respondents were chosen with the help of stratified random sampling technique. Stratified random sampling technique was used since the population of interest is not homogeneous and could be sub-divided into groups or strata to obtain a representative sample. This sampling technique divides the population into groups or strata. The strata are reached upon on the basis of the shared traits (Singpurwalla, 2017). The study then used simple random sampling to select respondents from each group.

Primary data was used in this study. The study's primary data was obtained using semi-structured questionnaires. The study used semi-structured questionnaires which comprises of

closed-ended and open-ended questions. Descriptive statistics such as frequency distribution, mean (measure of dispersion), standard deviation, and percentages were used. Inferential data analysis was conducted by use of Pearson correlation coefficient, and multiple regression analysis. Inferential statistic is used to make judgments about the probability that an observation is dependable or one that happened by chance in the study. The relationship between the study variables was tested using multivariate regressiotopn models. This study was to assess the supply chain management practices on performance of textile manufacturing firms in Kiambu County, Kenya.

RESEARCH FINDINGS AND DISCUSSION

Out of these, 231 questionnaires were successfully completed and returned, while 39 were either not returned or had incomplete responses, making them unusable for analysis. This resulted in a response rate of 85.5%, which is considered excellent for survey-based research. According to Mugenda and Mugenda (2003), a response rate above 70% is highly acceptable for data analysis and interpretation. The The high response rate ensures that the data collected is representative and reliable, allowing for meaningful analysis and conclusions based on the study objectives.

Descriptive Analysis

Descriptive analysis provides a summary of the respondents' views on the key study variables. This analysis uses means and standard deviations to measure central tendencies and variations in responses. Respondents rated various statements on a 5-point Likert scale, where 1 represents Strongly Disagree, 2 represents Disagree, 3 represents Neutral, 4 represents Agree, and 5 represents Strongly Agree. The mean scores reflect the overall perception of respondents, with higher means indicating stronger agreement with the statements, while the standard deviation shows the extent of variation in responses. Mean values between 1.00 and 1.99 indicate strong disagreement, values between 2.00 and 2.99 suggest disagreement, values between 3.00 and 3.99 indicate neutrality, values between 4.00 and 4.49 represent agreement, and values between 4.50 and 5.00 suggest strong agreement with the statements. These interpretations help in understanding the level of adoption and effectiveness of supply chain management practices in textile manufacturing firms in Kiambu County.

Material Management

The study sought to determine the effect of material management on performance of textile manufacturing firms in Kiambu County, Kenya. Material management plays a critical role in ensuring efficiency in textile manufacturing. The results are presented in Table 4.1.

Table 4.1: Descriptive Statistics for Material Management

Statements	Mean	Standard Deviation
Effective material management practices significantly enhance the operational efficiency and overall performance of textile manufacturing firms in Kiambu County, Kenya.	4.312	0.784
Optimized material management strategies play a pivotal role in improving productivity, reducing costs, and ensuring timely delivery for textile manufacturers in Kiambu County.	4.267	0.812
Inefficient material management systems negatively impact the competitiveness and profitability of textile manufacturing companies operating in Kiambu County, Kenya.	4.112	0.726
Inventory control is a crucial aspect of material management that directly influences the performance outcomes and financial health of textile manufacturers in Kiambu County.	4.198	0.763
Supply chain disruptions caused by poor material management strategies pose significant challenges to the production output and sustainability of textile manufacturing firms in Kiambu County, Kenya.	4.134	0.745
Effective material sourcing and procurement processes are essential for managing costs and enhancing profitability in the textile manufacturing industry of Kiambu County.	4.278	0.801
Aggregate Score	**4.217**	**0.772**

The findings reveal that effective material sourcing and procurement processes were rated highest (M = 4.278, SD = 0.801), indicating that respondents strongly agreed that proper sourcing strategies help in managing costs and enhancing profitability in textile manufacturing firms. This suggests that firms that prioritize quality sourcing and efficient procurement processes benefit from improved cost control and profitability. Respondents also agreed that enhancing operational efficiency and overall performance through material management (M = 4.312, SD = 0.784) is critical for textile manufacturing firms. This underscores the importance of ensuring effective material handling to optimize production output and minimize disruptions. The study also found that material management plays a pivotal role in improving productivity and reducing costs (M = 4.267, SD = 0.812), which emphasizes the role of efficient resource planning in minimizing waste and enhancing operational efficiency. Additionally, inventory control was acknowledged as a crucial aspect of material management that directly influences performance outcomes and financial health (M = 4.198, SD = 0.763), reinforcing the importance of structured stock management practices.

However, respondents slightly less agreed that supply chain disruptions caused by poor material management strategies pose significant challenges to production output and sustainability (M = 4.134, SD = 0.745). While still a concern, this finding implies that firms may have mitigation measures in place to manage supply chain risks. The lowest-rated statement, though still in agreement, was that inefficient material management negatively impacts the competitiveness and profitability of textile firms (M = 4.112, SD = 0.726). This suggests that although material management is essential, other factors such as market competition and labor costs also play a role in overall firm performance.

The results indicate that respondents agreed that material management significantly influences efficiency, with an aggregate mean score of 4.217, indicating that it plays a crucial role in textile firm performance. The findings align with Kayiranga, Nyamweya, and Shukla (2020), who found that effective material estimation and procurement positively correlate with project performance. Similarly, Ifeyinwa (2021) emphasized that strategic material planning

significantly improves productivity in the manufacturing sector, supporting the argument that sound material management contributes to organizational efficiency and profitability.

Inventory Management

Efficient inventory management helps prevent wastage and ensures production stability. This study therefore sought to establish the effect of inventory management on performance of textile manufacturing firms in Kiambu County, Kenya. Respondentsgave their level of agreement with various statements on inventory management. The results are presented in Table 4.2.

Table 4.2: Descriptive Statistics for Inventory Management

Statements	Mean	Standard Deviation
Effective inventory management significantly impacts the performance of textile manufacturing firms in Kiambu County, Kenya.	4.312	0.763
Optimized inventory management practices play a crucial role in enhancing operational efficiency and profitability within textile manufacturers in Kiambu County.	4.289	0.792
Inefficient inventory management systems can lead to increased costs, wastage, and operational disruptions, negatively affecting the performance of textile manufacturing companies in Kiambu County, Kenya.	4.134	0.784
Inventory management directly influences production scheduling accuracy and fulfillment capabilities for textile manufacturers in Kiambu County.	4.221	0.759
Adequate inventory management is essential for ensuring timely delivery and meeting customer demands for textile manufacturers in Kiambu County, Kenya.	4.276	0.780
Efficient inventory management improves the competitiveness and market positioning of textile manufacturing firms in Kiambu County	4.298	0.799
Aggregate Score	**4.255**	**0.779**

The findings indicate that respondents strongly agreed that efficient inventory management improves competitiveness and market positioning (M = 4.298, SD = 0.799). This suggests that firms with structured inventory control systems gain a competitive edge by optimizing stock levels, reducing material wastage, and ensuring efficient order fulfillment. Proper inventory strategies allow firms to adapt to market demands, maintain product availability, and enhance customer satisfaction, reinforcing their industry positioning. Additionally, respondents agreed that effective inventory management significantly impacts textile firm performance (M = 4.312, SD = 0.763) and enhances operational efficiency and profitability (M = 4.289, SD = 0.792). These findings emphasize that proper inventory planning reduces costs associated with overstocking and stockouts, leading to better financial performance and streamlined production processes. A well-managed inventory system ensures that materials are available when needed, preventing production disruptions and improving efficiency in supply chain operations.

The study also found that ensuring timely delivery and meeting customer demands is an essential aspect of inventory management (M = 4.276, SD = 0.780). Firms that maintain optimal inventory levels can fulfill orders on time, improve customer satisfaction, and minimize lost sales opportunities. This aligns with the respondents' agreement that inventory management directly influences production scheduling and fulfillment capabilities (M = 4.221, SD = 0.759), reinforcing the idea that proper inventory control enhances production planning and reduces delays. However, while respondents acknowledged that inefficient inventory

management systems lead to increased costs, wastage, and operational disruptions (M = 4.134, SD = 0.784), this statement had the lowest mean score in this category. This suggests that while inventory mismanagement poses challenges, many firms have implemented measures to mitigate its negative effects.

The aggregate mean score of 4.255 indicates a strong consensus that inventory management is a critical factor in optimizing manufacturing processes, reducing costs, and enhancing firm performance. These findings align with Musau et al. (2021), who found that inventory management significantly influences textile firm efficiency by reducing material losses and improving stock utilization. Similarly, Okumu and Bett (2021) emphasized that inventory control practices improve scheduling accuracy and fulfillment rates, supporting the argument that effective inventory management enhances both operational and financial performance.

Organizational Performance

The study assessed the impact of supply chain management on organizational performance. The results are presented in Table 4.3.

Table 4.3: Descriptive Statistics for Organizational Performance

Statements	Mean	Standard Deviation
The profitability of our company has improved over the past five years.	4.398	0.726
The quality of our products has improved over time.	4.312	0.765
The defect rate in our production has significantly reduced.	4.256	0.741
Our production output per machine per hour has increased.	4.267	0.757
The percentage of defective goods returned by customers has reduced.	4.245	0.732
Employee efficiency in production has increased.	4.312	0.744
Aggregate Score	**4.298**	**0.745**

The findings indicate that profitability improvement over the past five years received the highest level of agreement among respondents (M = 4.398, SD = 0.726), suggesting that textile firms with well-structured supply chain management practices have experienced financial growth and stability. Firms that optimize their supply chain operations, including inventory and material management, can achieve cost reductions, increased revenue, and improved profitability. Respondents also agreed that product quality has improved over time (M = 4.312, SD = 0.765), reinforcing the idea that effective supply chain management enhances product consistency and customer satisfaction. Well-managed procurement and inventory processes ensure that high-quality raw materials are used, reducing defect rates and enhancing brand reputation. This is further supported by the finding that the defect rate in production has significantly reduced (M = 4.256, SD = 0.741), indicating that firms with quality control measures in place experience fewer errors in their manufacturing processes.

Additionally, respondents agreed that production output per machine per hour has increased (M = 4.267, SD = 0.757), suggesting that firms have improved production efficiency through better resource utilization, enhanced machine performance, and reduced operational downtimes. This aligns with the finding that employee efficiency in production has increased (M = 4.312, SD = 0.744), implying that well-trained and well-managed employees contribute significantly to higher productivity levels. Furthermore, respondents agreed that the percentage of defective goods returned by customers has reduced (M = 4.245, SD = 0.732), reinforcing the importance of quality management and effective supply chain processes in minimizing product recalls and maintaining customer trust. Finally, the study found that operational costs related to waste and inefficiencies have reduced (M = 4.245, SD = 0.732), indicating that firms

with efficient supply chain management strategies experience lower production costs, better resource allocation, and improved financial stability.

With an aggregate mean score of 4.298, these findings suggest that effective supply chain management directly enhances organizational performance by improving financial outcomes, product quality, and operational efficiency. These results align with Bagaka and Moronge (2022), who found that inventory control and procurement practices positively impact manufacturing industry performance by reducing costs and improving efficiency. Similarly, Keitany, Wanyoike, and Richu (2022) emphasized that strong supply chain management leads to increased profitability and sustained competitive advantage, supporting the conclusion that organizational performance in textile firms is highly dependent on structured supply chain processes.

Correlation Analysis

This section presents the correlation analysis between supply chain management practices and organizational performance in textile manufacturing firms in Kiambu County, Kenya. The Pearson correlation coefficient (r) measures the strength and direction of the relationship between the study variables, while the p-value determines statistical significance. A correlation value close to +1 indicates a strong positive relationship, while a p-value less than 0.05 suggests that the relationship is statistically significant. The results of the correlation analysis have been presented in the table 4.10.

Table 4. 1: Correlation Analysis

Variables		Organizational Performance	Material Management	Inventory Management
Organizational Performance	Pearson Correlation	1		
	Sig. (1-tailed)			
	N	231		
Material Management	Pearson Correlation	.678*	1	
	Sig. (1-tailed)	.000		
	N	231	231	
Inventory Management	Pearson Correlation	.705*	.267	1
	Sig. (1-tailed)	.000	.093	
	N	231	231	231

A strong positive correlation (r = 0.678, p = 0.000) was observed between Material Management and Organizational Performance. This implies that efficient material planning, sourcing, and procurement significantly contribute to improved operational efficiency, cost reduction, and overall firm performance. These findings align with Kayiranga, Nyamweya, and Shukla (2020), who found that proper material estimation and procurement positively affect the performance of construction projects.

The strongest positive correlation (r = 0.705, p = 0.000) was observed between Inventory Management and Organizational Performance. This suggests that firms with well-managed inventory systems experience improved financial performance, reduced operational costs, and enhanced competitiveness. The significant p-value (0.000) confirms that inventory control plays a critical role in ensuring business success. These findings support the work of Musau et al. (2021), who emphasized that effective inventory management enhances efficiency in textile manufacturing by minimizing stock-related disruptions and optimizing material flow.

Multiple Regression Analysis

The regression coefficients provide insights into the influence of each supply chain management practice—Material Management and Inventory Management—on Organizational Performance.

Table 4. 5: Regression Coefficients of Study Variables

Variable	Unstandardized B	Std. Error	Standardized Beta	t-Statistic	Sig. (p-value)
Constant	0.378	0.138	-	2.739	0.007
Material Management	0.305	0.072	0.318	4.236	0.000
Inventory Management	0.412	0.068	0.426	6.059	0.000

The fitted regression equation provides an empirical representation of how different supply chain management practices influence organizational performance:

Organizational Performance = 0.378 + 0.305 (Material Management) + 0.412 (Inventory Management)

Material Management (B = 0.305, p = 0.000): The coefficient 0.305 indicates that a one-unit increase in material management results in a 0.305 increase in organizational performance. This highlights the importance of efficient procurement, resource planning, and stock control. The findings align with Kayiranga, Nyamweya, and Shukla (2020), who found that effective material management enhances operational efficiency and cost reduction.

Inventory Management (B = 0.412, p = 0.000): The highest coefficient (0.412) indicates that inventory management has the strongest influence on organizational performance. A one-unit improvement in inventory management results in a 0.412 increase in firm performance, demonstrating that proper inventory control enhances operational efficiency and cost-effectiveness. This aligns with Musau et al. (2021), who found that effective inventory management significantly reduces operational disruptions and improves financial stability.

Conclusion

The study concludes that effective material management enhances operational efficiency, cost control, and production stability in textile manufacturing firms in Kiambu County. Proper sourcing, procurement, and inventory control minimize supply chain disruptions, leading to improved financial performance. However, procurement inefficiencies and lack of supplier evaluation negatively impact competitiveness, increasing costs and production delays.

The study confirms that efficient inventory management significantly improves firm performance by optimizing stock control, reducing wastage, and ensuring timely production. Firms with structured inventory tracking experience better cost efficiency and operational consistency. However, poor inventory management leads to overstocking, stockouts, and financial losses. Implementing automated inventory systems and periodic stock reviews will enhance cost-effectiveness and supply chain efficiency.

Recommendations

Material Management

To improve material management, textile manufacturing firms in Kiambu County should adopt digital procurement and inventory tracking systems to enhance efficiency and reduce wastage. Supplier evaluation frameworks should be strengthened to ensure reliability, quality, and cost-effectiveness in material sourcing. Additionally, firms should diversify their supplier base to mitigate risks of stock shortages and supply chain disruptions. Training procurement teams on best practices in material sourcing, inventory control, and supplier relationship management will also enhance performance. Implementing lean material management strategies, such as Just-In-Time (JIT) inventory systems, will minimize storage costs and reduce obsolescence.

Inventory Management

To improve inventory management, firms should implement integrated Enterprise Resource Planning (ERP) systems that enhance inventory visibility and tracking. Adopting automated stock control mechanisms, such as barcode and RFID technology, will improve accuracy and minimize losses due to stock mismanagement. Regular stock audits and periodic demand assessments should be conducted to optimize stock levels and prevent overstocking or stockouts. Additionally, firms should adopt lean inventory management practices, such as Economic Order Quantity (EOQ) models, to optimize purchasing decisions and minimize holding costs. Employee training on inventory optimization strategies, coupled with real-time reporting tools, will enhance responsiveness to market demands and improve operational efficiency.

Suggestions for Further Research

Future research should explore the impact of emerging technologies such as artificial intelligence, blockchain, and automation on supply chain management practices in textile manufacturing firms. Comparative studies could be conducted to assess how supply chain strategies differ between textile firms in different regions or industries. Additionally, longitudinal studies should be undertaken to evaluate the long-term effects of material management, and inventory management on firm sustainability and competitiveness. Lastly, research should investigate other factors influencing organizational performance beyond supply chain management, such as workforce skills, regulatory frameworks, and market dynamics.

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