
ANALYSIS OF SUPPLY CHAIN RISK MANAGEMENT ON THE PERFORMANCE OF SELECTED FOOD MANUFACTURING FIRMS IN KIAMBU COUNTY, KENYA

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ABSTRACT

Purpose of the study: The objective of this study was to examine the influence of logistics systems on the performance of selected food manufacturing firms in Kiambu County, Kenya.

Statement of the problem: Food manufacturing firms face significant risks within their supply chains, particularly related to logistics, which have historically led to substantial losses. Despite efforts to improve supply chain management in food manufacturing firms in Kiambu County, challenges persist, particularly in areas of logistics systems and operational efficiency. The specific impact of logistics systems on firm performance in this context remained insufficiently understood.

Methodology: The study employed mixed methods, using both qualitative and quantitative approaches with a descriptive research design. A target population of 191 employees from 29 selected food manufacturing firms and 20 outlets in Kiambu County was used. Key respondents included managing directors, production and operations managers, procurement managers, and logistics managers. A census was conducted due to the small population size. Data were collected through questionnaires, interviews, and document analysis. Quantitative data were analyzed using SPSS version 28, while qualitative data underwent content analysis.

Findings: The findings revealed that a majority of respondents (74.1%) strongly agreed that warehouse management influences the performance of food manufacturing firms. Additionally,

86.41% of respondents agreed that transportation costs may influence firm performance. However, the study found mixed results regarding the impact of information flow and the effectiveness of current logistic systems for timely delivery.

Conclusion: The study concludes that logistics systems play a crucial role in enhancing the performance of food manufacturing firms in Kiambu County. Factors such as warehouse management, transportation costs, information flow, and overall logistics effectiveness significantly contribute to improving firm performance outcomes.

Recommendations: The study recommends increased investments in enhancing logistics infrastructure, optimizing transportation routes, improving information management systems, and regular performance evaluations of logistics systems. Further research should explore additional factors influencing the performance of food manufacturing firms in the area.

Keywords: *Logistics systems, supply chain management, food manufacturing firms, performance, Kiambu County, Kenya*

BACKGROUND OF THE STUDY

The influence of logistics systems on the performance of selected food manufacturing firms is shaped by multiple factors, including political, economic, technological, environmental, and social elements, which impact operations in various ways. These factors affect the efficiency, cost, quality, and availability of food products, and are crucial in ensuring seamless supply chain management. Even when there is sufficient food that is affordable and diverse, the choices individuals make significantly influence the nutritional value of their diets (Yousuf *et al.*, 2022). The journey of food from production to disposal involves several key stages production, processing, distribution, consumption, and waste management.

In Africa, the growing business landscape presents both opportunities and challenges in logistics and supply chain management. Successful operations require understanding local cultures and institutional functions, particularly in the context of globalization and technology (Skipper, (2019).). In East Africa, supply chain disruptions are costly, with manufacturers losing over \$330 million annually (Ongeri *et.al.*, 2020). To address these inefficiencies, partnerships between

governments, suppliers, and buyers are crucial in unlocking the region's economic potential (Waiganjo 2013).

In Kenya, external factors such as global trends, regional stability, and weather events have a direct impact on the economy and the performance of the food manufacturing sector (Republic of Kenya, 2019). Disruptions from natural disasters and labor strikes have negatively affected productivity (Guyo et al., 2017). Firms in Kiambu County, a key food production region, have been focusing on improving logistics systems and managing supply chain risks to enhance operational efficiency and performance (Wanjiku,2019). Despite efforts, a large portion of food production is still directed towards the informal sector, highlighting the need for optimized supply chain management to drive sustainable growth.

STATEMENT OF THE PROBLEM

Food manufacturing firms face significant risks within their supply chains, particularly related to logistics, which have historically led to substantial losses. These logistical challenges, such as fluctuations in supply and demand, transportation inefficiencies, and the management of perishable goods, are especially pronounced in the food sector, where timely delivery and product quality are critical. Over the last five years, 29 selected food manufacturing firms in Kiambu County have experienced declining profitability, illustrating the impact of these risks. For example, Kenya Nut Ltd saw a reduction in profits from Ksh.2 billion in 2021 to Ksh.1.4 billion in 2022, while Jungle Nut Company's profits fell from Ksh.10 million to Ksh.9.6 million over the same period. Despite these revenue declines, operational costs for both firms have risen, with Kenya Nut Ltd's costs increasing by 9% and Jungle Nut's by 8%, primarily due to logistical challenges. These issues, compounded by both internal inefficiencies and external environmental uncertainties, have made managing supply chain risks a critical priority for food manufacturing firms seeking to maintain profitability and operational performance. The increasing complexity of supply chains, coupled with disruptions from external factors such as trade barriers and regulatory changes, underscores the need for robust logistics systems to mitigate risks and enhance efficiency.

OBJECTIVE OF THE STUDY

The objective of this study was to examine the influence of logistics systems on the performance of selected food manufacturing firms in Kiambu County, Kenya.

LITERATURE REVIEW

A study by Muoki and Moronge (2021) asserts that transport infrastructure is pivotal for streamlined logistics. Highlighting the importance of well-maintained roads, ports, and airports, they emphasize how accessibility ensures smooth goods movement, minimizing delays. The interconnected nature of transportation infrastructure enhances overall coordination, facilitating efficient goods flow. This underscores the crucial role of transport infrastructure in achieving effective logistics coordination and a streamlined supply chain. Musyoka and Wanjohi (2024) explored how big data analytics can support SME performance sustainability in post-COVID-19 Kenya. SMEs, vital to the economy, face challenges like limited credit access, liquidity issues, and defaults. Focusing on supply chain management, operational flexibility, and logistics systems in Kiambu County's food manufacturing sector, the study found that big data analytics significantly improves resilience and productivity. It emphasized the need for better digital infrastructure and training to enhance SMEs' decision-making and adaptability.

Wasike and Juma (2020) emphasize the critical role of transportation costs in logistics coordination. Well-managed costs directly impact profitability and business competitiveness. Efficient cost management involves optimizing routes, transportation modes, and fuel efficiency, ensuring affordability and accessibility of logistics services. Strategic evaluation and optimization of transportation costs are essential for maintaining a competitive edge and enhancing overall logistics efficiency in a given region. The most effective and practical way to achieve transportation goals is through the use of transport practices, which include reduced costs, prompt transmission of information pertaining to transportation to consumers and other businesses, enhanced productivity, and the best possible use of corporate resources. Transport's main objective is to transfer consignments from point A to point B. Effective management of transportation is essential for fair pricing, fulfilling client deadlines and other shipping needs, and serving as a critical strategic connection between supply chain organizations.

According to Collins and Patrick (2021), having merchandise on hand benefits the connection more and results in customer satisfaction quickly, which boosts output. They note that completed items, incomplete goods, and necessary raw materials need safety stock. Inventories play a vital role throughout the manufacturing chain. It is utterly unbelievable and financially unfeasible for every item's supply to arrive at the exact location and time needed. As a result, it is always necessary to store a certain amount of inventory. When businesses have inventory, a significant amount of investments can be avoided. A decrease in inventory might result in lower operating costs, particularly for stock storage costs kept in the stockroom.

RESEARCH METHODOLOGY

The study aimed to investigate the influence of logistics systems on the performance of selected food manufacturing firms in Kiambu County, Kenya. The research design chosen was a cross-sectional survey incorporating both quantitative and qualitative methodologies. This approach allowed for comprehensive data collection and analysis, emphasizing numerical measurement and in-depth examination of social contexts. The target population included managing directors, production managers, procurement managers, and logistics managers from a total of 191 firms. A sample size of 172 was determined using a census sampling methodology. Data was collected through a standardized questionnaire featuring both closed-ended and open-ended questions, designed to gather insights on organizational data and key research variables. This structured approach ensured thorough exploration and meaningful conclusions regarding the impact of logistics systems on firm performance.

FINDINGS

The descriptive findings on Table 1 presents the influence of logistics systems. The data revealed that a majority of respondents (120, 74.1%) strongly agreed that warehouse management influences the performance of food manufacturing firms (Mean: 4.72, Standard deviation: 0.91). This implies that optimizing warehouse operations could yield substantial benefits for firms in terms of efficiency, cost reduction, and overall performance. On the statement whether Information Flow has a great impact on the performance of food manufacturing firms, a majority of respondents (134, 82.7%) neither agreed nor disagreed (Mean: 3.02, Standard Deviation: 0.84). The implication here is that there is room for improvement in information flow practices within food manufacturing

firms. Additionally, a substantial majority of respondents (140, 86.41%) agreed that transportation cost may influence the performance of food manufacturing firms (Mean: 3.98, Standard Deviation: 0.58). This suggests that firms need to carefully manage transportation costs to remain competitive. Finally, a significant majority of respondents (110, 67.90%) neither agreed nor disagreed on the assessment of current logistic systems' effectiveness for timely delivery (Mean: 3.31, Standard Deviation: 1.47). This implies that there may be opportunities for firms to assess and potentially improve their logistic systems to ensure more reliable and efficient delivery of raw materials and finished products.

Table 1: Descriptive findings on Influence of Logistics Systems

Statement	Strongly Disagree (F)	Disagree (F)	Neutral (F)	Agree (F)	Strongly Agree (F)	Mean	Standard Deviation
	1	2	3	4	5		
Warehouses management influence the performance of food manufacturing firms	0(0.00)	2(1.23)	0(0.00)	40(24.69)	120(74.07)	4.72	0.91
Information Flow has a great impact on performance of food manufacturing firms	1(0.62)	1(0.62)	134(82.71)	3(1.85)	23(14.19)	3.02	0.84
Transportation cost may influence the performance of food manufacturing firms	2(1.23)	5(3.08)	0(0.00)	140(86.41)	15(9.26)	3.98	0.58
Current logistic systems are effective for terms of timely delivery of raw materials and finished products,	7(4.32)	5(3.08)	110(67.90)	11(6.79)	29(17.90)	3.31	1.47

Discussion of Findings

The findings revealed a statistically significant positive correlation between the influence of logistics systems suggesting that firms with more efficient logistics systems tend to exhibit higher levels of operational flexibility. This correlation implies that improvements in logistics systems, such as enhanced warehousing, streamlined information flow, and optimized transportation, can positively influence the firm's ability to adapt and respond to changing market conditions and customer demands. The results were supported by Naomy, et.al (2022) findings stating

The results also found that there is a significant positive correlation between the influence of logistics systems and the influence of strategic factors. This suggests that effective logistics systems are linked to strategic advantages within firms, indicating the importance of logistics in supporting strategic goals and initiatives. This implies that while operational flexibility may be important for day-to-day operations, it may not directly contribute to strategic decision-making within these food manufacturing firms. The results were in consensus with Yousuf, et.al (2022) findings that operational flexibility and strategic factors are key in providing valuable insights for enhancing firm performance and competitiveness in the region.

Furthermore, the findings revealed a significant positive correlation between the influence of strategic factors and the influence of supply chain performance indicating that firms with strong strategic influences also tend to demonstrate better supply chain performance. This suggests that effective strategic sourcing practices, such as building networks, focusing on key suppliers, and implementing robust selection criteria, are associated with enhanced supply chain performance, which is crucial for overall firm success. The results of the study aligned with those of Wanjiku (2019), who study recommended that food and beverage manufacturing firms should embrace procurement best practices so as to improve performance and further researches should to be carried out in other sectors to find out if the same results can be obtained

SUMMARY OF THE FINDINGS

The objective of this study was to ascertain the impact of logistics systems on the performance of food manufacturing firms in Kiambu County, Kenya, with a focus on warehousing/storage, information flow, and transportation costs. The results demonstrated a statistically significant positive correlation between the influence of logistics systems and operational flexibility within these firms. This correlation suggests that companies with more efficient logistics systems are inclined to possess higher levels of operational flexibility. Consequently, improvements in logistics systems, including enhanced warehousing, streamlined information flow, and optimized transportation, have the potential to positively affect the firm's capacity to adapt and respond to dynamic market conditions and evolving customer demands.

CONCLUSION

The study concludes that the various objectives and findings discussed shed light on the intricate dynamics at play within food manufacturing firms in Kiambu County, Kenya, regarding supply chain and operational management. They emphasize the critical roles of logistics systems, operational flexibility, strategic sourcing, and supply chain re-engineering in shaping firm performance. Notably, the positive correlations observed between logistics systems and operational flexibility, as well as between strategic sourcing and supply chain performance, highlight the strategic importance of effective management practices in these areas. Conversely, the identified negative correlation between supply chain performance and strategic factors underscores the challenge of balancing operational efficiency with strategic alignment. Taken together, these insights emphasize the need for a comprehensive approach to supply chain management—one that integrates operational excellence with strategic vision to enhance performance and adaptability in the ever-evolving landscape of food manufacturing in Kiambu County, Kenya.

RECOMMENDATIONS

The study recommends that firms in Kiambu County should prioritize investments in enhancing their logistics infrastructure. This could involve upgrading warehousing facilities, implementing advanced information management systems for streamlined communication, and optimizing transportation routes to minimize costs and improve efficiency. Regular performance evaluations and continuous improvement initiatives should be undertaken to ensure that logistics systems remain aligned with evolving market conditions and customer demands. To leverage operational flexibility for improved performance, food manufacturing firms should focus on enhancing their agility in production capacity, sourcing, and order fulfillment. This may entail implementing flexible manufacturing processes, diversifying sourcing strategies to mitigate risks, and adopting responsive order fulfillment practices.

Firms should prioritize strategic sourcing initiatives to strengthen their supply chain capabilities. This involves building robust supplier networks, strategically selecting key suppliers, and implementing rigorous selection criteria to ensure supplier reliability and quality. Collaboration and communication with suppliers should be enhanced to foster long-term partnerships and

facilitate knowledge exchange. Moreover, firms should adopt a holistic approach to supply chain re-engineering to optimize performance effectively. This entails conducting comprehensive supply chain mapping exercises to identify inefficiencies and areas for improvement, redesigning supply chain processes to enhance agility and responsiveness, and aligning supply chain strategies with organizational objectives.

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