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SUPPLY CHAIN SCALABILITY AND PERFORMANCE OF LARGE FOOD AND BEVERAGE PROCESSORS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

The general objective of the study was to examine the effect of supply chain scalability on the performance of large food and beverage processors in Nairobi City County. The specific objectives were to examine the effect of supply chain integration, diversified supply base on the performance of large food and beverage processors in Nairobi City County. This study employed a descriptive research design. The target population was 368 managers and assistant managers of large food and beverage processors in Nairobi County. Yamane's 1967 formula was used to sample 192 staff using stratified according to their job department (operations, procurement and supplies, finance, and store management). Primary data was collected using questionnaires. The pilot was conducted with 19 management staff representing 10% of the sample. The study used content and construct validity. Cronbach's Alpha coefficient was used to measure reliability. The SPSS version 28 was used to analyze data. Descriptive and inferential statistics were used in the study. Findings show that; there is a strong significant relationship between supply chain integration and firm performance (r=0.539, p=0.000), a strong significant relationship between diversified supply base and firm performance (r=0.600, p=0.000). The recommendations are; the firms should closely work together with suppliers in order to increase the level of integration, the firms should carry out comprehensive supply sourcing which ensures that the shortlisted suppliers are committed, reliable, and the firms need to make sure that the supply chain is flexible to increase the performance of their supply chain.

Key Words: Supply Chain Scalability, Supply Chain Integration, Diversified Supply Base, Performance, Large Food and Beverage Processors

Background of the Study

The term scalability applied to logistics refers to the increase in the size of a warehouse, a logistics plant, or when steps are added to a process. The objective of a scalable system is that the operation remains just as efficient as before, without depending on the size of the warehouse or the transport of parts (Belay, 2018). The scalable supply chain is considered to consist of a network of supply, production, and delivery firms. In this case, many sources of uncertainty must be handled, such as market demand, supplier lead time, product quality, and information delay. Flexibility allows switching production between different plants and suppliers so that management can cope with internal and external variability. In food processing, logistics is an important source of competitive advantage since material flows strongly affect business performance. Different logistics channels of the supply chain are activated to face emergencies such as demand peaks. The production order assignments to the plants and the organization of transport are then critical decisional factors that can decrease the performance of a wide range of products. Scalability in supply chain process management is even greater when a firm can switch quickly among many different products with the ability to maintain performance standards as a firm switch among products. High uniformity implies the ability to maintain high quality as the product is changed. Different distribution and procurement policies are considered in a scalable supply chain (Popper & Lohr, 2017). The key elements in supply chain scalability are supply chain integration, diversified supply base, supply chain visibility, and supply chain agility.

Li et al. (2014) defines supplier integration as 'the long-term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits.'' Mubarak et al., (2019) also defined Supply chain integration (SCI) as the extent to which all activities of an organization and that of its suppliers, customers, and other supply chain members are linked. Supplier diversification is the process of expanding the number of suppliers that a company uses for its raw materials or products. The goal of supplier diversification is to reduce the company's dependence on any one supplier, which can lead to better prices, improved quality, and increased innovation. Supplier diversification is an important aspect of supply chain risk management. By having a diverse group of suppliers, companies can reduce the risk of disruptions in their supply chain, lower costs, improve their ability to respond to changes in the market, improve the overall quality of products and services, and mitigate the risk of fraud or unethical behavior (Trichakis,2019).

Statement of the Problem

The food and beverage processing sector in Kenya greatly contributes to economic development. According to KAM (2019), the processing of food and beverages is estimated to have contributed to about 3.5% of the GDP in 2022. The sector also employs about 600,000 people in the formal sector and 2 million people in the informal sectors of the economy (KAM, 2022). The food and beverage subsector was the most affected by the Kenyan economy in 2020 as its performance declined by 13.4% (KNBS, 2021). Moreover, Kenyan food and beverage processors are vulnerable to supply chain disruptions and challenges, which are rooted in the lack of effective internal and external supply chains (Mideva & Moronge, 2019).

Despite the critical role the food and beverages processors sector plays in the economy, the sector has been facing performance challenges. Disruptions in the supply chain have resulted in a sales drop of 7 %, as well as a drop of ROA by 35%. Poor logistics outsourcing was cited as the main reason for fluctuations in the sustainability of the F&B processors with notable percentage indices of between 49% and 58% (KAM, 2020). There has also been a notable decline in performance. On average, the cost of processing has been higher since 2021. A KNBS (2017) report stated that within the first few months of operating 3 out 5 processors fail and the ones that still operate 80%

collapse before the fifth year. The past five years have seen the closure of key F&B processors in Kenya including Cadbury Kenya, Kuguru Foods Complex Limited, Pecha Food Limited, Stawi Food and Fruits Limited, and Maz International Limited (Awino, 2019).

There are various studies conducted locally on supply chain; Korir, Bonuke, and Chepkwony (2017) on the effect of supply chain operational capabilities on firm performance in state corporations in Kenya found that logistic capability, structure capability, and technology capability have a positive and significant effect on firm performance. Wainaina (2021) on the effects of SCM practices on the competitive advantage in the dairy processing firms in Kenya found that supplier development practices, logistics management practices, CRM practices, ICT practices, and strategic sourcing practices significantly predicted both organizational performances. Cheruiyot (2018) on the effect of supply chain integration on the operational performance of manufacturing organizations in Kenya showed that supplier chain integration had a positive influence on operational performance. Karani (2022) on the effect of supply chain strategies on the performance of manufacturing firms in Kenya indicated that agile supply chain strategy, risk hedging supply chain strategy, postponement supply chain strategy, and lean supply chain strategy had a strong positive and significant effect on the performance of manufacturing firms. Mutwiri (2019) on the relationship between supply chain integration and organizational performance KEMSA showed that the effect of the combined supply chain integration dimensions has a positive and statistically significant effect on organizational performance. These studies mainly focus on selected elements of the supply chain. None of the studies focuses on supply chain scalability in food and beverage processing in Kenya. This study hence seeks to determine the effect of supply chain scalability and performance of large food and beverage processors in Nairobi City County.

Objectives of the Study

i. To establish the effect of supply chain integration on the performance of large food and beverage processors in Nairobi City County, Kenya.
ii. To determine the effect of a diversified supply base on the performance of large food and beverage processors in Nairobi City County, Kenya.

LITERATURE REVIEW

Theoretical Literature Review

Resource-Based View Theory

Resource-based view theory was formulated by Birger Wernerfelt and Barney in 1984. Resources, skills, and strategic assets are the main topics addressed by resource-based theory. According to Barney (2001), RBV enables the firm to examine whether the resources of the firm are valuable or whether they can assist the organization in achieving its expected goals. The purpose of evaluating resources is to get a deeper understanding of which resource has uniqueness and is not available to the competitors. The theory places primary emphasis on the capabilities and resources that are already present within an organization as the most important factors influencing that organization's level of success (Wang et al., 2016). The RBV Theory proposes that an organization's one-of-a-kind resources, assets, and capabilities, including its patent rights, brand recognition, and corporate culture, can be capitalized on to establish a competitive edge and maximize superior performance (Xu, Huo & Sun, 2014). This theory notes that, since they have access to strategic capital, businesses achieve a continuous competitive advantage. Such assets have distinctive features that are unusual, and important, cannot be imitated, and do not have a near replacement (Lai et al., 2012)

RBV Theory proposes that the integration of suppliers can be a significant source of sustainable competitive advantage for businesses (Weingarten et al., 2013). This is because it enables organizations to gain access to a wider variety of resources, assets, and capabilities while also enhancing their levels of efficiency and adaptability. Companies are increasingly aware of the interlinkages that inevitably occur between all the institutional operating processes of an organization and those of suppliers and clients (Wang et al., 2016). The theory relates to the objective of supply chain integration since by integrating with suppliers and customers, the organization creates unique skills, knowledge, and joint capabilities that are not easily replicated. This leads to improved product quality as there is faster identification and communication of challenges, joint problem-solving, and a better understanding of the capabilities of the supply chain partners. Joint idea generation and evaluation with both suppliers and customers can lead to improved product designs which also impacts product quality.

Grey System Theory

Grey system theory was developed by Deng (1982). The grey theory handles the uncertainty of a system. Supplier evaluation sometimes involves uncertainty, and it can be equated as a grey system. The importance of the attributes and the ratings of attributes can be expressed in grey numbers which gives the flexibility to express decisions more easily. According to grey theory, the buyer calculates a grey possibility degree between the compared suppliers' alternatives set and the ideal referential supplier alternative to determine the ranking order of all alternatives of supplier and to select the ideal supplier based on grey numbers. The drawback of the method is that the negative ideal referential alternative is not considered to evaluate and rank the alternatives (Deng, 1989). The theory of the Grey System applies the principle of series comparability to generate a grey relation. An evaluation matrix may be developed to facilitate this process. The best supplier is selected by choosing a goal and weighing the values of all evaluation factors based on the characteristics of materials to be sourced based on demand patterns (Zou, 2008). Applying the grey system theory, organizations will be able to appraise various suppliers and select the most qualified and reliable suppliers that will ensure that there is a constant supply of materials for processing.

Conceptual Framework

The conceptual framework in Figure 2.1 shows the relationship between the independent and dependent variables. The independent variables are supply chain integration, diversified supply base. The dependent variable is the performance of food and beverage processors.

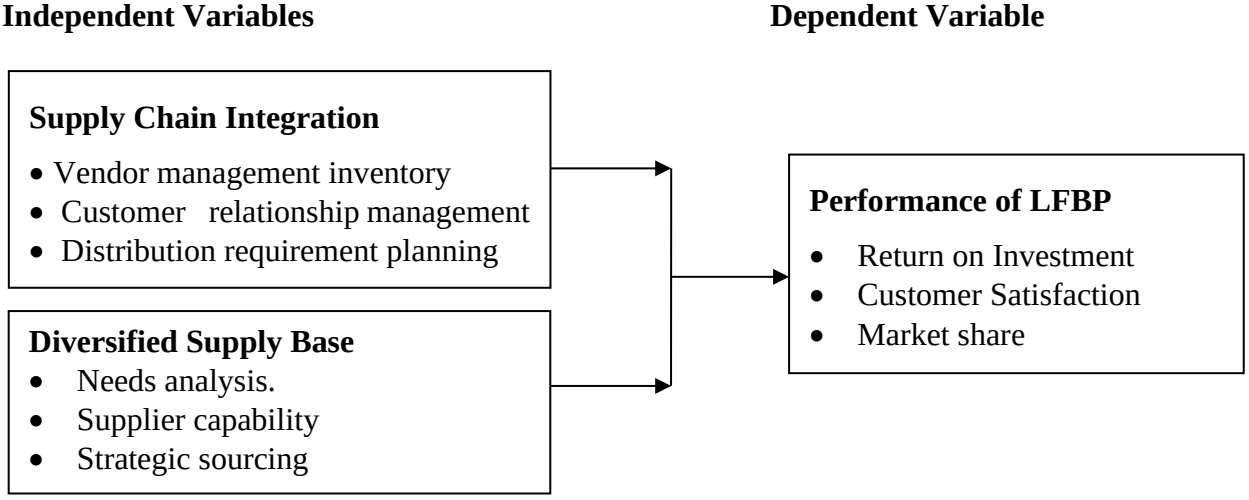

Figure 1: Conceptual Framework

Supply Chain Integration

Supply chain integration is defined as the extent to which all activities within an organization, and the activities of its suppliers, customers, and other supply chain members, are integrated (Huo & Zhao 2018). According to Kumar et al. (2017), to advance customer service to serve better, the customer-supplier integration process is the invaluable focus of the firm on strengthening the relationships between customer and supplier for the reason of achieving supply chain surplus. When suppliers are involved concerning information on the demand forecasts, production, and inventory levels decision-making of the organization, the organization, and suppliers have a working partnership that maximizes the benefits of both suppliers and the focal firm by reducing lead times and advancing innovations and quality.

Customer and supplier integration is commonly referred to as external integration, which is the degree to which a manufacturer partners with its external partners to structure inter-organizational strategies, practices, and processes into collaborative, synchronized processes. Customer integration involves core competencies derived from coordination with critical customers, whereas supplier integration involves core competencies related to coordination with critical suppliers (Kim, 2018). Customer integration represents a form of social construct and involves the exchange of social assets such as information. These assets and structures in conjunction with each other allow supply chain partners to start interacting and form an alliance in the long run. (Kumar et al., 2017). The integration of customers in the supply chain allows firms to have an overview of the requirements and their specific needs giving them the advantage of serving them better. Integrating customers in a supply chain is centered on drawing information from customers such as their buying patterns, their preference for products, and their ability to purchase products which would then be used in making better decisions during the manufacturing process or sales to customers. When firms collaborate with their customers, they can respond quickly and efficiently to their customers improving their order fulfillment as well as improving visibility (Lotfi, Sahran, & Mukhtar, 2013).

The process of internal integration is to integrate practices and processes of the supply chain to achieve customer satisfaction. It emphasizes the fact that instead of working in insulated silos, the firm should operate the different functions as an integrated process within an organization involving information sharing across a network of functions, strategies, partnerships, and synergy (Huo et al., 2016). Supplier integration involves jointly resolving problems and facilitating operations by working together with customers and suppliers. Supplier integration may have positive long-term effects, but it takes longer for firms to integrate with their suppliers, and it is costly, which worsens both competitive and financial performance (Chang et al., 2015). Sohani (2021) says that supplier integration is touted as an imperative strategy to improve firm performance and enhance a firm's competitive advantage in the marketplace. He says that several supplier integration activities, including supplier involvement, design integration, supplier base reduction, supplier commitment, and information-sharing practices are examined regarding their effect on time-based competition.

Diversified Supply Base

Supplier diversification is the process of expanding the number of suppliers that a company uses for its raw materials or products. The goal of supplier diversification is to reduce the company's dependence on any one supplier, which can lead to better prices, improved quality, and increased innovation (Trichakis,2019). According to Jensen (2017), strategic sourcing is a management process used to systematically assess purchasing requirements across a company and identify opportunities, both internal and external, for total cost reductions. Frederico, Kumar, and Garza-Reyes, (2021) indicated that supplier sourcing consists of processes of planning, evaluating, implementing, and controlling all sourcing activities undertaken by an organization to achieve its

long-term goals. Suppliers play a key important role in the supply chain network of the business and several factors have contributed to the shifting of the perceived value of supplier partnerships (Kakwezi & Nyeko, 2019). This necessitates that the business is supported by a solid vendor base that can ensure supplies at all locations. Advancement in technology and R & D capability enhancement is leading to shorter product life cycles. New versions and product innovation mean products become obsolete faster.

Introductions of new products depend upon the speedy development of new design supplier parts and the suppliers having to keep pace with changing designs and requirements. Lean manufacturing and cost per unit concept is demanding that the managers keep looking to reduce the procurement cost as well as procurement logistics cost. By developing a relationship with suppliers in a collaborative mode, buyers can get supplier companies to hold inventories for them at the buyer locations and postpone taking inventory ownership up to the point of consumption (Kim, Suresh & Kocabasoglu-Hillmer, 2015). Suppliers need competent technical ability to provide high-quality products or services, ensure future a rise in performance, and promote successful development efforts. This is very important when the firm's strategy includes the development of a new product or technology or access to proprietary technology (Basheka, 2016).

Empirical Literature

Supply Chain Integration

Riaz, Rida, and Muhammad (2020) examined the impact of supply chain integration (internal, supplier, and customer integration) on firm performance (competitive and financial). The study employed a cross-sectional survey design. Data was collected from 267 managers working in the manufacturing sector of Pakistan. Results showed that internal and supplier integration have a positive impact on financial performance while a significant impact of customer integration was found on competitive performance. Ali, Jianhua, Rasheed, and Siraj (2023) studied the effect of integration practices on supply chain performance in China. The study adopted a cross-sectional study design. Questionnaires were used to collect data from 205 managers from manufacturing firms in China. Results indicated that both external and internal integration influence SC performance and confirm the mediating role of organizational antecedents between integration practices and SC performance.

Hendijani and Saied (2020) focused on the relationship between SCI and the performance of automotive parts and steel industries in Iran. Data was collected from 84 firm managers. Findings showed that internal and process dimensions of integration had a positive effect on operational performance. In addition, internal and process dimensions had a positive effect on financial performance. In the face of high demand uncertainty, process integration improved financial performance. Uwamahoro (2018) studied the effects of supply chain integration on the performance of manufacturing firms in Rwanda. The study adopted a cross-sectional approach, and a questionnaire was used to collect responses from 258 employees. The findings indicated that SCI is related to both operational and firm performance. Results also indicated that customer integration affected a firm's performance, especially in frequent interactions with customers to set its reliability, responsiveness, and other standards to meet customer requirements.

Cheruiyot (2018) analyzed the effect of supply chain integration on the operational performance of manufacturing organizations in Kenya. The study adopted a descriptive research design. A questionnaire was used to collect data. The findings showed that supplier integration had a positive influence on operational performance followed by internal integration. Customer integration was determined to have a negative influence on operational performance. There was an association between supplier integration and customer integration with internal integration. Chirchir (2023) investigated the link between supply chain integration implementation and the performance of large manufacturing companies in Kenya. A cross-sectional descriptive research design was

applied. Questionnaires were used to collect data. The study found that supply chain integration, competitive advantage, and environmental dynamism had a significant combined effect on firm performance. The study affirms that the performance of manufacturing firms in Kenya can be strengthened by the implementation of supply chain integration.

Diversified Supply Base

Dey et al. (2015) studied the effect of strategic supplier evaluation on the performance of a UK-based carpet manufacturing firm. The study used a case study technique. According to the findings, assessing supplier performance just based on delivery, quality, and cost will not assist in enhancing supply chain performance. Improving suppliers' organizational capacity and techniques will result in higher business success as well as improved overall supply chain efficiency. Woo, et al. (2016) researched supplier communication capabilities and the performance of the construction sector in Korea. The study gathered data from 103 construction suppliers. According to the findings, suppliers that shared more information were able to enhance their environmental collaboration, reduce green costs, and gain a competitive advantage. Also, according to the research, buyer-supplier interactions are favorably correlated with favorable financial success.

Westhuizen and Ntshingila (2020) examined the influence of supplier selection, supplier development, and information sharing on firm performance in South Africa. The study adopted a descriptive survey design. The study sample included 300 business owners/managers. Questionnaires were used for data collection. Findings showed that there is a strong significant relationship between supplier selection and business performance. The ability of business owners/managers to select the right supplier influenced business performance to a very great extent. Tesfaye (2019) examined the effect of strategic sourcing on the performance of the Soft Drinks Industry in Ethiopia. Both descriptive and explanatory research designs were employed. Primary data was collected from employees using structured questionnaires. Results showed that supplier development, effective procurement plans, and communication have positive and significant effects on organizational performance.

Ojwang et al. (2018) analyzed how sourcing affected the performance of NGOs in Kisumu. The target population consisted of 35 respondents from the five Non-Governmental Organizations. Results showed that single sourcing as a technique of products and services sourcing promotes the acquisition of high-quality commodities, saves time, and lowers costs. Wachiuri (2019) investigated the influence of supplier evaluation criteria on the performances of state corporations in Kenya. The study adopted a cross-sectional survey design using both quantitative and qualitative approaches on 187 state corporations in Kenya. The study employed a census approach and utilized primary data collected using questionnaires. The findings indicated that supplier quality commitment, supplier competence, supplier financial viability, and supplier capacity have positive and significant associations with the performance of state corporations.

RESEARCH METHODOLOGY

This study employed a descriptive research design. The population of this study consisted of all the 46 large food and beverage processors located in Nairobi County that are registered under the Kenya Association of Manufacturers (KAM). The 46 large food and beverage processors were the unit of analysis while the unit of observation was the managers and assistant managers from four key departments that are involved in the supply chain: operations (92), procurement and supplies (92), finance (92), and store management (92). The target population was 368 managers and assistant managers of large food and beverage processors in Nairobi County. In this study, the sampling frame was a list of all 46 large food and beverage processors in Kenya. Yamane's 1967 formula was used to calculate the sample od 192. The management staff was stratified according to their job department (operations, procurement and supplies, finance, and store management).

The researcher acquired the names of the managers and their assistants and randomly picked 192 management staff. This ensured that all firms were well represented in the study.

Primary data was collected using questionnaires. According to Copper and Schindler (2018), a researcher can use 5-10% of the study sample to pre-test a questionnaire. In this study, the sample for sampling was 19 management staff representing 10% of the sample. Pilot test results were used to test the questionnaires' validity and reliability. The collected data was cleaned, edited, and coded before the analysis. The SPSS version 28 was used to analyze data. Data was analyzed using descriptive (frequencies, percentages, and mean) while inferential statistics (correlation and regression) were used to test the relationship between the study variables. The linear regression analysis was used to examine how a change in the independent variables causes a change in the dependent variable.

RESEARCH FINDINGS AND DISCUSSION

Supply Chain Integration

The first objective sought to establish the effect of supply chain integration on the performance of large food and beverage processors in Nairobi City County, Kenya. Respondents were asked to tick on the extent to which they agree/disagree with statements related to supply chain integration. Findings are shown in Table 1.

Table 1: Supply Chain Integration

Statements	SD		D		N		A		SA		M	Std.
	F	%	F	%	F	%	F	%	F	%		
The firm uses information technology to share information with our major suppliers.	7	5.6	18	14.3	3	2.4	66	52.4	32	25.4	3.96	1.439
Our suppliers provide information to us on the production and procurement processes.	3	2.4	6	4.8	2	1.6	45	35.7	70	55.6	4.37	0.919
An enterprise system is used to integrate the activities of various departments.	23	18.3	77	61.1	12	9.5	5	4.0	9	7.1	2.25	1.138
There is real-time integration and connection among all internal functions from raw material management, through production to sales.	11	8.7	4	3.2	8	6.3	32	25.4	71	56.3	4.17	1.233
There is a high degree of joint planning and forecasting with major customers to anticipate demand visibility.	4	3.2	4	3.2	2	1.6	19	15.1	97	77.0	4.19	1.250
Information technology is used to exchange information with major customers.	12	9.5	6	4.8	6	4.8	74	58.7	28	22.2	4.21	1.189
Customers provide information to assist in the procurement and production processes.	12	9.5	4	3.2	8	6.3	29	23.0	73	57.9	4.17	1.270
Supply chain integration is creating cohesion and increasing connectivity throughout the entire value chain	5	4.0	4	3.2	8	6.3	49	38.9	60	47.6	4.23	0.989

N=126

Findings show that the management staff strongly agreed that; the suppliers provide information in the production and procurement processes (m=4.37, Std.=0.919), supply chain integration creates cohesion and increases connectivity throughout the entire value chain (m=4.23, Std.=0.989), and information technology is used to exchange information with major customers (m=4.21, Std.=1.189). The managers agreed that; there is a high degree of joint planning and forecasting with major customers to anticipate demand visibility (m=4.19, Std.=1.250), customers provide information to assist in the procurement and production processes (m=4.17, Std.=1.270), there is real-time integration and connection among all internal functions from raw material management, through production to sales (m=4.17, Std.=1.233), and the firm use information technology to share information with major suppliers (m=3.96, Std.=1.439). The managers disagreed that the enterprise system is used to integrate the activities of various departments (m=2.25, Std.=1.138).

Supply chain integration affects firm performance. The firms involve the staff, the suppliers, and the customers. The suppliers are key in production since they are the key providers of the raw materials used for processing, hence the need to have a good relationship with the suppliers. Integration with suppliers in the supply chain creates room for information sharing with the firm, particularly on the availability of raw materials and machinery that may help to improve production. Internal integration on the other hand may help to improve the supply chain since all the departments work towards the achievement of the common goal. The production process is planned in collaboration with the suppliers and the customers, which enhances accurate demand estimation on the availability of raw materials versus market demand. Findings concur with Uwamahoro (2018) that customer integration affects a firm's performance, especially in frequent interactions with customers to set its reliability, responsiveness, and other standards to meet customer requirements. Wado (2018) also concluded that internal integration, supplier integration, and customer integration enhance firm performance.

Diversified Supply Base

The second objective aimed at determining the effect of a diversified supply base on the performance of large food and beverage processors in Nairobi City County, Kenya. Respondents were asked to tick on the extent to which they agree/disagree with statements related to the diversified supply base. The findings are shown in Table 2.

Table 2: Diversified Supply Base

Key: SD=Strongly disagree, D=Disagree, NS=Not Sure, A=Agree, SA= Strongly agree, M=Mean.

Statements	SD		D		N		A		SA		M	Std.
	F	%	F	%	F	%	F	%	F	%		
The firm has a wide pool of suppliers.	5	4.0	19	15.1	2	1.5	36	28.6	64	50.8	4.07	1.221
Most suppliers selected to do business with are competent.	5	4.0	12	9.5	13	10.3	26	20.6	70	55.6	3.86	1.178
The firm reviews the suppliers' ability to supply the quoted materials and services.	11	8.7	18	14.3	6	4.8	59	46.8	32	25.4	3.66	1.247
The firm manages supplier relationships at every stage of the procurement process.	9	7.1	12	9.5	5	4.0	55	43.7	45	35.7	3.91	1.193
Suppliers are evaluated based on their ability to achieve buyer objectives.	8	6.3	10	7.9	4	3.2	64	50.8	40	31.7	3.94	1.115
Supplier identification criteria ensure that only those suppliers with technical capability are selected.	11	8.7	10	7.9	4	3.2	26	20.6	75	59.5	4.14	1.313
Diversifying supply chain helps mitigate risks by spreading them across multiple suppliers and locations.	7	5.6	13	10.3	7	5.6	52	41.3	47	37.3	3.94	1.161
Relationships with trusted and reliable suppliers facilitate the quality supply of materials in our firm.	17	13.5	8	6.3	3	2.4	60	47.6	38	30.2	3.75	1.320

N=126

Findings show that the management staff agreed that; supplier identification criteria ensure that only those suppliers with technical capability are selected (m=4.14, Std.=1.313), the firm has a wide pool of suppliers (m=4.07, Std.=1.221), diversifying the supply chain helps mitigate risks by spreading them across multiple suppliers and location (m=3.94, Std.=1.115), suppliers are evaluated based on their ability to achieve buyer objectives (m=3.94, Std.=1.161), the firm manages supplier relationship at every stage of the procurement process (m=3.91, Std.=1.193), most suppliers selected to do business with are competent (m=3.86, Std.=1.178), relationships with trusted and reliable supplier facilitate quality supply of materials in in our firm (m=3.75, Std.=1.320), and the firm reviews the suppliers' financial ability to supplier the quoted materials and services (m=3.66, Std.=1.247).

Findings imply that the firms do not practice single sourcing but have multiple suppliers to ensure continuous processing. Diversifying the supplier base helps to spread supply chain risks since risks are spread across multiple suppliers. The firms select suppliers who have the technical capability, ability to achieve buyer objectives, and financial ability to supply quality materials. The firms also maintain a good relationship with all the suppliers. Findings are in agreement with Westhuizen, and Ntshingila (2020) that the ability of business owners/managers to select the right supplier influences business performance to a very great extent.

Firm Performance

The study sought to establish the of large food and beverage processors in Nairobi City County, Kenya. Findings are presented in Table 3.

Table 3: Firm Performance

Statements	SD		D		N		A		SA		M	Std.
	F	%	F	%	F	%	F	%	F	%		
Profitability has improved over the years.	42	33.3	42	33.3	7	5.6	19	15.1	16	12.7	2.40	1.410
There is improved product quality.	17	13.5	22	17.4	21	16.7	36	28.6	30	23.8	3.26	1.394
Sales volume in our firm has improved over the years.	22	17.5	45	35.7	9	7.1	27	21.4	23	18.3	2.87	1.414
Business diversification has greatly improved.	20	15.9	20	15.9	4	3.2	51	40.5	31	24.6	3.21	1.536
There are few customer complaints concerning the quality of our products	10	7.9	7	5.6	1	0.8	33	26.2	75	59.5	3.76	1.256

N=126

Findings show that the management staff agreed that there are few customer complaints concerning the quality of our products (m=3.76, Std.=1.256), there is improved product quality (m=3.26, Std.=1.394), and business diversification has greatly been improved (m=3.21, Std.=1.536). The managers disagreed that profitability has improved over the years (m=2.40, Std.=1.410), and sales volume in the firm has improved over the years (m=2.87, Std.=1.414). Findings imply that even though the firms have made efforts to improve product quality and deliver quality products to customers, there has been decreased sales volume resulting in decreased profitability. Findings concur with KAM's (2020) report that despite the critical role the food and beverages processors sector plays in an economy, the sector has been facing performance challenges.

Correlation Analysis

Correlation shows the strength of the relationship between the independent and dependent variables. Table 4 shows the Pearson correlation results.

Table 4: Coefficient of Correlation

Variables		Firm Performance	supply chain integration	Diversified supply base
Firm Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	126		
Supply chain integration	Pearson Correlation	.539**	1	
	Sig. (2-tailed)	.000		
	N	126	126	
Diversified supply base	Pearson Correlation	.600**	.258	1
	Sig. (2-tailed)	.000	.041	
	N	126	126	

**. Correlation is significant at the 0.05 level (2-tailed).

Findings show that; there is a strong significant relationship between supply chain integration and firm performance (r=0.539, p=0.000), a strong significant relationship between diversified supply base and firm performance (r=0.600, p=0.000), Findings are in agreement with; Cheruiyot (2018) that supplier integration had a positive influence on operational performance followed by internal integration, Wachiuri (2019) that supplier quality commitment, supplier competence, supplier financial viability, and supplier capacity have positive and significant association with performance.

Regression Analysis

Regression analysis was conducted to understand how a unit change in the independent variable (supply chain integration, diversified supply base) may predict changes in the dependent variable (performance of large food and beverage processors). The regression output is presented in Table below.

Table 5: Model Summary

Model	R	r^2	Adjusted r^2	Std. Error of the Estimate
1	0.884	0.782	0.765	.727

Predictors: (constant) supply chain integration, diversified supply base

The findings in Table 5 show an R-square value of 0.782. This shows that 78.2% of changes in firm performance may be explained by supply chain integration, diversified supply base. This means that other supply chain scalability practices that this study did not focus on contribute to 21.8% of the performance of large food and beverage processors in Nairobi City County.

Table 6: Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	23.808	2	23.808	45.104	.000[b]
	Residual	66.528	125	.528		
	Total	90.336	127			

Predictors: (constant) supply chain integration, diversified supply base

Dependent variable: Firm Performance

The ANOVA shows that the F value of 45.104 is significant at the 0.05 significance level. In general, the regression model with the four independent variables of supply chain scalability was suitable in explaining the changes in the performance of large food and beverage processors in Nairobi City County.

Table 7: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant/Y Intercept	1.463	.487		3.004	.003
Supply chain integration	1.398	.103	1.064	6.610	.000
Diversified supply base	1.557	.099	1.530	8.424	.000

As per the SPSS generated in Table 7,

Firm performance = 1.463 + 1.398 (supply chain integration) + 1.557 (diversified supply base)

A unit change in supply chain integration would cause a change in the sustainability of firm performance by a factor of 1.398, a change in diversified supply base change would cause a change in firm performance by a factor of 1.557. A higher value of the t-statistic suggests stronger evidence of the relationship between study variables. Results show that diversified supply base (t=8.424) had the strongest effect on firm performance followed by supply chain integration (t=6.610),

Conclusion

Findings imply that the food and beverage processors integrate the customers and suppliers in the supplier chain. The firms have a good relationship with the suppliers which enables the suppliers to share information regarding production and procurement processes with the firms. Integrating suppliers in the supplier chain also creates cohesion and increases collaboration in the value chain. The firms make good use of information technology to communicate with the customers, to have a better understanding of their tastes and preferences. While planning for production, the firms involve the suppliers since they are key in providing raw materials and the customers since they are at the end of the production process. This enables the firm to produce high-quality products that meet the market demands, hence increasing sales volume and sales revenue. There is however poor utilization of an enterprise system in customer and supplier integration. Enterprise planning is rarely used, which is an indication that the firm may lack accurate data on the supply chain operations.

Diversifying supplier base affects firm performance. The firms have multiple suppliers that supply products and services. This ensures continuous operations in the firm since the chances of processing cut-off are very low. A diversified supply base creates a wide pool of suppliers, and the firms have an option of selecting suppliers who offer quality products/materials at very fair prices. The firms source suppliers based on competency, financial ability to meet the terms of the contracts, and ability to deliver quality products that meet customer needs. Multiple supplier sourcing provides an improved quality by utilizing a supplier who has more knowledge, experience, and expertise. Supplier selection is key to the procurement process and represents a major opportunity for an organization to reduce costs, increase effectiveness, and enhance customer satisfaction.

Recommendations

The firm managers should strive to better understand their supply chains and the various activities that enhance collaboration. This may lead to improved efficiencies which in turn improve their operational performance as well as improved financial performance. The firms should closely work together with suppliers in order to increase the level of integration which in turn increases the operational performance through linking both suppliers and the firm with advanced information systems to facilitate the flow of materials, information, and experiences, in addition to control the inventory movement. Managers should pay greater attention to the practices that promote customer integration through the involvement of various stakeholders within the supply chain to enable the formulation of strategies that would improve operational performance by leveraging on both internal integration and supplier integration.

The firms should carry out comprehensive supply sourcing. This will ensure that the shortlisted suppliers are committed, and reliable, and deliver within the agreeable delivery schedules and service level agreements. The organization should adopt supplier optimization policies that will enable them to select suppliers based on their capabilities and not just based on the price and the quality of service or product. These procurement policies will ensure that delays resulting from the procurement process are reduced. The managers should ensure that all their suppliers adopt

modern technology as it will help them improve their capacity performance, which will indeed help curb any cases of lack of goods and supplies.

Areas for Further Study

A similar study focused on manufacturing firms in other sectors since the study only focused on large food and beverage processors in Nairobi Kenya.

A study on supply chain scalability practices affecting the performance of large food and beverage processors in other counties in Kenya.

A study incorporating other supply chain scalability practices may predict changes in the firm as the study has shown that the four supply chain scalability practices contribute to 78.2% of changes in firm performance.

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