



SUPPLY CHAIN RATIONALIZATION PRACTICES ON PERFORMANCE OF LARGE MANUFACTURING FIRMS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

This study sought to assess supply chain rationalization practices on performance of large manufacturing firms in Nairobi City County, Kenya. In specific, the study aimed to examine the effect of sourcing practices, information visibility, strategic relationship and to explore the effect of demand planning on performance of large manufacturing firms. This study was built on Transaction Cost Economics Theory, Network Theory, Relational Exchange Theory and Dynamic Capability Theory. The researcher adopted a descriptive research design. The target population was observed from the 499 supply chain managers and analyzed in manufacturing firms in Nairobi City County. A stratified random sampling technique was employed in attaining a representative sample from the target population to obtain a sample size of 222 respondents using formula proposed by Yamane. A closed-ended questionnaire was used to collect raw data from the respondents and analyzed using Statistical Package for Social Sciences version 25 to compute percentages of respondents' answers. Inferential statistics using multiple linear regression was applied to assist examine relationship between research variables in the study. The study found out that supply chain rationalization practices had a positive significant influence on performance with coefficient determination of 0.785 signifying that supply chain rationalization practices; sourcing practices, information visibility, strategic relationship and demand planning, contributed to 78.5% in performance of large manufacturing firms in Nairobi City County, Kenya. The study therefore concluded that when these supply chain rationalization practices are properly implemented, then improved performance would be realized. The study recommended for an establishment of proper organization's structure and a holistic adoption of supply chain rationalization practices in large manufacturing firms in Nairobi City County by all levels of management.

Key Words: *Supply Chain Rationalization, Sourcing Practices, Information Visibility, Strategic Relationship, Demand Planning*

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INTRODUCTION

On the international scene, global manufacturing strategies depend on the firm's ability to rationalize its productive activities; that is, the firm must assign each value-added activity to an appropriate area of the world so that the greatest cumulative competitive advantage is achieved.

The unique markets or niche could be fetched by global manufacturing best practices able to reduce costs, expansion strategies to borderless networks. The goal of global supply chain rationalization strategy is to assert that the foreign networks of manufacturers, logistic companies, warehouses, suppliers, regional distributors and retailers operate effectively and efficiently with minimum bottlenecks making them reduce risk because of the global networks and operations with good international rules and regulations based from different governments and states. Global manufacturing output has been on a decline since 2019. This is attributed to the uncertainty caused by Brexit and trade tension between the U.S and China (UNIDO, 2020). Currently, the ongoing pandemic alongside the Ukraine Russia war has created an economic impact to the world economies letting in some sharp focus that technology is not and will never be an adjunct but indispensable in the global supply chain. The product end users have valued non-financial buying decisions amid the supply chain disruption. Many governments over the world are adopting strategic approach to global sourcing (Giles *et al*, 2021). The global outbreak of COVID-19 exacerbated the drop in manufacturing output as several countries went into lockdown in early 2020, report shows that there was a drop in output by 6%, 11.2%, and 1.1% in the last months of the year and the contraction was recorded in all regions; save for Africa which registered an estimated 0.2% growth in output and East Asia whose output remained the same.

China experienced the biggest drop in manufacturing output in the first quarter of 2020, with a 14.1% decline in output. However, it was the only economy that registered a bounce back to

positive growth in the subsequent quarters. The risk emerged when global demand reduced dramatically prompting US based consumer goods manufacturer had no alternative but shut down the plants in several foreign markets with immediate stoppage of supply in identified outlets making it to narrow the projected global range thus anticipated myriad of problems (McGregor, 2021). The year 2020 proved relatively technical for the super power of the world. According to United States Cyber Security and Infrastructure Agency (CISA) which gave a comprehensive report on the global supply chain disruption caused by the pandemic. In a survey of four hundred and fifty managers across the firms found out that 62% of firms realized disruptions ranging from 20% and 80% overall volume.

Countries in Africa will continue to trade, and supply chains will of course thrive within the continent despite the pandemic, Brexit, regional wars and conflicts, Ukraine Russian war with projected repercussions of supply chain disruptions crippling constant supply of fertilizers, wheat, gas and petroleum products. There is increased pressure in the continent more so, piling fears on fragile domestic production for several African nation relying on the supplies as staple food like wheat products. The consequences of overreliance on these supplies emanate when it comes to downstream effects of supply chain constraints that could be able to escalate prices, build unsustainable pressure on already stretched fiscal environment, increase vulnerability and food insecurity. There is need for Africa to solve her problems through the Economic Commission for Africa (ECA) by developing robust mechanism to obtain critical goods and cultivate intra Africa links amongst suppliers (ECA, 2022). Nigeria is particularly badly affected because its manufacturing base depends on diesel for a whopping 70 percent of its power generation due to the failure of the power sector to provide a constant power supply. When you also factor in that diesel and gasoline power the transportation and logistics industries, it becomes easier to see the nature of the secondary impact of

the Ukrainian war on production costs and sales prices in Africa (Nwanze, 2022).

According to the International Monetary Fund (IMF) in its recent Regional Economic Outlook has released a statement on the situation explaining that it expects a shrink in growth from 2021's 4.5 percent growth to 3.8 percent for 2022. Inflation projections for Africa in 2022 and 2023 are 12.2 percent and 9.6 percent, respectively, which would be the highest regional levels reached since 2008. Nearly eight million people in South Sudan are facing severe levels of food insecurity at a time when the cost of staple items and fuel have shot up due to supply chain disruptions caused by the war in Ukraine, the World Food Program (WFP) has reported. Sub-Saharan Africa's (SSA) economy is projected to have contracted by 2.6% in 2020 compared to a growth of 3.2% in 2019 (IMF, 2021). Oil-exporting and resource intensive countries are projected to witness the sharpest contraction of their economies. The economic consequences of the COVID-19 pandemic triggered expansionary fiscal policy responses across all categories of economies in Africa. The expansionary fiscal policy widened fiscal deficits in the continent heightening the likelihood of a widespread sovereign debt crisis if debt is not properly managed.

In Kenya, the manufacturing sector is the third biggest industrial sector after agriculture, transport and communication (KPMG, 2019). It is also the third leading sector contributing to GDP in Kenya being the East African most industrially developed nation despite constituting just 10% of the manufacturing sector contribution to GDP (RoK, 2018). Companies face an increasingly challenging marketplace with a growing field of competitors, higher customer expectations, and complex supplier relationships. The need to divert underutilized capital equipment and facilities, cut cost is driving companies to outsource business operations, minimize inventories and in general run as close to the edge as possible (Mwangi, 2019). Due to the challenging environments the growth of this industry has declined despite the sector being

the engine of growth that drives an economy. There is consensus among policymakers, academicians and researchers that hope rests in promoting industrial manufacturing for countries mired in poverty. Kenya is already making efforts to industrialize, guided by aspirations set out in Vision 2030 among other development programs such as the blue economy. The Vision 2030 is Kenya's current blue-print for the future of economic growth. The long-term goals of this vision are to create a prosperous and globally competitive nation with a high quality of life by the year 2030. To do this, it aims to transform Kenyan industry all the way while creating a clean and secure environment (Chege & Ochiri, 2019).

The Kenyan economy is estimated to have contracted by 1% in 2020 compared to a 5.4% growth in 2019 (World Bank, 2020). The contraction came in as the economy took a hit from COVID19. The pandemic resulted in reduced consumer demand both globally and locally, disruption of supply chains, job losses coupled with the COVID-19 prevention measures announced by the government, most economic activities in the service sector that demand manufactured goods such as the hospitality industry came to a near halt. Economic output is forecasted to rebound in 2021, with real GDP increasing by 6.9% on the assumption that there will be increased domestic and global demand following the easing of containment measures and increased international travel. The country was expected to experience normal weather that will support agricultural production and its strong linkage to industrial and services sectors, but according to International Food Policy and Research Institute report in 2022 allays fears that higher prices, particularly for fertilizer, will reduce GDP growth and increase poverty rates in the country, putting an estimated 1.4 million additional people below the poverty line. Inflation in Kenya hit 7.1% as of May 2022, mainly driven by a combination of high world commodity prices and a depreciating exchange rate (CBK, 2022). The majority of maize, rice, and wheat in Kenya's

domestic market— including maize and wheat flours—are produced locally, while about 45% of edible oils are imported.

In the country, manufacturing firms are registered under the Kenya Association of Manufacturers (KAM) which is a private sector body established in 1959 with a sole purpose representing businesses that deal manufacturing and exporting their products. The body has evolved into a dynamic, vibrant, credible and respected business association that unites industrialists and offers a common voice for businesses (Memia, 2018). This sector is vital in spurring economic development by restoring and sustaining high productive growth, boosting job opportunities for semi-skilled labor and building country competitiveness through exports therefore plays a leading role in the country. Kenya Vision 2030 blue print has outlined the manufacturing sector as one of the key drivers for realizing a sustained annual GDP growth of 10% (Mwangi, 2019). This sector is the third biggest industrial sector after agriculture, transport and communication (KPMG, 2019). The structure of the manufacturing sector has seen little change over the years despite targeted policy interventions attempting to adjust this. Market share of GDP in this sector has remained stagnant with only limited increases in the last three decades, contributing an average of 10% from 1964-73 and rising marginally to 13.6% from 1990-2007 and averaging below 10% in recent years (KAM, 2018). It is the third leading sector contributing to GDP in Kenya despite recording a drop from 7.9% in 2019, 7.61% in 2020 and 7.24% in 2021 due to a challenging operating environment thus the need to address the binding constraints that have continued to militate against the performance of the manufacturing sector and limited its share of contribution to the GDP (Ndeto & Nguyai, 2021).

Statement of the Problem

The rising growth of manufacturing firms in the city has been accredited to urbanization; a growing middle class and its altering lifestyles and market liberalization that has led to competition in the

sector. Gaining preference with suppliers is an important factor in making flexibility work thus need for a more flexible supplier base, capable of delivering higher-quality products and of finding innovative ways to drive costs out of production. Majority of these firms are vulnerable to supply chain threats including corruption and nepotism amid volatile areas (Chege & Ochichi, 2019). Manufacturers' suppliers are not ready to meet their new demands due to competitive pressures, management malpractices and the structure of their business models derailing their market share. Statistics from World Bank shows that Kenyan manufacturing firms have registered stagnation and declining profits for the last five years due to a turbulent operating environment and high cost of capital (Chemwogen & Moronge, 2019). These firms have failed to manage their ever increasing supply chain costs due to poor performance contributed by high energy costs and increased tax burden by the authorities. There is evidence of reduced government annual GDP, inflation, unemployment and trade imbalance culminating into weakening and instability of the currency due to increased imports (Memia, 2018).

The manifestation of vision 2030 as the recipe to Kenya's long term development targets annual growth rate of 10% with manufacturing rate of 30% as the greatest enablers expects rise in growth of the country's GDP by 30% (GoK, 2021). Blatant mismanagement of resources and misappropriation of fund culminating into drain of meagre resources and non-delivery of services to customers in the rise. Post corona pandemic and Ukraine-Russia war has further challenged their performance creating volatility in international oil prices and disruption in supplies of wheat alongside fertilizers into the country (GoK, 2022). Studies have been done on supply chain rationalization practices globally, for instance; Baka (2019) and Munyimi (2020). Locally; Chege and Ochichi (2019), Mwangi and Waithira (2021) Otieno and Langat (2019). These studies however, did not look at supply chain rationalization practices and performance among

these multi- sectorial firms therefore creating a knowledge gap in supply chain rationalization practices on performance of large manufacturing firms in Nairobi City County, Kenya. This study intended to address this knowledge gap thereupon.

Objectives of the Study

The general objective of the study was to examine supply chain rationalization practices on performance of large manufacturing firms in Nairobi City County, Kenya. The study was guided by the following specific objectives;

- To examine the effect of sourcing practices on performance of large manufacturing firms in Nairobi City County, Kenya.
- To assess the effect of information visibility on performance of large manufacturing firms in Nairobi City County, Kenya.
- To establish the effect of strategic relationship on performance of large manufacturing firm in Nairobi City County, Kenya.
- To explore the effect of demand planning on performance of large manufacturing firms in Nairobi City County, Kenya.

LITERATURE REVIEW

Theoretical Framework

Transaction Cost Economics (TCE) Theory

Ronald Coase, Herbert Simon and Chester Barnard in 1937 developed this theory. It refers to the cost of providing for a product, service or works through the market rather than having it provided from within the firm. The transaction is made the basic unit of analysis and the procurement decision, as between make and buy, is made (principally) with reference to a transaction cost economizing purpose. Williamson proposes that costs are comprised of not only production costs – the costs of capital, labor and materials – but transaction costs. First, TCE specifically addresses sourcing decisions, that is, the decision to produce a good or service internally or purchase it externally. Second, TCE captures the widely-held perception that organizational members make sourcing decisions

based upon an economic rationale and that outsourcing should reduce costs. In general, Williamson argues that production costs are lower with outsourcing due to vendor economies of scale achieved through mass production efficiencies and labor specialization.

The theory is centered in category strategy whereby products are grouped and singularly treated as a unit leading to efficiency and time saving; supplier strategy ensures purchasing is consolidated to best fetch the best package in the market in terms of goals of the firm, quotation to check on the lower values in the market, selection and negotiation with suppliers to leverage sales like prompt delivery, cost quality, operative procurement and supplier evaluation with attractive terms and conditions (Kubair, Inderpal & Karodia, 2017). The excessive application of (TCE) as the most used theory in sourcing is due to the need to optimize cost (Kivuva, 2018). It is the best strategy to be applied when organizations want to achieve efficiency gains in terms of transaction and production costs. Analyzing TCE from the perspective of the decision to make or buy, managers will execute the organizational form that reduces transaction costs. Consequently, TCE makes assumptions about how relationships are structured, and the development of ensuing forms of leverage. Transaction Economics Theory principles and applications correlates with sourcing practice as a dependent variable in the study.

Network Theory

The network theory describes the relationships between companies located in the same supply chain and is a theory behind organizational communication. It allows us to observe clusters of communication relationships created by the objects communicating within a network. These clusters link together to form organizational networks digitally. Lu (2018) asserts that it involves information asymmetry, material handling and management, finances and administration of firms along the supply chain bearing in mind that they will set socio-economic and environmental

sustainability as prioritized by stakeholders and customer requirements. The concept developed over time from the simple consideration of relationships or strategic alliances between just two companies, towards the explanation of relationships between several counterparts within a supply network, are they suppliers, organizations, buyers, customers or manufacturers and in this case; the latter. Through application of network theory, aims to move products and raw materials from source of whichever location to market of choice and can mitigate the recent supply chain drawbacks. It provides a way to visualize and study the complicated and dynamic systems in supply chains (networks) and, thereby, makes smarter use of the relationships and connections involved in the network (Davletshin, 2020).

Relational issues have to do with the history of personal interactions. Given the overwhelming number of interactions and interdependencies among different firms, processes and resources, network theory can help a firm separate signal from noise and thereby make decisions based on more accurate information (Baah *et al*, 2020). Stock analysts increasingly look at firms in the context of their supply networks. They must do so to make more accurate forecasts of the firms' future performance. Their forecasts can make firms flourish or perish because if analysts see a risky supplier deep in a firm's supply network, they would alert investors who, in turn, may change their decisions to buy a firm's stock. This can be instrumental to academicians and leaders identify gaps in systems that can be improved or closed with innovative solutions such as block chain technology (Olhager & Jeong, 2020). Network theory connects indirect partners who previously had relatively no knowledge, thus opening new possibilities of broader visibility, deeper learning and better situational awareness in the production industry as it spans from road links to circulatory systems, and relationships to digital transformations (Asnoradin, Sundram & Noranee, 2021).

Relational Exchange Theory

The relational exchange theory (RET) focuses on building personal trust relationships and developing grid norms. It centers on the idea of embeddedness, which suggests that cooperative party's act based on certain norms, as opposed to contractual obligations. It emphasizes soft control mechanisms to attenuate opportunism. That is, RET predicts that trust-based relationships are less prone to partners' opportunism. Kiarie (2017) opines that trusting relationships assist in dedicating resources to developing and maintaining relationships, rather than managing transactional tensions or abnormal behaviours in the supply chain. Overall, RET is significant to SCM because it provides a framework to manage relationship flows, which is important to facilitate resource exchange within and between supply chain organizations.

The framework supports collaboration and ease of communication between supply chain partners and enhances the effectiveness of supply chain management and related improvement activities of the supply chain (Mueni & Morongo, 2018). The salient aspects of relational behaviours include; long term orientation, role integrity, mutuality, solidarity and flexibility. Interpersonal satisfaction is emphasized at the relationship level while the inter-organizational level investigates long term orientation between firms. The organization would therefore find this theory relevant in relation to the organization focus objective to focus on building supplier confidence, its ability to describe your process architecture in a way that makes sense to key business partners. Mueni and Morongo (2018) opine that it encourages participants to get to know suppliers almost as well as they themselves so that they can anticipate their changes, needs and problems in order to respond appropriately. The theory informed the study by providing an understanding of how strategic relationship practice impacts on the performance of large manufacturing firms in Nairobi City County.

Dynamic Capability (DC) Theory

A dynamic capability is the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments and formed when teams and individuals use their skills and knowledge to acquire, put together and transform resources available with the firm (Azhar & Azlam, 2018). Dynamic capability is a theory of competitive advantage in rapidly changing environments in the market place in terms of tastes and preferences showing how it informs and complements explanations based on market positions, firm resources, and operational strategies in place easily foreseeable. It revolves within the aspects when change is unforeseeable; when change is; when the effect size of new capabilities is small; in industries subject to repeated technological shifts; and in markets that reward short bursts of extraordinary performance over long-term persistence (Teece & Heaton, 2018). It is true to the words of Swiercaek (2019) that these capabilities could be derived from the salient skills emanating when supply chain partners transfer knowledge and information in cordial relationships between them within the organizational routines and processes. It is

Conceptual Framework

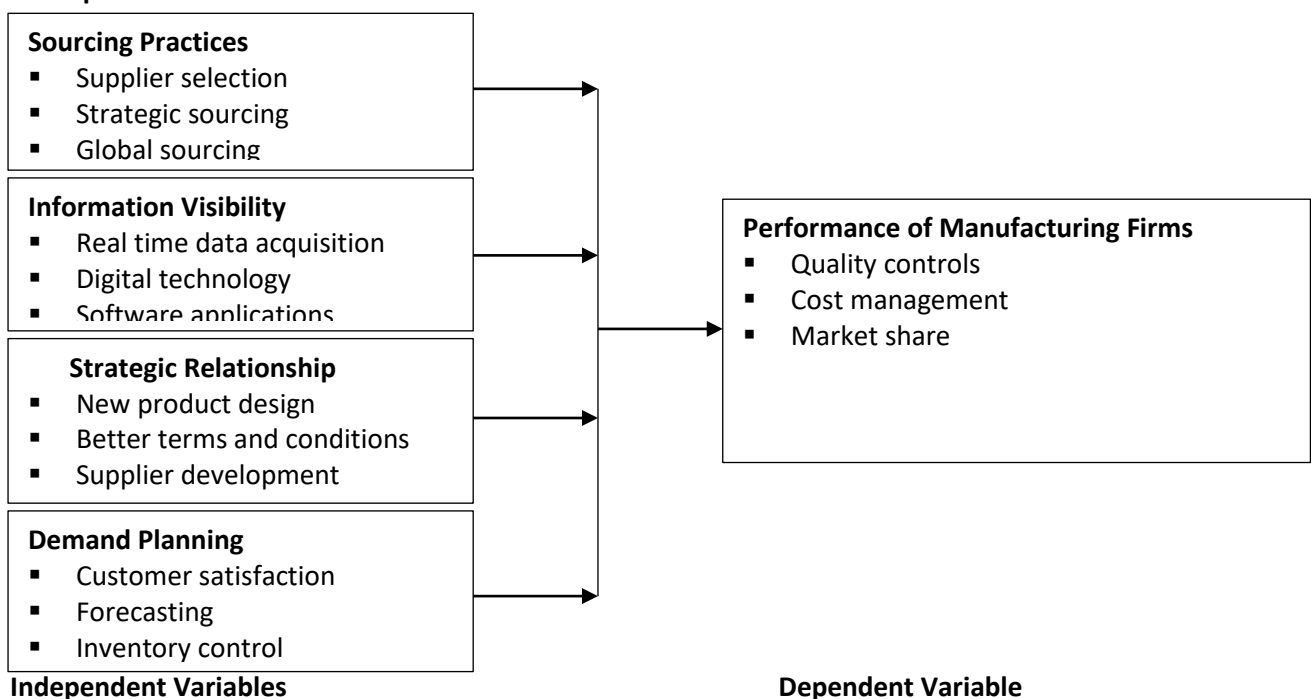


Figure 1: Conceptual Framework

important to note that a company no longer takes control over all the resources required in dynamic business environment full of competition but rationalize through continuous practice of synchronization of suppliers and clients in the marketing environment.

What affects optimization usually lies on the ability of the firm to sense and capitalize on varied market opportunities. Whilst these firms not only learn about their line members in the distribution channel but also competitors and customers in the chain. Arguably, the stronger the market focus, stronger the capability to gather, interpret and use the market information vital for decision making. There is urgent need to handle both customer and supplier variation in the supply chain emanating from differing facets of information, therefore progressive information sharing between buyer-supplier on demand and supply is key strategy in crafting collaborative relationships, keeping inventories safely to avoid bottlenecks, risk mitigation teams to adapt to unexpected events and building logistics systems to execute such contingency plans with required urgency (Azhar & Azlam, 2018).

Empirical Review

Munyimi (2020) conducted a study to investigate the role of supplier base rationalization in operational performance in retail sector in Zimbabwe. He found out that approaches such as competency staircase approach, twenty/eighty rule, improve or else approach triage approach and spend categorization supplier base rationalization practices have a positive significant effect in operational performance in the retail sector.

Baka (2019) explored the impact of supplier base rationalization on organizational performance at Terrain Construction Company in Uganda and found out that the benefits included buying high quality products through quality assurance controls, reduced supply chain risks and ability to undertake complex purchasing strategies. However, he outlined setbacks such as dependency on particular supplier, absence of fair competition, supply disruption and elimination of competent suppliers through the market in the construction industry. Chege and Ochiri (2019) conducted a study to examine the influence of supply base rationalization on performance of manufacturing firms in Kenya and found out that the triage approach, Pareto's approach, improve or else method and competency staircase method had positive relationship with performance of manufacturing firms in Kenya. The approaches provided good reason whereby having trustworthy vendors whom you transact at the necessity level plays a significant role in cost reductions and increase profitability in the industry performance, however, the study conclusions hinted that the manufacturing firms are striving hard to improve their performance there are still issues of poor quality products, long lead time and high cost of products. Otieno (2019) conducted a study to establish the role of supply base rationalization techniques on procurement performance in the public sector and found out that competency staircase, 20/80 rule, improve or else and triage approach leads to positive and significant procurement performance, he further revealed in his findings that all parastatals in Kenya should be

encouraged to put these supplier rationalization techniques into consideration since they will greatly help them attain degree of competitiveness. Mwangi (2021) carried out a study to establish the influence of supply chain optimization on the performance of manufacturing firms in Kenya and found that by working with suppliers that are able to offer a variety of stocks to the firms can enhance their performance significantly. Supplier with a wide portfolio of products and services reduces the costs that are related to acquiring new supplier such as supplier appraisal costs. The study further concluded that adoption of integrated planning and execution systems, adoption of information technology supported processes and electronic procurement in supply chain management simplifies the procurement process hence enhancing supply chain optimization. In recap of they concluded that in order to benefit from supply chain optimization, firms must have a competent team in the procurement departments just like in other sector to enhance the overall performance.

METHODOLOGY

The study adopted descriptive research design. Target population of the study according to KAM (2021) included the 499 supply chain managers in charge of procurement department in large manufacturing firms in Nairobi City County because they are the professionals with vital information about the firm's procurement processes and fully understood the subject matter questionnaires. A stratified random sampling technique was employed in attaining a representative sample from the target population to obtain a sample size of 222 respondents using formula proposed by Yamane. A closed-ended questionnaire was used to collect raw data from the respondents and analyzed using Statistical Package for Social Sciences version 25 to compute percentages of respondents' answers.

FINDINGS AND DISCUSSION

Sourcing Practices and its effect on performance of large manufacturing firms

The study sought to establish the strongest variable/indicator of sourcing practices and its effect on performance of large manufacturing firms in Nairobi City County, Kenya. This was done by comparing the means of the variables describing the sourcing practices' dimension/ indicators. To achieve this, the respondents were asked to rate their opinions on the statements on sourcing

practices according to their level of knowledge and understanding on a Likert scale of 1 to 5. Where, 1=Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree. Data was analyzed using descriptive statistics of mean and standard deviation. Variables with a mean close to 4.0 and above represented agreed and strongly agreed while those with a mean close to 3.0 represented "neutral" and those with a mean of 2.0 and below represented disagreed and strongly disagreed. The results are as shown in Table 1 Below.

Table 1: Sourcing Practices

Statements	N	Mean	Std. Deviation
Sourcing decisions focus on core competencies that help retain and gain competitiveness in the market.	180	4.31	.476
The firms get high quality product and services from multiple supplier selection strategy.	180	4.16	.486
Manufacturing firms has implemented strategic and global sourcing practice in the supply chain	180	4.39	.490
Consolidation of the purchasing power through global sourcing results into better terms and conditions for the manufacturing firms.	180	4.27	.446
Value for money is achieved through proper supplier selection.	180	4.29	.469
Valid N (list wise)	180		

The findings from Table 1 indicated that most of the respondents who participated in this study revealed that sourcing decisions focus on core competencies that help retain and gain competitiveness in the market with a mean of 4.36 and standard deviation of 0.476. The respondents further agreed that the firms get high quality product and services from multiple supplier selection strategy with (mean = 4.16; std. dev. = 0.486) indicating that multiple supplier selection offer variety of high end products and services. To assess whether manufacturing firms have implemented strategic and global sourcing practice in the supply chain, the study findings agreed with mean of 4.39 and standard deviation of 0.490. Further, the research finding agreed that consolidation of the purchasing power through global sourcing results into better terms

and conditions for the manufacturing firms with a mean of 4.27 and standard deviation of 0.446. Respondents also strongly agreed that value for money is achieved through proper supplier selection with a mean of 4.29 and standard deviation of 0.469.

Information Visibility and its effect on performance of large manufacturing firms

The effect of information visibility on performance of large manufacturing firms was sought in the study. Means and standard deviations were used to give the findings under this objective. Respondents were asked to indicate their level of agreement or disagreement with each of the statement related to the objective written in five point Likert scale. The results are as presented in Table 2 below.

Table 2: Information Visibility

Statements	N	Mean	Std. Deviation
The use of IT and integrated systems has simplified the procurement process for our firm.	180	4.28	.499
Data visibility helps manufacturing firms enhance traceability and audit trail in record keeping thus improve transparency around sourcing.	180	4.22	.637
Digital technology enhances process automation thus improves operational performance of the firms.	180	4.16	.486
Our employees are skilled and knowledgeable to handle technological changes in the supply chain.	180	4.18	.466
Use of software applications like IoT, EDI, MRP and ERP enables end to end information visibility and rational decision making in the supply chain.	180	4.29	.574
Valid N (list wise)	180		

When asked whether the use of IT and integrated systems has simplified the procurement process for the various sectors, the study findings strongly agreed by a mean of 4.28 and a standard deviation of 0.499. The study revealed data visibility helps manufacturing firms enhance traceability and audit trail in record keeping thus improve transparency around sourcing with a mean of 4.22 and standard deviation of 0.637. The respondents strongly agreed that digital technology enhances process automation thus improves operational performance of the firms by a mean of 4.16 and standard deviation of 0.486. When asked whether the employees are skilled and knowledgeable to handle technological changes in the supply chain, the study findings agreed (Mean = 4.18, SD =0.466). The study

further revealed that use of software applications like IOT, EDI, MRP and ERP enables end to end information visibility and rational decision making in the supply chain (Mean = 4.29, SD =0.574). The findings are also in tandem with not only Njuguna and Noor (2017) but also Hoa (2021) who found out that information visibility has pivotal role in implementation of information based decision making in the supply chain.

Strategic relationship and its effect on performance of large manufacturing firms.

The study sought to assess the effect of strategic relationship on performance of manufacturing firms and the results from the statements were as follows in table 3 below.

Table 3: Strategic Relationship

Statements	N	Mean	Std. Deviation
Frequent sharing of information to establish effective buyer supplier relationship structure.	180	4.16	.471
Building relationship with suppliers jointly leverages for better terms and conditions of product or service hence reaching mutually advantageous goals.	180	4.26	.522
Suppliers are engaged through capacity buildings and collaborations to improve product design and quality of products	180	4.32	.602
Long term buyer-supplier association encourages mutual planning and problem solving efforts reducing risk of nonperformance of suppliers.	180	4.18	.718
Supplier development promotes technological exchange, legal support, financial aid thus develops production capacity.	180	3.99	.544
Valid N (list wise)	180		

From the results, the respondents strongly agreed that frequent sharing of information establishes effective buyer-supplier relationship structure (mean =4.16, std deviation=0.471). This implies that information asymmetry is key for buyer-supplier relationship. The respondents further strongly agreed that building relationship with suppliers jointly leverages for better terms and conditions of product or service hence reaching mutually advantageous goals (Mean = 4.26, SD =0.522). On a statement whether suppliers are engaged through capacity buildings and collaborations to improve product design and quality of products the respondents agreed with a mean of 4.32 and standard deviation of 0.602 implying the significance of capacity building and mutual collaborations for better quality controls and assurance. The respondents further agreed that long term buyer-supplier association encourages mutual planning and problem solving efforts

reducing risk of non-performance of suppliers (Mean = 4.18, SD =0.718). This is in agreement with the findings of Eliapenda (2020) who discovered that supply chain disruption is caused by lack of mutual planning and association. When asked whether supplier development promotes technological exchange, legal support, financial aid thus develop production capacity the respondents agreed by a mean of 3.99 and standard deviation of 0.544. Cheruyot and Miroga (2021) opine that supplier development is a win-win effort and depends on the development scheme commissioned by the firm and is achieved through cost and quality differentiation.

Demand planning and its effect on performance of large manufacturing firms

The study sought to examine the demand planning and its effect on performance of manufacturing firms and the results from the statement are as follows in table 4 below.

Table 4: Demand Planning

Statements	N	Mean	Std. Deviation
Demand planning can strike a balance between supply and demand in the market leading to customer satisfaction.	180	4.12	.556
Understanding the market trends and sales inventory improves the accuracy of forecasts generated.	180	4.25	.548
Poor demand planning can result into backorders, stock-outs or costly scrambles of raw materials along the supply chain.	180	4.33	.527
Clear forecast create basis for future planning through rational decisions in the supply chain.	180	4.12	.509
The total amount of inventory stored by our company is manageable and cost effective	180	4.23	.516
Valid N (list wise)	180		

From the findings respondents agreed that demand planning can strike a balance between supply and demand in the market leading to customer satisfaction with a mean of 4.12 and standard deviation of 0.556. The respondents also agreed that understanding the market trends and sales inventory improves the accuracy of forecasts generated (Mean = 4.25, SD =0.548) and further agreed that poor demand planning can result into backorders, stock-outs or costly scrambles of raw materials along the supply chain (Mean = 4.33, SD

=0.527). The findings obtained on whether clear forecast create basis for future planning through rational decisions in the supply chain was agreed by mean of 4.12 and standard deviation of 0.509. The findings indicated the majority of the respondents strongly agreed that the total amount of inventory stored by our company is manageable and cost effective by a mean of 4.23 and standard deviation of 0.516.

Performance of large manufacturing firms

The study sought to determine the rating of performance of large manufacturing firms in the city. Respondents were asked to indicate the extent

to which they agreed with the opinion statements given in regard to the rating of firm performance in their manufacturing firms. The findings were as shown in table 5 below.

Table 5: Performance of Large Manufacturing Firms

Statements	N	Mean	Std Dev.
Use of supply chain rationalization practices has accredited my organization with excellent quality controls of both products and services.	180	4.39	.490
The department has the support of the organization leadership and are empowered with the right tools and skills to fulfil their cost management role.	180	4.27	.446
Increased market share has led to productivity in the organization	180	4.12	.509
Procurement staffing level are adequate and knowledgeable for the realization of supply chain rationalization practices in the organization.	180	4.39	.490
The organization's structure supports the implementation of supply chain rationalization practices	180	4.27	.446
Valid N (list wise)	180		

From the study findings, majority of the respondents strongly agreed that use of supply chain rationalization practices has accredited their organization with excellent quality controls of both products and services with a mean of 4.39 and standard deviation of 0.490. When asked whether the department has the support of the organization leadership and are empowered with the right tools and skills to fulfil their cost management role majority of the respondents agreed (Mean = 4.27, SD =0.446). On a statement to ascertain if increased market share has led to productivity in the organization, the respondents agreed (Mean = 4.12, SD =0.509). The respondents were asked whether procurement staffing level are adequate and knowledgeable for the realization of supply chain rationalization practices in the organization and majority agreed (Mean = 4.39, SD =0.490). A large number of respondents indicated that the organization's structure supports the implementation of supply chain rationalization practices with mean of 4.27 and standard deviation of 0.446.

CONCLUSIONS AND RECOMMENDATIONS

The study aimed at determining supply chain rationalization practices on performance of large manufacturing firms in Nairobi City County, Kenya. The study adopted sourcing practices, information

visibility, strategic relationship and demand planning. The study assessed performance of large manufacturing firms in terms of quality controls, cost management and market share. The study generally found a positive effect of supply chain rationalization practices on performance of large manufacturing firms in Nairobi City County, Kenya.

Based on findings and conclusions of the study, the study recommended that supply chain rationalization practices needed to be implemented in the manufacturing firms as a way of improving performance. Further, the study recommended that the management should train their employees periodically to acquaint them with skills and competencies to handle dynamic technological changes in the supply chain. Additionally, the study recommended for senior leadership support across all cadre to effectively and efficiently implement these supply chain rationalization practices in entirety by boosting their staff levels so as to fulfil their cost management roles.

Correspondingly, the study recommended the adoption of sourcing practices as a way of improving the performance of manufacturing firms in order to be competitive in the liberal market. The study found a strong positive significant relationship between sourcing practices and performance. The study therefore recommended

that there was need to select and evaluate suppliers properly, carry out strategic sourcing and source both locally and globally since these are ideal practices in sourcing and holistically improved the performance of manufacturing firms.

In regard to information visibility, the study recommended that these firms needed to embrace sharing of information and wide usage of technology in the supply chain networks. These firms need to acquire modern technology and install software applications to eliminate mundane tasks performed by human and automate the entire operations and processes thus help save costs and eliminate the seven wastes. The use of technology goes handy with trainings which the study recommended periodically to gain skills and competencies thus leveraging visibility of supply chain.

Similarly, on strategic relationship, the study recommended for partnerships, associations and joint venture between buyer and suppliers. This collaboration would lead to supplier development and involvement where possible new product design and development emerge and this would expand the market share. Involvement of suppliers reduce risk on non-compliance and consequently improve performance. The study however determined that most firms lacked mechanism for training as well as motivation through awards. Imperatively, the study recommended adoption of seminars and need to hold supplier meeting through frequent visits in order to share information and create long term mutual trust and relationships.

In respect to demand planning, the study recommended an enlist demand and supply forecast as a key strategy for these firms seeking to strike the right balance between sufficient

inventory and customer demand aimed at satisfying the end users. The study further recommended the use of stochastic forecasting models to reduce forecast errors that eliminates backorders, stock-outs, and the need for lateral or reverse logistics thus holding adequate inventory good enough to keep the customer service levels.

The study finally recommended a holistic adoption of these supply chain rationalization practices in the manufacturing firm in the city by all levels of management. This would help out the underpinned problems affecting these firms such as poor performance, competition, blatant mismanagement of resources through corruption, supply chain disruptions and escalated management costs among others. The study further recommended for proper structure of the organization that supports the implementation of these supply chain rationalization practices. Nevertheless, the adoption of these practices will ultimately depend on individual needs of the firm, the type of the firm as well the industry needs.

Areas for Further Research

The current study was based on descriptive research design on the manufacturing sector, future studies should be undertaken using other research designs such as correlational, survey or experimental research designs to help in finding an in-depth investigation into the sector. Even though many manufacturing firms are found in Nairobi City County, this limited its scope and similar study should cover the whole country or region to come up with a variety of outcomes. In addition, the study covered only four supply chain rationalization practices, it is therefore recommended that future research explores other practices such as total quality management and procurement planning with knowledge strategy as a moderating variable.

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