Int Journal of Social Sciences Management and Entrepreneurship 9(2): 145-160 2025

ISSN 2411-7323

www.sagepublishers.com

PROCUREMENT MANAGEMENT AND PERFORMANCE OF SUGAR MANUFACTURING COMPANIES IN KENYA

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ABSTRACT

Sugar manufacturing companies play a vital role in Kenya's economy, contributing significantly to employment, food security, and industrial development. However, despite its importance, sugar manufacturing companies face numerous challenges that affect their performance. The main objective of the study is to determine the influence of procurement management on performance of sugar manufacturing companies in Kenya. Specifically, the study sought to determine the influence of procurement planning on performance of sugar manufacturing companies in Kenya and to establish the influence of inventory management on performance of sugar manufacturing companies in Kenya. The study used a descriptive survey research design. This study focused on sugar manufacturing companies in Kenya. According to KAM report (2024), there are 16 sugar companies in Kenya whereby 5 of them are public companies while 11 are private companies. The study therefore targeted all the 16 companies and focused on the management employees. The sample frame for this study consisted of 144 employees consisting of management employees. The sample for this study was drawn using the census method. Therefore, this study was a census of 144 employees. The study collected primary data using semi-structured questionnaires. Specifically, respondents were targeted to provide information needed for the study. Collected data was analyzed using both quantitative and qualitative techniques. In qualitative technique, the researcher performed content analysis on the findings collected from the open ended questions and presented in prose form. SPSS (version 22) was applied in analysing quantitative data where descriptive statistics was computed and presentations done in percentages, means, standard deviation and frequencies. Inferential data analysis was conducted by use of Pearson correlation coefficient, and multiple regression analysis. The study findings were presented through use of figures and tables. The study concludes that procurement planning has a positive and significant effect on the performance of sugar manufacturing companies in Kenya. The study also concludes that inventory management has a positive and significant effect on the performance of sugar manufacturing companies in Kenya. Based on the findings, the study recommends that the management of sugar manufacturing companies in Kenya should implement integrated Enterprise Resource Planning (ERP) systems. An ERP system centralizes data and streamlines key business processes such as procurement, inventory management, production planning, and financial reporting.

Key Words: Procurement Management, Procurement Planning, Inventory Management, Performance of Sugar Manufacturing Companies

Background of the Study

Sugar manufacturing companies are industrial enterprises engaged in the processing of raw materials like sugarcane or sugar beets into refined sugar and related products. These companies operate large-scale facilities where raw crops are crushed, extracted, and purified through various mechanical and chemical processes to produce different types of sugar such as white refined sugar, brown sugar, and molasses (Pegnato, 2022). Many also produce ethanol and bioenergy as by-products. Sugar manufacturing companies play a vital role in the agricultural and industrial sectors by processing raw sugarcane or sugar beets into refined sugar, which is a key ingredient in a wide range of food and beverage products (Coggburn, 2022). These companies not only contribute significantly to the economy through job creation and export earnings, but they also support millions of farmers by purchasing large quantities of raw crops. In addition, they often invest in infrastructure development and community programs in rural areas (Grimm, 2022).

Procurement is basically the acquisition through contractual means any kind of public or private works, services or supplies (Procurement and Disposal Act, 2021). It begins when organization identifies a need that requires to be met, establishes the needs procurement requirements, does the risk assessment, seeks out and evaluates the alternative solutions at its disposal, awards the contract to the successful bidder, gets the goods or services delivered, make payment and where necessary the engages contract management with the original contract being modified (Nicol, 2021). Procurement management extends to the end of its useful life of the procured item at which point the property is disposed of. From this, it's evident that procurement activities have an impact on the economic performance of any establishment. Worthington (2022) noted that effective national procurement policies can help improve the execution of infrastructure projects, yielding export and growth benefits. Procurement management practices are critical but pricey activities for any organization. This is due to the fact that organizations usually allocate a sizeable chunk of their income and operational budget (even up to 70%) towards obtaining goods and services required for the firm to run its operations, (Sindiga, Nyang'au & Mbura, 2023)

Around the world, public sector organizations are experiencing an unprecedented pace of change and as a result, they are rapidly re-evaluating their operating models and market strategies not just to withstand these market forces, but capitalize on them (Fradkov, 2022). Clearly, procurement has a significant role to play in helping the public sector achieve their objectives and prepare for the uncertainty ahead. In part, this will require procurement to focus on driving costs out of the cost base. But the opportunity also exists for the function to add value in a much more strategic way (Kaufmann, 2023)

Thai (2021) describes two types of goals in the procurement system: non procurement goals and procurement goals. Procurement goals are primarily associated with quality, reduction of financial and technical risks, and protection over competition and integrity in the system. Non procurement goals usually involve the economic, social, and political goals within the system.

Achieving efficiency in public procurement is an ambitious task, as procurement faces numerous challenges, especially due to the market structure, the legal framework and the political environment that procurers face, (Mokogi, Mairura & Ombui, 2021).

Statement of the Problem

Sugar manufacturing companies play a vital role in Kenya's economy, contributing significantly to employment, food security, and industrial development. These companies support thousands of farmers throughout-grower schemes, providing a stable market for sugarcane, which is a key cash crop in various regions (Odhiambo & Kamau, 2022).

However, despite its importance, sugar manufacturing companies face numerous challenges that affect their performance. Cost reduction is a significant challenge for sugar manufacturing companies in Kenya (Sindiga, Nyang'au & Mbura, 2023). The cost of raw materials, energy, labor, and transportation makes it difficult for companies to achieve efficient cost management. In Kenya, sugarcane accounts for over 70% of the total cost of production for sugar manufacturers (Makori, 2022). According to the Kenya Association of Manufacturers (KAM), sugar production costs in Kenya are among the highest in East Africa. The energy costs alone account for about 25-30% of the total production costs. As of 2020, energy costs in Kenya were approximately KSh 18 per unit, a considerable burden for energy-intensive industries like sugar manufacturing (Odhiambo & Kamau, 2022). In addition, the fluctuating cost of sugarcane, driven by supply shortages, often results in high costs for sugar producers. In 2020, sugar prices in Kenya ranged between KSh 4,000 to KSh 5,500 per ton, depending on the region, making it difficult for sugar manufacturers to plan for sustainable production costs. Moreover, inefficiencies in the supply chain—especially due to poor infrastructure—add to the cost burden. The World Bank estimates that poor transport infrastructure in Kenya increases the cost of sugar production by about 10-20%, further affecting profitability (Mokogi, Mairura & Ombui, 2021).

Data from the Kenya Sugar Directorate shows that over 50% of the sugar mills in Kenya operate at less than 60% of their production capacity (Sindiga, Nyang'au & Mbura, 2023). This low utilization is partly due to equipment breakdowns and inefficiencies in the production process. According to a report by the Kenya Institute for Public Policy Research and Analysis (KIPPRA), the inefficiency of Kenya's sugar mills results in an annual production loss of over 200,000 metric tons of sugar, which is approximately 10% of the country's total sugar demand (Makori, 2022). The lack of modernization in processing plants, especially in rural areas, exacerbates this issue. Furthermore, poor labor management practices and insufficient training contribute to low productivity (Odhiambo & Kamau, 2022). A 2021 survey by the Kenya National Bureau of Statistics (KNBS) indicated that labor productivity in Kenya's manufacturing sector, including sugar, is among the lowest in East Africa, with an average productivity rate of KSh 20,000 per worker per year, compared to KSh 40,000 in neighboring Uganda and Tanzania (Mokogi, Mairura & Ombui, 2021).

Maintaining the quality of goods and services is another challenge for sugar manufacturing companies in Kenya. The lack of investment in modern quality control systems results in product inconsistencies and contamination. A report by the Kenya Sugar Board (KSB) from 2019 revealed that 15-20% of Kenyan sugar was often rejected in both local and international markets due to quality issues, such as contamination with foreign matter and inconsistent sweetness levels (Sindiga, Nyang'au & Mbura, 2023). This quality inconsistency is primarily attributed to inefficient milling processes and delays in processing sugarcane, which leads to the degradation of raw materials. For instance, a 2020 survey by the KSB showed that about 25% of sugarcane harvested in Kenya is not processed within 24 hours, leading to a deterioration of the cane quality (Makori, 2022). Additionally, Kenya's sugar products have faced significant barriers to export due to quality issues, especially in regional markets like the European Union (EU) and COMESA (Common Market for Eastern and Southern Africa) (Odhiambo & Kamau, 2022). According to the Export Promotion Council (EPC), Kenya's sugar exports to the EU dropped by 40% between 2018 and 2020, mainly due to non-compliance with international quality standards. Furthermore, the lack of consistent quality control measures also impacts local consumer trust, limiting demand for locally produced sugar (Mokogi, Mairura & Ombui, 2021).

To fill the highlighted gaps, the current study sought to determine the influence of procurement management (supplier relationship management, procurement planning, information communication technology (ICT) adoption and inventory management) on the performance of sugar manufacturing companies in Kenya.

Main Objective

The main objective of the study was to determine the influence of procurement management on performance of sugar manufacturing companies in Kenya

Specific Objectives

i. To determine the influence of procurement planning on performance of sugar manufacturing companies in Kenya
ii. To establish the influence of inventory management on performance of sugar manufacturing companies in Kenya

LITERATURE REVIEW

Theoretical Review

The Theory of Constraints

The theory of constraints was developed by Eliyahu M. Goldratt (1984). The theory gives an inventory network the executives hypothesis of how associations ought to be run particularly the defense of the stock base (Zain, Safi & Safia, 2023). The idea was reached out to hypothesis of requirements (TOC) with a production which sees any sensible framework as being restricted in accomplishing a greater amount of its destinations by few imperatives (Ingabire & Dushimimana, 2023).

There is constantly one requirement and the TOC utilizes a centering procedure to recognize the limitation and rebuild the inventory base around it (Bahoza & Mulyungi, 2023) TOC underscores on the enhancement of execution inside a characterized set of imperatives of the current procedure and it gives an activity structure which joins the exercises of the chiefs and the noticeable framework components (Okello & Kihara, 2021).

TOC sees supply bases as frameworks comprising of assets, which are connected by the procedures they perform. The objective of the stockpile base fills in as the essential judge of achievement. Inside that framework, an imperative is characterized as whatever restrains the stockpile base from accomplishing better comparative with its motivation (Waswa & Namusonge, 2022). The inescapability of interdependencies inside the association makes the relationship of a chain, or system of chains, graphic of a framework's procedures. Similarly as the quality of a chain is administered by its single most vulnerable connection, the TOC viewpoint is that the capacity of any stock base to accomplish its objective is represented by a solitary, or at most not many, requirements (Apiyo & Mburu, 2023).

The hypothesis of requirements characterizes a lot of devices that change specialists can use to oversee imperatives, along these lines expanding benefits. Most organizations can be seen as a connected arrangement of procedures that change contributions to saleable yields. TOC thoughtfully models this framework as a chain, and supporters the well-known aphorism that a chain is just as solid as its most fragile connection (Mokogi, Mairura & Ombui, 2021). This hypothesis fuses that the objective or strategic an association exists, and associations can be estimated and constrained by minor departure from three measures having A, B and C class sellers unmistakably sorted (Zain, Safi & Safia, 2023). This theory was used in this study to determine the influence of procurement planning on performance of sugar manufacturing companies in Kenya.

Queuing Theory

Queuing theory was developed by Will Kenton in (1976). The theory is the mathematical study of waiting lines, or queues. A queuing model is constructed so that queue lengths and waiting time can be predicted. Queuing theory is generally considered a branch of operations research because the results are often used when making business decisions about the resources needed to provide a service (Rushami *et al*, 2020).

Queues happen when resources are limited. In fact, queues make economic sense; no queues would equate to costly overcapacity. Queuing theory helps in the design of balanced systems that serve customers quickly and efficiently but do not cost too much to be sustainable (Kubwimana & Njenga, 2023). All queuing systems are broken down into the entities queuing for an activity. At its most elementary level, queuing theory involves the analysis of arrivals at a facility, such as a bank or fast food restaurant, then the service requirements of that facility, e.g., tellers or attendants (Mwesigye, 2023).

By applying queuing theory, a business can develop more efficient queuing systems, processes, pricing mechanisms, staffing solutions, and arrival management strategies to reduce customer wait times and increase the number of customers that can be served (Kamau & Kagiri, 2023). Queuing theory as an operations management technique is commonly used to determine and streamline staffing needs, scheduling, and inventory, which helps improve overall customer service. It is often used by Six Sigma practitioners to improve processes, (Mulandi & Ismail, 2021).

This study used queuing theory to establish the influence of inventory management on performance of sugar manufacturing companies in Kenya. The theory holds that queues happen when resources are limited. In fact, queues make economic sense; no queues would equate to costly overcapacity. Queuing theory helps in the design of balanced systems that serve customers quickly and efficiently but do not cost too much to be sustainable (Kairu, 2022).

Conceptual Framework

A conceptual framework is a consistently evolved, depicted and expounded system of interrelationships among factors vital in the elements of a circumstance being researched. A variable is a measurable characteristic that accept various qualities among the subject. It is in this way a legitimate method of communicating a specific trait in a subject (Mugenda, 2018). The conceptual framework shows the interrelationships among the independent variables and the dependent variables. It is the understanding of how the particular variables in a study connect with each other.

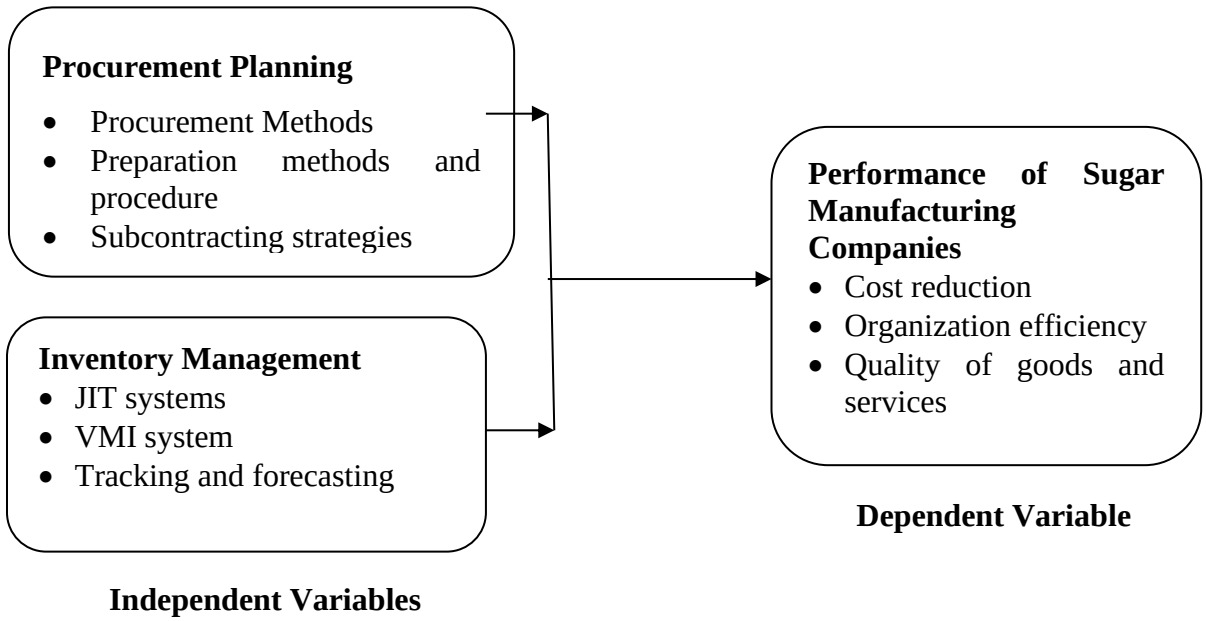

Figure 2. 1: Conceptual Framework Model

Procurement Planning

Procurement planning is the process of identifying and consolidating requirements and determining the timeframes for their procurement with the aim of having them as and when they are required. A good procurement plan will describe the process in the identification and selection of suppliers/contractors/consultants (Ingabire & Dushimimana, 2023).

A procurement plan is a process in which a company decides what they need, who will provide the products, and when orders will be fulfilled. Many departments within an organization are involved in the procurement team to aid in decision-making processes and maintain efficiency (Bahoza & Mulyungi, 2023). A team member is assigned to each stage, such as the request proposal, vendor research, and approval process, to determine what procurement strategy best meets the business needs (Okello & Kihara, 2021). Waswa and Namusonge (2022) argues that an adequate procurement management plan will identify and define realistic product expectations, such as fulfillment time, cost, and quality of products. In turn, this allows a company to recruit the required staff to optimize the efficiency of the procurement process. In doing so, a business can aim to reduce stock ordering and labor costs without sacrificing the quality of goods and services (Apiyo & Mburu, 2023).

Inventory Management

Inventory management is a systematic approach to sourcing, storing, and selling inventory—both raw materials (components) and finished goods (products). In business terms, inventory management means the right stock, at the right levels, in the right place, at the right time, and at the right cost as well as price (Rushami *et al*, 2020).

Inventory control means availability of materials whenever and wherever required by stocking adequate number and kind of stocks. The sum total of those related activities essential for the procurement, storage, sales, disposal or use of material can be referred to as inventory management (Kubwimana & Njenga, 2023). Inventory managers have to stock-up when required and utilize available storage space resourcefully so that available storage space is not exceeded. Maintaining accountability of inventory assets is their responsibility (Mwesigye, 2023). They have to meet the set budget and decide upon what to order, how to order and when to order so that stock is available on time and at the optimum cost. Hence, inventory management involves planning to organize and controlling the flow of materials from their initial purchase unit through internal operations to the service point through distribution (Kamau & Kagiri, 2023).

Empirical Review

Procurement Planning and Organization Performance

Zain, Safi and Safia (2023) researched on strategic procurement planning and procurement performance: a practical investigation of the Commercial Banks in Quetta, Pakistan. The study included descriptive and Analytical research design which involves quantitative research in form of a survey. As to describe observations and examine the findings to come up with conclusions by the correlation between strategic procurement as an independent variable and procurement performance as a dependent variable and recommendations for implementation. The target population involved employees working in commercial banks in Quetta. Employees who worked in commercial banks. Especially to procurement officers, operations managers, and accountants in each bank. The sampling techniques for this study have been used to select respondents by using non-probability convenient sampling resort to the situation of unlisted population. The exact amount of population could not be shared by the commercial banks, based on the past study where the average of sampling size is taken 250 to 300 so I have chosen 250 as my sampling size. The result of the study proved that significant positive effect of relationships between strategic procurement planning and procurement performance.

Furthermore, challenges related to procurement mediate the relationship between both constructs. The study concluded that procurement planning has a positive significant influence on procurement performance.

Ingabire and Dushimimana (2023) determined the effect of procurement planning on organizational performance within the public sector in Uganda. Descriptive research design was adopted in this research. This study has taken 106 populations who have direct works related to procurement planning functions from Ruhengeri referral hospital and reporting health centers (42 working at Ruhengeri referral hospital main location and 64 from 12 health centers under management of Ruhengeri referral hospital). The researcher has determined that due to the small population size, a census inquiry method employed instead of sampling. This study used both primary and secondary data, and each has its specific instruments for collection including questionnaire, documentary and interview. The findings revealed that majority of the variance in organizational performance of Ruhengeri Referral Hospital explained Terms of payment in procurement planning, Needs identification in procurement planning, Quality specification in procurement planning, Cost estimation in procurement planning. The results indicated that there was significant effect of needs assessments in procurement planning on organizational performance of Ruhengeri referral hospital. The results revealed the significant effect of quality specification in procurement planning on organizational performance of Ruhengeri referral hospital. The results indicate the coefficient of cost estimation in procurement planning; it shows the significant effect of cost estimation in procurement planning on organizational performance of Ruhengeri referral hospital. The study concluded that there is a significant effect of terms of payment in procurement planning on organizational performance of Ruhengeri referral hospital.

Bahoza and Mulyungi (2023) assessed the role of procurement planning on the performance of state corporations in Rwanda. Descriptive research design was adopted for this study using both qualitative and quantitative methods of data collection. The study used a sample of 52 employees of RRA and was selected by using purposive sampling techniques from a targeted population of 520 employees. Findings indicated that contract management, procurement planning, lead time and operational capacity have high positive significance. The study concluded that contract management, procurement planning, lead time, and operational capacity are paramount aspects of public procurement.

Okello and Kihara (2021) determined the effect of procurement planning on performance of government ministries in Kenya. The study used five theories to support the literature. The study theories were Principal-Agency Theory, the Institutional Theory, Stakeholder Theory and Resource based Theory. The study employed descriptive research design. The targeted population of this study was 18 government ministries. The researcher collected primary data using both open-ended and closed-ended questionnaires. From the finding, the study established that Tender Qualification and Selection, Procurement Contract Management and Procurement Planning were significant to the study. The study concluded that Government Ministries in Kenya to consider improving procurement contract award to their suppliers by improving on the way they prepare the solicitation document, receive and evaluate bids, conducts the cost analysis, award the bid as required by the act as well as the way procurement prepares the solicitation document for better performance in future.

Waswa and Namusonge (2022) researched on the factors affecting procurement planning in Bungoma county government in Kenya. A target population of 43 included procurement County officers and staff from Bungoma County Government. A sample of 22 was selected using 50% and 10 of them were individuals purposely involved in procurement and planning at the County. Both primary and secondary data was collected by use of questionnaire and document analysis guide respectively. Results in regression analysis established statistical significance relationship between independent variables; resource availability, government

procurement regulations and service delivery standards on procurement planning. The study concluded that procurement planning has a significant influence on firm performance.

Inventory Management and Organization Performance

Rushami *et al* (2020) researched on the influence of inventory management practices towards inventory management performance in Malaysian public hospitals. This study focused on the descriptive study approach and hypothesis testing of testable relationships between the constructs in order to achieve the objectives. The testable statements were used to describe the relationship between the study's variables. In order to choose an appropriate research design to answer the above research questions, this study employed several methods, which were non-probability sample, besides consultations with content experts such as the person in charge of inventory in the organization and the lecturers from a local university. The measurement issue in social science research and previous studies from other disciplines were based in reference on the selection of accurate data analysis. Hence this study utilizes descriptive statistics, which is quantitative study design. The study revealed that improper management may have been caused by various reasons such as the level of management commitment, the costs incurred and also the level of skills that the workers have. The study concluded that inventory management across the supply chain is a big challenge for improving coordination among the value chain in the organizations.

Kubwimana and Njenga (2023) assessed the effect of inventory management on organizational productivity of manufacturing companies in Rwanda. The study was descriptive designed, correlative designed, qualitative designed, quantitative designed, and primary and secondary data-based designed. Target population was 136 populations who have direct works related to inventory management of Urwibutso Enterprise. The sample size determined by the help of Solvin formula. Researcher used cluster sampling to select 101 respondents into groups based on each employee department. To collect main data, Researcher used a questionnaire and predetermined interview questions, and to compile secondary data, Researcher did a paper search means documentary technique. The study indicated that majority of the variability in the outcome variable (Productivity of Urwibutso Enterprise) can be explained by the predictors (Finished goods inventory management, Work in progress inventory management, and Raw material inventory management) in the model. It was shown that raw material inventory management, work in progress inventory management and finished goods inventory management are statistically significant in Productivity of Urwibutso Enterprise. The study concluded that material inventory management has a positive significant influence on organization performance.

Mwesigye (2023) determined the impact of inventory management on the business performance. A case study of Seroma Ltd Uganda. he researcher had a total population of 70 people from whom only 60 were chosen. Chapter four of this research had the presentation, interpretation and analysis of findings. The data was presented in form of tables, and graphs. The researcher followed the questionnaire from the demographic characteristics of the respondents and then the objectives of the study. The findings were that several challenges are faced in inventory management including Poor demand Forecasting, Risks such as Spoilage, Limited technical skills, high costs of inventory handling, Stock out costs, Limited equipments to handle inventory and finally lack of a lean supply chain. This prompted the researcher to seek for strategies that included Adopting a lean supply, Effective requirement plan, establish appropriate inventory management procedure, Effective requirement plan, Improved demand forecasting, Adoption of vendor managed inventory system prevalence, adequate order making and training of stores staff on handling, this according to respondents would improve inventory management. It was finally established that inventory management has effect on performance of Seroma Limited Uganda through improved Custon1er service, Profitability, efficiency and effectiveness in production, increased customer base: Effective management of resources,

increased sales because of adequate customer needs assessment and, improved service delivery. The study concluded that inventory management was a key determinant of a firm success.

Kamau and Kagiri (2023) assessed the influence of inventory management practices on organizational competitiveness. A descriptive research design was used in this study. The target population comprised of Safaricom Kenya Ltd senior personnel in the following departments; Finance division, customer care, supply and administration, commercial (sales and marketing) department. The study targeted personnel in those departments as they are better placed to answer questions relating to inventory control and the company's competitiveness. The target respondents included the 103 management staffs from the Company's Head Offices in Nairobi. Stratified random sampling was applied where a sample was calculated using Fishers Formula. This generated a sample of 80 respondents. The study collected primary data using a questionnaire with both open ended and closed ended questions and administered using drop and pick later method. The study found that inventory shrinkage; inventory investment and inventory turnover affects the competitiveness of Safaricom Ltd. The study concluded that inventory management practices are very vital to the competitiveness of organizations.

RESEARCH METHODOLOGY

Research Design

Mugenda (2018) define descriptive research as a process of collecting data in order to test hypothesis or answer questions concerning the current status of the subjects in the study. This study will use a descriptive research design since the design helps to understand the characteristics of a group in a given situation, offer ideas for further probe and research and help to make certain decisions (Sekaran, 2017). Further, according to Singh, *et al*,(2018) descriptive research design is suitable where the study seeks to describe and portray characteristics of an event, situation and a group of people, community or population which is the case adopted in this study. According to Yin (2017), descriptive design gives the researcher the opportunity for describing record, analyzing and reporting conditions that existed or exist. It is therefore best suited to assess the influence of procurement management practices on performance of commercial state agencies in Kenya.

Target Population

Target population is the entire set of individuals (or objects) having the same characteristics as pointed out in the sampling criteria used for the study (Quinlan, 2019). The unit of analysis as defined by Cooper and Schindler (2019) is the individual participant or the object on which the measurement is taken. This study focused on sugar manufacturing companies in Kenya. According to KAM report (2024), there are 16 sugar companies in Kenya whereby 5 of them are public companies while 11 are private companies. The study therefore targeted all the 16 companies and focused on the management employees since they are in the best position to provide information on procurement management and performance of sugar manufacturing companies in Kenya

Table 1: Target Population

Category	Target Population
Top managers	16
Middle Level Managers	48
Lower Level Managers	80
Total	**144**

Sample and Sampling Techniques

Yin (2017) explained that sampling is the process of selecting a small representative group from the entire population. Best (2017) defines a sample to be a subset of the study population

and is drawn for the purpose of analysis. The sample for this study was drawn using the census method. Census method is the statistical enumeration where all members of the population are studied. Therefore, this study was a census of 144 employees.

Data Collection Instruments

Sekaran (2018) explained instruments for data collection as means through which information is obtained from a subject selected for investigation. The study collected primary data using semi-structured questionnaires. Specifically, respondents also targeted to provide information needed for the study. Babbie (2019) explained that questionnaires are most desirable data collection tools because they are simple to administer and scoring and also data analysis.

Pilot Test

Pilot test is a small scale preliminary study conducted in order to evaluate feasibility, time, cost, adverse events, and improve upon the study design prior to performance of a full-scale research project (Kothari, 2019). Before undertaking the actual study, a pilot study was conducted to ensure reliability and validity of data collection instrument and data collection techniques. When a pilot study is conducted, it assists to identify mistakes present in data collection instrument and procedure (Nyaberi, 2019). The aim of identifying the mistakes prior to actual study is that it enables to take the appropriate restitution measures prior to carrying out the actual research. Pilot study was conducted for the purpose of testing for validity and reliability of the questionnaire. The questionnaire was piloted to a group of 14 employees. This represents 10% of the population being studied. The findings from the pilot test were excluded from the final study.

Data Analysis and Presentation

Collected data was analyzed using both quantitative and qualitative techniques. In qualitative technique, the researcher performed content analysis on the findings collected from the open ended questions and presented in prose form. SPSS (version 22) was applied in analysing quantitative data where descriptive statistics was computed and presentations done in percentages, means, SD and frequencies. Displaying of the information was done in table and figures. To facilitate this, responses were tallied, percentages of variations computed and data described and interpreted in line with study's objectives and assumptions.

Inferential data analysis was conducted by use of Pearson correlation coefficient, and multiple regression analysis. Inferential statistic is used to make judgments about the probability that an observation is dependable or one that happened by chance in the study. Pearson R correlation was used to measure strength and the direction of linear relationship between variables. The bigger the correlation coefficient R, the stronger the association between two variables. The values were interpreted between 0 (no relationship) and 1.0 (perfect relationship). The relationship was considered small when $r = \pm 0.1$ to ± 0.29, while the relationship was considered medium when $r = \pm 0.3$ to ± 0.49, and when $r = \pm 0.5$ and above, the relationship was considered strong.

Multiple regression models were fitted to the data in order to test the influence of the independent variables on the dependent variable. The study adopted multiple regression models at 5% level of significance to establish the strength and direction of the relationship between the independent variables.

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Descriptive Statistics Analysis

Descriptive statistics are brief descriptive coefficients that summarize a given data set, which can be either a representation of the entire or a sample of a population. Descriptive statistics are broken down into measures of central tendency (mean), measures of dispersion (standard

deviation), frequencies and percentage (Baggio & Klobas., 2017). This study used descriptive statistics with the help of Statistical Package for Social Sciences to analyze the study variables.

Procurement Planning and Organization Performance

The second specific objective of the study was to determine the influence of procurement planning on performance of sugar manufacturing companies in Kenya. The respondents were requested to indicate their level of agreement on various statements relating to procurement planning and performance of sugar manufacturing companies in Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 2.

From the results, the respondents agreed that procurement methods implemented in our organization are cost effective. This is supported by a mean of 3.719 (std. dv = 0.945). In addition, as shown by a mean of 3.701 (std. dv = 0.908), the respondents agreed that through procurement planning the procurement operations in their organization are efficient. Further, the respondents agreed that the procurement methods adopted are in compliance with the public procurement act. This is shown by a mean of 3.561 (std. dv = 0.776). The respondents also agreed that procurement planning influences organization performance. This is shown by a mean of 3.596 (std. dv = 0.865). With a mean of 3.526 (std. dv = 0.840), the respondents agreed that they are satisfied with the procurement methods implemented in their organization. The respondents also agreed that the organization adheres to the implemented procurement plan. This is supported by a mean of 3.508 (std. dv = 0.611).

Table 2: Procurement Planning and Organization Performance

	1	2	3	4	5	Mean	Std. Deviation
Procurement planning influences organization performance	7.0	14.0	22.8	24.6	31.6	3.596	0.865
Procurement methods implemented in our organization are cost effective	7.0	8.8	14.0	45.6	24.6	3.719	0.945
The organization adheres to the implemented procurement plan	10.5	14.0	3.5	57.9	14.0	3.508	0.611
Through procurement planning the procurement operations in our organization are efficient	10.5	7.0	19.3	28.1	35.1	3.701	0.908
The procurement methods adopted are in compliance with the public procurement act	17.5	3.5	8.8	45.6	24.6	3.561	0.776
Am satisfied with the procurement methods implemented in our organization	10.5	10.5	15.8	42.1	21.1	3.526	0.840
Aggregate						**3.622**	**0.841**

Inventory Management and Organization Performance

The second specific objective of the study was to establish the influence of inventory management on performance of sugar manufacturing companies in Kenya. The respondents were requested to indicate their level of agreement on various statements relating to inventory management and performance of sugar manufacturing companies in Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 3.

From the results, the respondents agreed that they are satisfied with the inventory management techniques in our organization. This is supported by a mean of 4.277 (std. dv = 0.873). In addition, as shown by a mean of 4.105 (std. dv = 0.981), the respondents agreed that their

organization experiences very few cases of stock out. Further, the respondents agreed that the organization has implemented vendor management inventory system. This is shown by a mean of 3.928 (std. dv = 0.925). The respondents also agreed that the organization has adopted JIT systems. This is shown by a mean of 3.859 (std. dv = 0.885). With a mean of 3.842 (std. dv = 0.821), the respondents agreed that they are satisfied with the adopted inventory management techniques.

From the results, the respondents agreed that inventory management influence organization performance. This is supported by a mean of 3.768 (std. dv = 0.905). In addition, as shown by a mean of 3.700 (std. dv = 0.605), the respondents agreed that tracking and forecasting is ensured in our organization.

Table 3: Inventory Management and Organization Performance

	1	2	3	4	5	Mean	Std. Deviation
Inventory management influence organization performance	6.9	9.0	11.0	52.4	20.7	3.768	0.905
Our organization has adopted JIT systems	8.3	13.8	17.2	29.0	31.7	3.859	0.885
Tracking and forecasting is ensured in our organization	9.7	12.4	7.6	37.2	33.1	3.700	0.605
Our organization experiences very few cases of stock out	2.8	9.0	27.6	41.4	19.3	4.105	0.981
Am satisfied with the inventory management techniques in our organization	5.5	4.1	20.0	40.0	30.3	4.277	0.873
The organization has implemented vendor management inventory system	13.3	5.1	14.0	40.5	27.0	3.928	0.925
Am satisfied with the adopted inventory management techniques	7.0	7.0	19.3	28.1	38.6	3.842	0.821
Aggregate						**3.999**	**0.867**

Performance of Sugar Manufacturing Companies

The performance of sugar manufacturing companies in Kenya was measured in terms of output in volume, customer satisfaction and number of complaints.

Output in Volume

The respondents were requested to indicate the performance of their agency in terms of the output in volume. The results were as sown in Figure 1. From the results, output in volume in the year 2015 was at 21%, in 2016 it was at 24% then decreased to 20% in the years 2017 before increasing to 23% and 26% in the year 2018 and 2019 respectively.

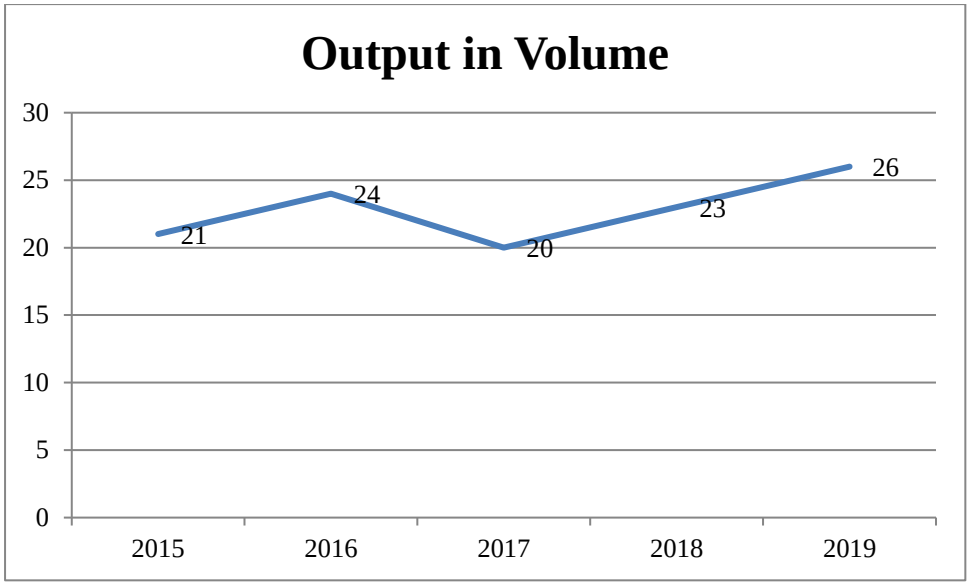

Figure 1: Output in Volume

Customer Satisfaction

In addition, the respondents were requested to indicate the performance of their agency in terms of the customer satisfaction. The results were as sown in Figure 2. From the results, customer satisfaction level in the year 2015 was at 18%, in 2016 it was at 24% then decreased to 19% in the years 2017 before increasing to 23% and 26% in the year 2018 and 2019 respectively.

Figure 2: Customer Satisfaction

Number of Complaints Received

In addition, the respondents were requested to indicate the performance of their agency in terms of the number of complaints received. The results were as sown in Figure 4.3. From the results, number of complaints received in the year 2015 was at 17%, in 2016 it was at 16% then decreased to 15% in the years 2017 before increasing to 16% in 2018 and then decreasing to 12% in the year 2019.

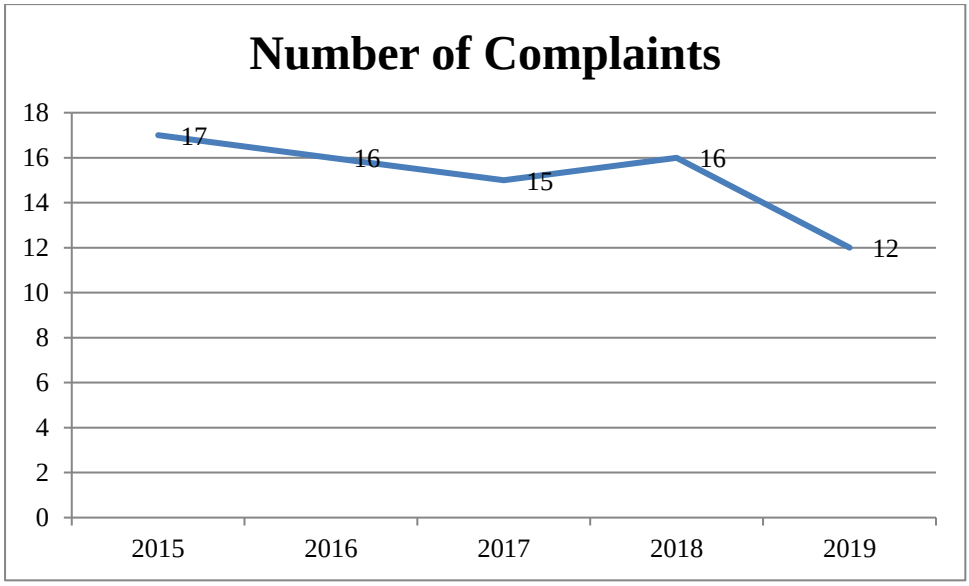

Figure 3: Number of Complaints Received

Correlation Analysis

The present study used Pearson correlation analysis to determine the strength of association between independent variables (procurement planning and inventory management) and the dependent variable (performance of sugar manufacturing companies in Kenya dependent variable.

Table 4: Correlation Coefficients

		Organization Performance	Procurement Planning	Inventory Management
Organization Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	127		
Procurement Planning	Pearson Correlation	.857**	1	
	Sig. (2-tailed)	.001		
	N	127	127	
Inventory Management	Pearson Correlation	.915**	.189	1
	Sig. (2-tailed)	.000	.081	
	N	127	127	127

The results revealed that there is a very strong relationship between procurement planning and performance of sugar manufacturing companies in Kenya (r = 0.857, p value =0.001). The relationship was significant since the p value 0.001 was less than 0.05 (significant level). The findings conform to the findings of Ingabire and Dushimimana (2023) that there is a very strong relationship between procurement planning and organization performance.

The results also revealed that there was a very strong relationship between inventory management and performance of sugar manufacturing companies in Kenya (r = 0.915, p value =0.000). The relationship was significant since the p value 0.000 was less than 0.05 (significant level). The findings are in line with the results of Kamau and Kagiri (2023) who revealed that there is a very strong relationship between inventory management and organization performance.

Regression Analysis

Multivariate regression analysis was used to assess the relationship between independent variables (procurement planning and inventory management) and the dependent variable (performance of sugar manufacturing companies in Kenya)

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.928	.861	.862	.10582

a. Predictors: (Constant), procurement planning and inventory management

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r-squared for the relationship between the independent variables and the dependent variable was 0.861. This implied that 86.1% of the variation in the dependent variable (performance of sugar manufacturing companies in Kenya) could be explained by independent variables (procurement planning and inventory management).

Table 6: Analysis of Variance

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	172.027	2	86.135	796.426	.000[b]
	Residual	6.568	124	.054		
	Total	178.595	126			

a. Dependent Variable: performance of sugar manufacturing companies in Kenya

b. Predictors: (Constant), procurement planning and inventory management

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 796.426 while the F critical was 2.446. The p value was 0.000. Since the F-calculated was greater than the F-critical and the p value 0.000 was less than 0.05, the model was considered as a good fit for the data. Therefore, the model can be used to predict the influence of procurement planning and inventory management on performance of sugar manufacturing companies in Kenya.

Table 7: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.134	0.039		0.872	0.001
	Procurement Planning	0.486	0.107	0.482	4.121	0.001
	Inventory Management	0.454	0.088	0.452	5.057	0.000

a Dependent Variable: performance of sugar manufacturing companies in Kenya

The regression model was as follows:

$$\mathbf{Y = 0.134 + 0.486X_1 + 0.454X_2 + \varepsilon}$$

The results revealed that procurement planning has significant effect on performance of sugar manufacturing companies in Kenya, $\beta 1=0.486$, p value= 0.001). The relationship was

considered significant since the p value 0.001 was less than the significant level of 0.05. The findings conform to the findings of Ingabire and Dushimimana (2023) that there is a very strong relationship between procurement planning and organization performance

In addition, the results revealed that inventory management has significant effect on performance of sugar manufacturing companies in Kenya β1=0.454, p value= 0.000). The relationship was considered significant since the p value 0.000 was less than the significant level of 0.05. The findings are in line with the results of Kamau and Kagiri (2023) who revealed that there is a very strong relationship between inventory management and organization performance

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The study concludes that procurement planning has a positive and significant effect on the performance of sugar manufacturing companies in Kenya. Findings revealed that procurement methods, preparation methods and procedure and subcontracting strategies influence the performance of sugar manufacturing companies in Kenya.

The study also concludes that inventory management has a positive and significant effect on the performance of sugar manufacturing companies in Kenya. Findings revealed that JIT systems, VMI system and tracking and forecasting influence the performance of sugar manufacturing companies in Kenya.

Recommendations

The study recommends that the management of sugar manufacturing companies in Kenya should adopt data-driven demand forecasting. By leveraging historical production data, market trends, and seasonal patterns, companies can more accurately predict their raw material and supply needs. This proactive approach minimizes the risks of overstocking or stockouts, reduces procurement costs, and ensures uninterrupted production.

The study also recommends that the management of sugar manufacturing companies in Kenya should adopt real-time inventory tracking systems. By using technologies such as barcode scanning and RFID (Radio Frequency Identification), companies can monitor stock levels, movements, and usage patterns with greater accuracy and efficiency.

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