



**ROLE OF PUBLIC PROCUREMENT AUDIT ON SUPPLY CHAIN PERFORMANCE
OF STATE CORPORATIONS IN NAIROBI CITY COUNTY, KENYA**

¹ Mutegi Edna Njoki, ² Dr. Thogori Miriam

¹ MsC Student, Procurement and Contract Management, Jomo Kenyatta University of
Agriculture and Technology

² Lecturer, Jomo Kenyatta University of Agriculture and Technology

ABSTRACT

The study was aimed at establishing the role of public procurement audit on supply chain performance of state corporations situated in Nairobi County, Kenya and provide relevant recommendations. The study sought to establish the effect of procurement planning audit, and tender preparation audit. This was achieved through the review of both theoretical and empirical literature. Descriptive research methodology was used to address the gaps identified in the literature and also response to the research questions were obtained. A sample of 94 respondents was selected from the 125 state corporations situated in Nairobi County, Kenya. Stratified random sampling technique was applied in the selection of the sample from the target population. Primary data was collected from Supply Chain Officers through administration of questionnaires. Questionnaires were deemed to be more effective tools of data collection as results obtained therefrom could easily be quantified by the researcher through the use of a software package. The instruments were adequately created based on the study objectives and their validity and reliability were determined. In order to analyze the data gathered, descriptive and inferential statistics were employed. To reflect the link between the variables under research, i.e., the dependent and independent variables, the study used multiple regression as well as correlation analysis. Data was analyzed using the Statistical Package of Social Sciences (SPSS) version 24 to provide information that was graphically represented by charts, frequencies, and percentages. The findings also demonstrate that an increase of one unit in the procurement planning audit will result in a 0.250 increase in the scores of state corporations' supply chain performance; an increase of one unit in the tender preparation audit will produce a 0.481 increase in supply chain performance.

Key Words: public procurement audit, supply chain performance, state corporations, procurement planning audit, tender preparation audit

Background of the Study

Public procurement, in its most basic definition, is the use of public funds from state budgets, domestic loans or loans from abroad guaranteed by the state, as well as foreign aid and profits from other state-run economic operations, to purchase things and hire persons and services. Given the size of public resources, auditing is seen as the foundation of sound public administration. According to the (Institute of Internal Auditors, 2018), auditors tend to assist public sector organizations achieve accountability and integrity, improve their operations, and in the process, instill confidence among citizens and stakeholders through provision of an unbiased, objective assessments of whether public resources are being managed responsibly to attain efficiency.

The Public Procurement and Asset Disposal Act, 2015, section 43(2), states that the Authority shall conduct procurement audits during the preparation of the tender, contract audits during the implementation of an awarded tender, and performance audits following the conclusion of the contract with regard to any procurement or asset disposal that may be necessary.

Public procurement accounts for around 12% of the GDP in the majority of industrialized countries, and 29% of government spending in OECD member countries, per (Organization for Economic Co-operation and Development, 2019). According to the PPOA Annual Report 2018, the budgets of Ministries, Departments, and Agencies (MDAs) are made up of around 45% spent on procurement. According to Kenya's Controller of Budget, public procurement accounts for 16% of the country's GDP. This demonstrates unequivocally that public procurement plays a crucial function in a nation as it promotes rises in the national economy (KNBS, 2018).

Public procurement audit is aimed at gathering and evaluating sufficient evidence on government procurement activities to ascertain whether specified laid down procedures have been complied with or not (Richard, 2020). Procurement audit is aimed at determining if the procuring entity followed proper procedures when procuring. The audit also ascertains whether the process is in compliance to the stipulated laws and regulations. During procurement audit, the auditors also assess whether proper records have been maintained to justify the procurement, and whether budgetary limits set by the parliament were adequately adhered to. In addition to these, it is essential for the auditors to evaluate the adequacy of rules and procedures applied in the operations so as to protect public assets. According to (Wayne State University, 2018), public procurement audits enable realization of value addition to public procurement by ensuring accountability, compliance and transparency, consequently leading to improved performance.

(Etse & Asenso-Boakye, 2018) State that the general reason for which public procurement audits are conducted is to evaluate whether performance is at par with pre-determined standards set within defined parameters so that improvements can be made. Other specific reasons for which these audits are conducted include, but are not limited to; provision of assurance on efficiency and effectiveness of operations, prevent fraudulent activities, to evaluate the level of compliance to set laws and regulations as well as to address corruption risk. These audits are also conducted to see if there was an actual need for a certain procurement and if value for money was accomplished. It is crucial to recognize that over time, customers have become more demanding in terms of higher quality, faster delivery, and overall better value. This has subsequently led to adoption of public procurement audit in corporations in a bid to achieve competitive advantage over their competitors.

Statement of the Problem

The Kenyan government spending is estimated at approximately 24.9 percent of GDP in FY2018/19 with a projected pickup in capital spending to 6.3 percent of GDP (World Bank, 2019). According to (Ambasa, 2018), it is estimated that 25% of public expenditure could be saved through effective implementation of public procurement and disposal of assets laws. This is

significant considering the fact that public procurement accounted for approximately 12% of the GDP in 2018. Through public procurement audit, adherence to the procurement laws and regulations are precariously assessed.

According to a report dispensed by the auditor general for financial year 2016/17, lack of adherence to public procurement laws and non-compliance to the Public Finance Management Act greatly contributed to widespread misuse of public funds. This was majorly due to weak financial controls and failure to properly account for funds spent. Procurement audits undertaken noted incidences of non-compliance to procurement guidelines by state corporations in Kenya.

Observations indicate that state corporations tendering committees from time to time manipulate the regulations to restrict taking part of interested suppliers in procurement, or even direct the outcome of others (Chemoiywo, 2014).

In a report compiled by the auditor general on public procurement regulations violations, findings suggest that out of 61% of cases of violation that occur at the Order and payment sub-stage, a total of 40% relate to unsupported expenditure. In addition to this, 22% of them are because of abuses of the supplier in carrying out the contract in relation to the quality, pricing and timing and at least 2% can be accredited to payment for goods not supplied by the entity. This is a clear indicator of inefficiencies being witnessed in public procurement. In most of these cases, it was also noted that the value for public money could not be ascertained. According to (Institute of Economic Affairs, 2018), these procurement violations subsequently lead to delays in implementation or in some cases, complete failure to complete projects. A number of studies have been undertaken on public procurement audit globally. (Chimberengwa, N, & Gombe, 2017) for example, accredits poor service delivery in Zimbabwe to difficulties faced in the procurement process. Locally, Kioko and Were (2019) executed a study on factors affecting efficiency in public procurement audit in the private sector in Kenya. (Karugo, 2017) Also did a study on factors affecting effective procurement auditing of CDF projects in Kenya. The impact of public procurement audit on the supply chain performance of state-owned companies located in Nairobi County, Kenya, was not, however, examined in this research. By investigating the impact of public procurement audit on the supply chain performance of state corporations in Nairobi County, Kenya, this study aims to close this gap.

Objectives of the Study

The study's general objective was to establish the role of public procurement audit on supply chain performance of state corporations in Nairobi County, Kenya. The study was guided by the following specific objectives;

- i. To determine the effect of procurement planning audit on supply chain performance of state corporations in Nairobi County, Kenya.
- ii. To assess the effect of tender preparation audit on supply chain performance of state corporations in Nairobi County, Kenya.

LITERATURE REVIEW

Theoretical Review

The Theory of Constraints

This theory guides the study in determining the association between procurement planning and supply chain performance of state corporations in Nairobi County, Kenya. Theory of constraints is an approach to the management of operations, and it was developed by Goldratt (1981). It basically provides a supply chain management theory of how organizations should be run especially when planning and preparing for procurement. The constraints experienced during procurement planning are: Inadequate budget allocation, inappropriate procurement method and government regulations and directives.

Due to inadequate budget, the quality and lead time of goods, services and works are affected since the procuring entity will settle for low quality goods. These goods may ultimately not be procured on time. Improper procurement methods however affect lead time and cost. The procurement method selected affects the time period for goods to be delivered. For example, direct procurement takes a shorter period of time compared to open tendering. Government directives such as restrictions on sourcing will affect lead time and cost. For instance, all government agencies are expected to only procure medical supplies from KEMSA. Any delays in supply or change in costs tend to have a negative impact on the government agencies procuring the medical supplies.

The theory of constraints (TOC) is a management tool, which considers any manageable system as being limited in reaching more of its objectives by some constraints. According to TOC, there is always, at least, one single constraint, and TOC implements a concentrating process to detect the constraint and restructure the remaining of the organization around it (Orouji, 2016). TOC majorly emphasizes on the optimization of performance within a defined set of constraints of the existing process and it provides an action framework which combines the activities of the managers and the visible system elements (Hansen, Schaumburg-Muller & Pottenger, 2008).

TOC views procurement planning as systems consisting of resources, which are linked by the processes they perform. The major goal of procurement planning is to serve as the primary judge of success. Within that system, a constraint is defined as anything that limits preparation and planning from achieving higher performance relative to its purpose (Tummala, Phillips & Johnson, 2016). The theory of constraints defines a set of tools that change agents can use to manage constraints, thereby increasing profits.

According to (European Commission, 2010), a majority of businesses can be viewed as a linked set of processes that transform inputs into saleable outputs. The theory of constraints conceptually models this system as a chain, hence, advocating the familiar adage that a chain is only as strong as its weakest link.

In this study, one of the variables of public procurement audit will clearly depict the linkage to one of the measures of success that are used to measure the performances of organizations in the public sector. The theory of constraints therefore impacts on the procurement planning variable.

Institutional Theory

This theory will be used to establish the effect of tender preparation on supply chain performance of state corporations. Institutional theory is a widely used theory in social studies. Kraft's public policy summarizes the theory as policy-making. It emphasizes the formal and legal aspects of public institutions structures (Zheng, 2015). It considers processes through which structures, including schemes and rules become established by authoritative figures as guidelines for social behavior.

The Public Procurement and Asset Disposal Regulations, 2020 state that the Public Procurement Regulatory Authority shall create standard tender papers for use by all purchasing bodies as specified in the Eighth Schedule, as contemplated by sections 9(1)(f) and 70(1) of the Act. Government directives on procurement also provide guidance on how public entities should do advertisement for tenders. First, advertisement should be done through the state advertising agency and all tenders should be listed on the government portal. This has a cost implication on public entities as they are expected to meet the advertisement costs. The overall lead time of delivery of goods, services and works is impacted since there are approvals to be fulfilled before such tenders are floated.

According to (Wood, 2016), the theory explains how the elements are created, diffused and adapted by institutions. It also focuses on how policies fall into decline and disuse. He further states that

“institutions are transmitted by various types of carriers, including symbolic systems, relational systems, routines, and artifacts. Institutions tend to operate at different levels of jurisdiction, from the world system to localized interpersonal relationships.”

In this context, Tender preparation audit, is entrenched and implemented within the purview of the law, to provide tangible awareness. However, as this study has established, the rate of success of this institutional agenda is not giving an impressive output. As (Puddephatt and Kaspar, 2016) explain, this theory assisted the researcher to understand how Tender Preparation affects supply chain performance of state corporations. Institutional theory therefore explains the tender preparation audit variable.

Conceptual Framework

Independent Variables

Dependent Variable

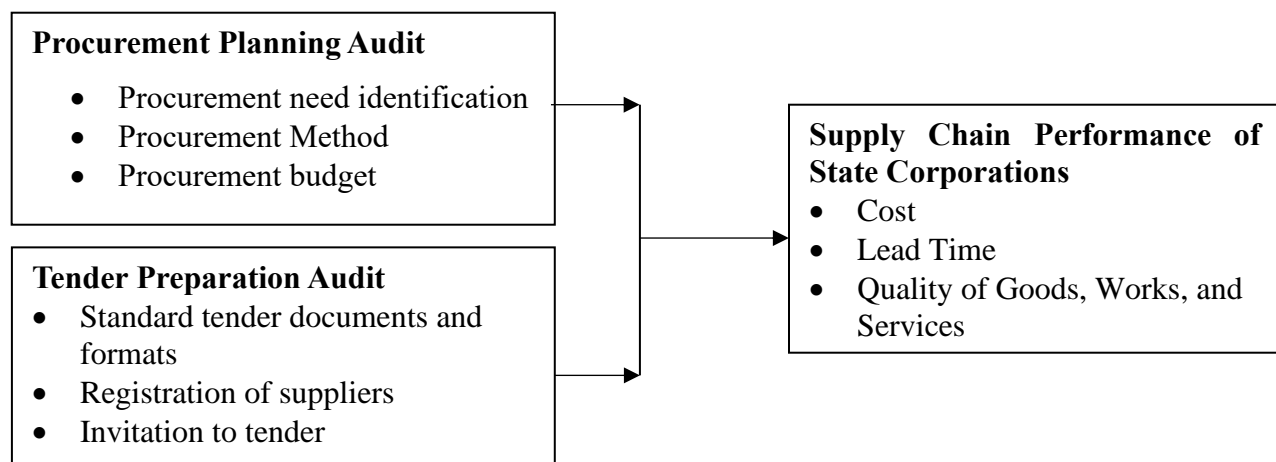


Figure 1: Conceptual Framework

Source: *Reimagined conceptual framework adapted from Salim & Kitheka (2019)*

Procurement Planning Audit

A procuring entity must create a procurement strategy for each fiscal year as part of the creation of the annual budget, as stated in Section 40(1) of the Public Procurement and Asset Disposal Regulations, 2020. An annual departmental purchase plan must be submitted to the accounting officer by the head of the user department prior to the start of the fiscal year and must be carried out in accordance with the timetables outlined therein, according to section (3). The act also describes what should be included in the procurement planning detailing, including a breakdown of the required goods, works, or services, a schedule of planned delivery, implementation, or completion dates for all such goods, works, or services, an indication of which items may be combined for procurement as a single package or through any applicable arrangements for common-user items, and an estimation of the estimated cost for procurement of items, which must include insurance.

As part of its mandate under the Act, Public Procurement Regulatory Authority the apex body with the oversight responsibility of public procurement in Kenya, has developed regulation and manuals that provide detailed and step by step information as a guide for effective implementation of the Act (Kiplagat, 2016). To meet international standard and best practices; and to ensure cost effectiveness and transparency, web-based procurement planning software IFMIS that seek to standardize the formats of entities to ensure timely delivery and receipt of procurement plans has also been developed State Corporations in Kenya (Otieno, 2019).

Planning promotes efficiency in performance of the audit work and enhances smooth flow of operations from initiation to completion of the process.

According to (Davis, 2016), planning ahead of the procurement process ensures adequate time is set aside to adequately prepare for any unforeseen challenges. (Kagai, 2016) states that Planning enables identification of risks that an organization may encounter in the forthcoming financial period. The organization is therefore able to hedge against these risks in a timely manner.

Tender Preparation Audit

In all procurement and asset disposal actions, the Ministry Departments adopt the standard procurement and asset disposal documentation outlined in the Public Procurement Asset and Disposal Act of 2015. The tender papers that a procuring organization uses in accordance with subsection must have enough details to permit fair competition among individuals who might want to submit tenders. In conjunction with the user and other pertinent departments, an accounting officer of a procuring body is in charge of creating the tender paperwork. According to regulations and as specified in the tender documents, State Departments may charge a price for acquiring tender documents (Public procurement asset and disposal Act, 2015).

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According to (Voleza, 2015), In an open procurement procedure, any company interested in participating has the opportunity to submit a bid. The bid however must conform to the requirements of the administrative department that issued the tender document. No alterations of the standard application documents, e.g. of the legal terms and conditions contained in them are permissible, as that would make it very difficult if not impossible to compare the offers received. The terms of the contract are thus laid out exclusively by the office calling for the bids. Any violation of this principle by a bidder automatically disqualifies him and his submission is rejected, all these details are well laid out in the tender advert.

In parity with these restrictions, the public call for bids must also mention all of the things that are necessary for a bidder to submit a proper and complete proposal (Perry, 2016). This often presents a major challenge to the public authorities, particularly when they are dealing with highly technical subject matter. In such cases, the bidders are allowed to ask questions during the submission phase of the process in order to clarify the content of the call for proposals.

The answers to these questions are shared with all of the bidders so as to comply with the principles of non-discrimination and transparency, which should also be reviewed by the auditors.

“The forbiddance of any modification of the terms and conditions of the call for bids is particularly worthy of notice with respect to the general terms of business and standard contract forms that are preferentially used by U.S. companies” (Richard, 2016). Such standardized forms cannot be successfully submitted in an open procedure in Germany. In the event that a bidder cannot or does not want to fulfil all the requirements of a call for proposals, the most he can do is submit a so-called “auxiliary bid” whether or not auxiliary bids are even permissible or whether or not they are only permissible in the context of a main tender can be derived from the public announcement of the call for bids.

Supply Chain Performance of State Corporations

There are financial and non-financial performance measures and all the measures have importance in supply chain management which include: support for better decision making, support for better communication, provide performance feedback and motivate and direct behavior (Borad, 2019). There are hundreds of performance measure which include: price performance, cost-effectiveness, revenue, quality, time/responsiveness, innovation, physical environment and safety, administration efficiency, internal customer satisfaction, supplier performance and strategic performance.

Departmental policies and procedures as well as applicable laws are essential when developing and implementing a Supply Chain Performance Management System. Often, supply chain managers aim at achieving several objectives instantly mostly without accounting for inherent trade-off existing in the supply chain. For example, in a bid to reduce supply costs, there is a possibility of experiencing unpleasant impacts on quality and lead time of required products or services. According to (Chemoiywo, 2014), organizations need to align their cross-departmental goals and ensure their operational KPI's are aligned to their enterprise's strategic KPI's to avoid measuring and rewarding against conflicting metrics owing to counter-productive decisions. This also promotes inefficiencies in the organization.

Supply chain management can evaluate price performance by looking at how effectively it spends purchase dollars.

The common price performance is looking at actual purchase price against planned purchase price (CIPS, 2016). These measures fall under two categories: cost changes and cost avoidance.

(Handfield, 2016) states that, "A cost change is the increase or decrease in cost resulting from a change in purchasing strategy. Cost avoidance represents the difference between a price paid and a potentially higher price which might have occurred if a purchase had not been obtained at a lower price." A number of measures are available to evaluate quality of a supply chain these include; parts per million, customer defects per supplier and field failure rates by purchase item and by supplier (Lysons, 2016). As per Lysons, Parts per million is used to express the maximum number/levels of defects that are allowable for a given product, assembly, or service. On the other hand, customer defects per supplier is used to refer to the number of defects from individual suppliers that can be used to reflect comparative quality performance among competing suppliers. Therefore, this is a measure of the amount of time in weeks or months from concept to first shipment or delivery of final product to the market. The aim is continuous reduction of time to the market (Christine, 2016).

The measures here include on time delivery, cycle time reduction, responsiveness to schedule changes, mix changes and design or service changes. As an essential part of supply chain management, the processes' performance also needs to be measured, managed, improved, and suitable metrics for it should be established (Gunaserakan, 2016). The performance of this audit processes has a major impact on product cost, quality, speed of delivery, and on delivering reliability and flexibility (Slack, 2015).

According to (Wild, 2016) all the operations planning takes place within the framework set by capacity decisions.

From this statement, the role of capacity in determining the level of all supply chain activities is clear. This highlights the importance of measuring and controlling the capacity utilization.

According to (Slack, 2015), auditing capacity utilization directly affects the speed of response to customers' demand. Hence, by measuring auditing capacity, gains in flexibility, lead-time and deliverability will be achieved.

Empirical Review

Procurement Planning Audit and Performance of State Corporations

(Momanyi, 2016) in her paper investigated the effect of public procurement process on cost of generating power in the energy sector in Kenya; A case study of Kenya Electricity Generating Company. The study adopted both case study and descriptive research designs. The population under study was all the procurement employees of Kengen. A sample of 134 was taken consisting of the procurement department employees. Data was collected using a structured questionnaire. The data was analyzed using descriptive statistics, regression analysis and frequencies and percentages. The study established that the procurement process has a significant effect on the cost of generating energy at Kengen. It was evident that the three variables that constituted the procurement process: procurement planning, supplier selection and tender process explain 56.2 percent of the cost of generating energy.

(Makabira & Waiganjo, 2014) undertook a study on Role of Procurement Practices on the Performance of Corporate Organizations in Kenya: A Case Study of Kenya National Police Service. The study adopted Descriptive Research Design. The target population was the 120 procurement personnel in Kenya National Police Service in Makeni County. Stratified sampling and simple random sampling techniques was employed in the selection of 48 respondents. The study revealed that procurement planning, controls, monitoring and staff training in procurement practices have a great role in the performance of Kenya National Police Service. The study also established that procurement planning sets in motion the entire procurement process.

(Kiage, 2013) performed a study on factors affecting procurement performance: A case of Ministry of Energy. The study was conducted through a descriptive design using a cross sectional survey within Kenya's Ministry of Energy workforce at the Nairobi head office. The study employed purposive sampling to select the sample and sample elements. This resulted to a sample size of 72 staff. A semi structured questionnaire as a data collection instrument was used. The field data was statistically analyzed using descriptive statistics and narrative summary analyses. The findings noted that Planning accounts for 26.9% of variations in procurement performance, second resource allocation accounts for 17.2%, third, staff competency accounts for 20.1 % and lastly contract management accounts for 23.3% of variations in procurement performance. The findings therefore concluded that procurement planning is a key aspect contributing to procurement performance.

Tender Preparation Audit and Performance of State Corporations

(Chemoiwo, 2014) carried a research on Kenyan state corporations' supply chain performance and public procurement practices. A sample size of 56 respondents was used in the study, which used a descriptive research approach. Using questionnaires, primary data was gathered from procurement officers. The findings noted that effective tender evaluation, use of appropriate media of advertisement for procurement opportunities as well as use of standard tender documents from PPOA impact performance of state corporations.

(Cherotich, 2018) in her paper investigated the effectiveness of procurement practices on performance of county governments in Kenya. Census approach was used to choose research participants in a descriptive research design. Close ended questionnaires were used to gather primary data from a population of 75 County employees. The findings of the study indicated that tendering had a positive effect on performance of county governments and was crucial in enhancing timely service delivery.

According to studies carried by (Kioko&Were, 2018) on factors affecting efficiency of the procurement function at the public institutions in Kenya the study established that Efficiency of public procurement procedure strongly depends on the level of competition in public contracts. This, in turn, requires wide participation of bidders. As such a situation, designing tenders with conditions that severely limit the number of potential bidders or awarding contract on nomination basis without following the normal tendering process seriously jeopardizes the spirit of competitive neutrality (Lysons& Farrington, 2015).

According to (Gunasekeran, 2015) at the national level public sector managers have to deal with a more competitive environment than has been the common practice in the past. The public is also demanding greater accountability and better service. The extensive dissemination of information and publicity has led to this competitiveness. Therefore, managing the risks associated with the complex competitive environment give rise to accountability problems, as the roles as well as the responsibilities of all of the participants in the process are not clear. Good procurement holds its practitioners responsible for enforcing and obeying the rules (Richard, 2013). It makes them subject to challenge and to sanction, if appropriate, for neglecting or bending those rules.

Accountability is at once a key inducement to individual and institutional probity, a key deterrent to collusion and corruption, and a key prerequisite for procurement credibility. According to (Korosec and Bartle, 2016) public service agencies strive to maximize overall 'value for money' for citizens. This requires consideration of issues such as client satisfaction, the public interest, fair play, honesty, justice and equity. Recent theorists also point to the importance of public administration as a moral and ethical concern and recognize that administrative action is permeated by moral choices in advertising and are therefore models of not only technical and professional competencies but also of moral behavior (Schlosser, 2014).

RESEARCH METHODOLOGY

This study employed the descriptive research approach. Descriptive research design, according to Dunn (2010), is a design that offers responses to queries such what, who, where, when, and how they are related to the problems. The plan was used to compile, encapsulate, present, and interpret data in order to make things clearer. The 125 registered state corporations situated in Nairobi County, Kenya were the target population. This state corporations list was informed by the Report of the State Corporations Advisory Committee (SCAC, 2020). The study used proportionate stratified random sampling technique. In this approach, each stratum sample size is directly proportional to the population size of the entire population of strata. That means each strata sample has the same sampling fraction. A total of 94 state corporations were selected from the 125 for the study. The sample size used is justified since it minimizes the duplicity and redundancy of the data to be obtained and the size is large enough to ensure collection of comprehensive data. The *Pagano and Gauvreau, 2000* formula was applied to obtain a sample from each stratum

The research was a combination of qualitative and quantitative research methods. Consequently, questionnaires were deemed to be the most fit choice for the undertaking of this research. The questionnaires used for the study comprised of both open and close ended questions. This study used both descriptive and inferential statistics. Descriptive statistics such as mean, percentage and standard deviation was used to present the various characteristics of the data sets such as biographical data. Tables and charts were also used to present the results of the study. To effectively explain research findings, data was arranged and evaluated in accordance with the objectives with the aid of the computer program statistical package for the social sciences (SPSS) version 22. The study used Pearson's' correlation model to test the direction of correlation between the dependent variable and the various independent variables. Multiple regression analysis described by the model was used to make inference between the collective effects of the independent variables

DATA ANALYSIS, PRESENTATION, AND INTERPRETATION

Out of the 94 distributed questionnaires, 77 were responded to and returned. This translated to a response rate of 81.91%. The response rate was assessed as adequate and a good representation of the population. It agrees with (Mugenda & Mugenda, 2013) that a response rate of 70% and above is considered sufficient.

Descriptive Analysis

Procurement Planning Audit

Responses to statements regarding role of procurement planning audit on supply chain performance of state corporations in Kenya were obtained. These responses were rated on a 5 point Likert scale ranging from; 1 = strongly agree to 5 = strongly disagree. The score of 'agree' and 'strongly agree' represent a statement highly agreed upon. The score of 'neutral' has been taken to indicate a statement agreed upon, whereas 'strongly disagree' and 'disagree' represent a statement not agreed upon. The findings have been reflected on Table 1 below. The respondents were also asked to indicate the descriptive for Procurement planning audit.

a) Procurement need identification

A large number of the respondents (36.36%) strongly agreed that the organization develops procurement plans to enhance accountability and transparency in procurement, 33.77% agreed, 19.48% were neutral whereas 10.39% disagreed.

Majority of the respondents, 35.06%, strongly agreed that Organization ensures early financial considerations/ cost-benefit analysis for items to be procured during procurement planning, 37.66% agreed, 20.78% were neutral and 6.49% disagreed. 41.56% of the respondents strongly agreed that the budget is normally compared with similar projects or procurements yet realized (historical standards), 36.36% agreed, 12.99% were neutral whereas 7.79% and 1.30% disagreed and strongly disagreed with the statement respectively as shown in the table below;

Table 1: Measurement of procurement need identification

Statements		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
The organization develops procurement plans to enhance accountability and transparency in procurement	Count	28	26	15	8	0	77
	%	36.36%	33.77%	19.48%	10.39%	0.00%	100%
Organization ensures early financial considerations/ cost-benefit analysis for items to be procured during procurement planning	Count	27	29	16	5	0	77
	%	35.06%	37.66%	20.78%	6.49%	0.00%	100%
The budget is normally compared with similar projects or procurements yet realised (historical standards)	Count	32	28	10	6	1	77
	%	41.56%	36.36%	12.99%	7.79%	1.30%	100%

Chi square= 4.9005 df=8 P-value =0.7682

The Pearson Chi square value was 4.9005, the degree of freedom was 8 and the P-value was 0.7682 which is more than 0.05.

Therefore, procurement need identification audit has a significant impact (accepted at 5% level of significance) on supply chain performance of state corporations. The findings are consistent with (Salim & Kitheka, 2019), which found that measures for identifying procurement needs (need evaluation, product characteristics, and requirement realization) have a significant and favorable impact on state corporations' procurement performances (quality products, on-time delivery, and

cost reduction), in a study aimed at determining the effects of procurement planning on procurement performance of state corporations in Mombasa County, Kenya.

b) Procurement method

The majority of respondents, 49.35%, strongly agreed that it is important to have a clear procurement technique in place before beginning any work, followed by 36.36% and 14.29% who agreed but had other opinions. Additionally, 50.65% of those surveyed firmly agreed that the organization used suitable procurement techniques and thresholds for purchase, 40.26% agreed whereas 9.09% were neutral. A large number of the respondents 41.56% and 53.25% strongly agreed & agreed respectively that Proper market analysis is conducted to ascertain costs and potential suppliers, 3.90% were neutral and 1.29% disagreed.

Table 2: Measurement of procurement method

Statements		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Clear procurement methodology is set out during procurement planning to avoid wastage	Count	38	28	11	0	0	77
	%	49.35%	36.36%	14.29%	0.00%	0.00%	100%
The organization employs suitable procurement methods for applicable thresholds in procurement	Count	39	31	7	0	0	77
	%	50.65%	40.26%	9.09%	0.00%	0.00%	100%
Proper market analysis is conducted to ascertain costs and potential suppliers	Count	32	41	3	1	0	77
	%	41.56%	53.25%	3.90%	1.29%	0.00%	100%

Chi square= 10.1404 df=8 P-value =0.2553

The Pearson Chi square value was 10.1404, the degree of freedom was 8 and the p-value was 0.2553 which is more than 0.05. This therefore indicates that procurement method audit has a significant positive impact on supply chain performance (accepted at 5% level of significance). The study agrees with (Chemoiywo, 2014) that procuring entities using competitive processes in procuring enables the firm to obtain advantageous pricing and contract conditions.

c) Procurement budget

It was observed that 48.05% of the respondents strongly agreed that effective planning allows requirements to be aggregated into larger purchases at lower unit costs, 33.77% agree, 5.19% were neutral, 7.79% disagree and 5.19% strongly disagreed. Also, 37.66% of the respondents strongly agreed that procurement planning seeks to achieve best value for money in order to maximize economy and efficiency of public spending, 42.86% agreed with the statement, 7.79% were neutral, 7.79% disagreed and 3.90% strongly disagreed.

Table 3: Measurement of procurement budget

Statements		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Effective planning allows requirements to be aggregated into larger purchases at lower unit costs	Count	37	26	4	6	4	77
	%	48.05%	33.77%	5.19%	7.79%	5.19%	100%
Procurement planning seeks to achieve best value for money in order to maximize economy and efficiency of public spending	Count	29	33	6	6	3	77
	%	37.66%	42.86%	7.79%	7.79%	3.90%	100%
There are clear procurement timeframes set out during the planning stage	Count	33	26	10	8	0	77
	%	42.86%	33.76%	12.99%	10.39%	0.00%	100%

Chi square= 9.0369 df= 8 P-value= 0.3392

The Pearson Chi square value was 9.0369 at 8 degrees of freedom. The p-value was 0.3392 which is more than 0.05, therefore concluded that procurement budget had significant impact on supply chain performance at 5% level of significance. This was in agreement with (Lynch, 2017), that the procurement procedure and schedule are key operating principles in an organization. They relate to a number of factors which not only include the price of the purchases, but also the suitability and satisfactory quality of those purchases.

Tender Preparation Audit

The study sought to establish the effect of tender preparation audit on supply chain performance of State Corporations in Nairobi County. The respondents were asked to note the extent to which tender preparation auditing affected supply chain performance of State Corporations in Nairobi County, Kenya.

a) Standard tender documents and formats

The assertion that the organization uses Standard Tender Documents in accordance with the Public Procurement and Asset Disposal Act and procurement procedures was overwhelmingly highly agreed upon by respondents. Strong agreement was at 51.95%, agreement at 40.26%, neutral at 2.60%, and disagreement at 5.19%. A significant portion of respondents, 48.05%, also agreed that the bids are appropriately and clearly described, including evaluation criteria and open to innovation. Of the remaining respondents, 37.66% disagreed, 6.49% were neutral, 5.19% disapproved, whereas 2.60% strongly opposed.

Table 4: Measurement of standard tender documents

Statement		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
The organization employs Standard Tender Documents as per PPDA Act and procurement regulations	Count	40	31	2	4	0	77
	%	51.95%	40.26%	2.60%	5.19%	0.00%	100%
The tenders are clearly and properly specified, including evaluation criteria and receptive to innovation	Count	37	29	5	4	2	77
	%	48.05%	37.66%	6.49%	5.19%	2.60%	100%
The public authority describes the minimum requirements to be met by the tenderers in the procurement document	Count	41	28	8	0	0	77
	%	53.25%	36.36%	10.39%	0.00%	0.00%	100%
Chi square= 11.9794		df= 8		P-value=0.1521			

From the table above, it was observed that the Pearson Chi square value was 11.9794, the degree of freedom was 8 and the p-value was 0.1521 which is more than 0.05. Therefore, standard tender documents and formats audit has a significant positive impact on supply chain performance of state corporations at 5% level of significance. This is agreement with (Interagency Procurement Working Group, 2020), that states that all requirements should be expressed in conducive terms to ensure receipt of adequate number of respondents. This not only allows for competition, but also enables the procuring organization to identify and award the contract to the lowest bidder, hence saving on cost.

b) Registration of suppliers

49.35% of respondents strongly agreed, followed by 33.77% who agreed, 10.39% who agreed but were neutral, and 6.49% who disagreed with the statement that procurement officers have a sound commercial awareness and understanding of suppliers and the market. The majority of respondents; 49.35% strongly agreed, 33.77% agreed, 10.39% were neutral, 2.60% and 3.90% disagreed and strongly disagreed—also agreed that the prequalification criteria for suppliers i.e.,

size of the company, track record and experience of the company with government bodies, capacity, price, etc.—are correctly defined and applied. Additionally, 48.05% of respondents strongly agreed, 38.96% agreed, 7.79% agreed but were neutral, and 5.20% disagreed that timelines are provided to prevent time waste in the tendering process.

Table 5: Measurement of registration of suppliers

Statement		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
The procurement officers have a sound commercial awareness and knowledge of suppliers and the market	Count	38	26	8	5	0	77
	%	49.35%	33.77%	10.39%	6.49%	0.00%	100%
Prequalification criteria of suppliers (i.e. size of company, track record and experience of the company with government bodies, capacity, price etc.) is properly defined and applied	Count	26	38	8	2	3	77
	%	33.77%	49.35%	10.39%	2.60%	3.90%	100%
Timelines are specified to reduce time wastage in tendering process	Count	37	30	6	4	0	77
	%	48.05%	38.96%	7.79%	5.20%	0.00%	100%
Chi square= 8.0443 df=8 p-value=0.4292							

The Pearson Chi square value was 8.0443, the degree of freedom was 8 and the p-value was 0.4292 which is more than 0.05. Therefore, registration of suppliers has a significant impact on supply chain performance of state corporations. This agrees with (Financial and Fiscal Commission, 2016), that the purpose of supplier registration is to give all prospective suppliers an equal opportunity to submit quotations as well as enhance transparency and equality. Supplier registration greatly impacts on cost, quality and lead time.

c) Invitation to tender

The results obtained indicated that 61.04% of the respondents strongly agreed that procurement opportunities are advertised using the appropriate medium, 27.27% agreed, 5.20% were neutral and 6.49% disagreed. Majority of the respondents, 53.25%, also agreed with the statement that forums are organized, and all tenderers invited for communication on clarifications on issues raised by various suppliers, 23.38% agreed, whereas 10.39% were neutral with 7.79% and 5.19% disagreeing and strongly disagreeing respectively. Also, it was noted that majority of the respondents at 55.84% strongly agreed that all potential suppliers receive the same information at the same time and the terms are clearly outlined, 27.27% agreed, 9.09% were neutral and 3.90% both disagreed and strongly disagreed.

Table 6: Measurement of invitation to tender

Statement		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Procurement opportunities are advertised using the appropriate medium.	Count	47	21	4	5	0	77
	%	61.04%	27.27%	5.20%	6.49%	0.00%	100%
Forums are organized and all tenderers invited for communication on clarifications on issues raised by various suppliers	Count	41	18	8	6	4	77
	%	53.25%	23.38%	10.39%	7.79%	5.19%	100%
All potential suppliers receive the same information at the same time and the terms are clearly outlined.	Count	43	21	7	3	3	77
	%	55.84%	27.27%	9.09%	3.90%	3.90%	100%
Chi square = 6.8102 df= 8 p-value= 0.5572							

The Pearson Chi square was 6.8102 with 8 degrees of freedom. The P- value was 0.5572 which is more than 0.05. Therefore, invitation to tender audit has a significant impact of supply chain performance of state corporations accepted at 5% level of significance.

This is in agreement with (Smith-Deighton, 2015), that through public advertisement, the procuring entity is able to attract numerous quotations from various vendors, thus enabling selection of vendors offering lower cost and better quality.

Correlation Analysis

The level of association and significance of the variables were assessed using correlation analysis, which was also used to forecast the amount of variation in the dependent variable brought on by the independent variables.

Table 7: Correlation Analysis

Correlation	Procurement Planning Audit	Tender Preparation Audit	Supply Chain Performance of State Corporation
Procurement Planning Audit and Pearson Correlation Sig. (2-tailed)	1		
Tender Preparation Audit and Pearson Correlation Sig. (2-tailed)	.598**	1	
Supply performance of state corporation and Pearson Correlation Sig. (2-tailed)	.806**	.684**	1
	0.000	0.000	

** Correlation is significant at the 0.05 Level (2-Tailed).

The correlation summary shown in Table 7 indicates that the relationship between each of the independent variables and the dependent variable. At the 95% confidence level, all independent factors and the dependent variable were significant. Based on the findings, it was determined that the supply chain performance of state corporations in Nairobi County, Kenya and procurement planning audit performance have a positive correlation ($r=0.806$). At the 5% level, the connection was shown to be statistically significant ($p=0.000, 0.05$). When analyzing the association between tender preparation auditing and supply chain performance of state corporations in Nairobi County, Kenya, the Pearson correlation coefficient was computed and tested at the 5% significant level. According to the findings, there is a correlation between the performance of the state companies' supply chain operations in Nairobi County, Kenya, and the auditing of tender preparation ($r=0.684$).

Regression Analysis

To determine the significance of the link between the dependent variable and each independent variable that was simultaneously evaluated, multivariate regression analysis was utilized in this study. The supply chain performance of state corporations in Nairobi County, Kenya, was the dependent variable, and regression analysis was used to evaluate the proportion of the dependent variable that can be predicted from the independent variables;

Based on the findings of the regression analysis, it was determined that the dependent variable and the independent variable have a very strong positive association. This is because the independent variables were found to have an R value of 0.876, which indicates that the dependent variable and independent variables have an exact relationship. On the other hand, R square value of 0.768 indicates that (procurement planning auditing, and tender preparation auditing) can explain or predict 76.8% of the corresponding variation in performance of state corporations in Nairobi County, Kenya, which proves that the model fits the study data. According to the regression analysis's findings, the dependent variable and independent variable had a statistically significant positive connection at ($\beta = 0.761$), $p=0.000 < 0.05$).

Table 8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.876 ^a	.768	.761	.1148

Predictors: (constant), Procurement Planning Auditing, Tender Preparation Auditing,
 Dependent Variable: Supply Chain Performance of State Corporations.

Multiple Regression Analysis

The regression equation was

$$Y=15.1 + 0.250X_1+0.481X_2$$

Where;

Y: The dependent variable (supply chain performance)

X₁: Procurement Planning Audit

X₂: Tender Preparation Audit

The above regression equation has established that taking all factors into account (State corporations supply chain performance due to procurement planning, and tender preparation) constant, at zero supply chain performance will be at 15.1.

Table 9: Multiple Regression Analysis

Model	B	Unstandardized Coefficients		Standardized Coefficients	
		Std. Error	Beta	t	Sig.
(Constant)	15.1	1.023		2.65	.000
Procurement planning audit	0.250	.018	.101	4.12	.001
Tender preparation audit	0.481	.031	.054	5.23	.001

Source: Researcher, (2022)

The findings also demonstrate that, if all other independent variables are set to zero, an increase of one unit in the procurement planning audit will result in a 0.250 increase in the scores of state corporations' supply chain performance; an increase of one unit in the tender preparation audit will produce a 0.481 increase in supply chain performance. This suggests that the two independent factors all positively influence supply chain performance, with tender preparation audit contributing the most.

Conclusion

According to the study's findings, which were based on the procurement planning objective, the majority of respondents agreed that the state corporations' supply chain performance depends significantly on the way in which needs are identified for procurement and how they are procured, as this has an impact on the price of the goods and services that are purchased. This concurs with (Salim & Kitheka, 2019), who noted that procurement need identification measures (need evaluation, product characteristics, and requirement realization) have a significant and positive effect on procurement performances (quality products, timely delivery, and cost reduction) of state corporations in Mombasa County. Their study sought to ascertain the effects of procurement planning on procurement performance of State Corporations in Mombasa County, Kenya.

The second goal assessed the impact of the audit of the tender preparation. The majority of respondents, according to the researcher, believed that the quality and lead time of goods and services are significantly influenced by standard tender forms and formats. The results concur with Neema Athumani's (2015) assessment of the success of Tanzania's public sector tendering

procedure in the case of the ministry of health and social welfare. According to the study, if tendering is carried out and managed in accordance with the established efficient methods and regulations, the result is the best quality of goods given in accordance with the public's expectations.

Recommendations

State corporations should have contingency funds to ensure continuity of procurement whenever faced with budget cuts. This ensures procurement is undertaken without delays as per the procurement plan and subsequently enhances performance of these organizations. When submitting requests, user departments should conduct research and offer a reasonable foundation for their estimates, including the amount and quality needed, as inaccurate estimates by user departments contribute to the purchase of subpar goods and services as well as delays in obtaining these requests. Additionally, as the budgets do not account for inflation, the state corporations should engage prequalified suppliers to deliver the required goods, services, or works at pre-negotiated and agreed-upon costs. To slash red tape and speed up procurement, firms can also consider reducing bureaucracies, particularly in the budget approval procedure. To ensure that the procurement process moves fast, it should be emphasized to have enough qualified personnel.

To provide staff with the necessary information and skills and to improve the performance of the company's supply chain, policymakers should implement frequent procurement trainings and seminars, particularly on the norms and regulations outlined in the Public Procurement and Asset Disposal Act. The tender committee members should undergo frequent training. State Corporations should invest more in appropriate e-procurement technologies to increase efficiency and effectiveness of the procurement process as well as save on costs, thus, improving their supply chain performance. Confidentiality should be guaranteed during the tender preparation process and measures put in place to avoid conflict of interest, such as requirement for declaration of conflict before involvement by all staff.

Areas for further Studies

The study was restricted to three performance measures; cost, lead time, and quality as well as two procurement audit variables: procurement planning audit, and tender preparation audit. Future study is therefore required to confirm the findings using multidisciplinary metrics of supply chain performance, a wider scope of procurement audit, and application to various demographics.

Since the roles analyzed in the study are not all-inclusive, additional research is also required to determine other functions of procurement audit on state corporations' supply chain performance.

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