
**Procurement Methods and Procurement Performance of Public Universities
in Nairobi Metropolitan Region, Kenya.**

Evans Mutugi Mwaririe¹ and Miriam Thogori Nyambura²

¹ Jomo Kenyatta University of Science and technology,
School of Entrepreneurship, Procurement and Management,
P.O. Box 62000 – 00200, Nairobi.

² Jomo Kenyatta University of Science and technology,
School of Entrepreneurship, Procurement and Management,
P.O. Box 62000 – 00200, Nairobi.

doi.org/10.51505/IJEBMR.2024.8507

URL: <https://doi.org/10.51505/IJEBMR.2024.8507>

Received: Apr 24, 2024

Accepted: May 03, 2024

Online Published: May 16, 2024

Abstract

This study's main objective was to ascertain how public procurement methods, impact the effectiveness of public universities in Nairobi Metropolitan region. One hundred and twenty five staff members from each of the seven public universities in Nairobi Metropolitan region made up the study's target population. A descriptive research design was used. Since information was gathered from the seven public universities in Nairobi Metropolitan region, the study used the census methodology. Questionnaires were used to collect data. The tools were pre-tested by ten members of the Machakos University procurement team. The Cronbach Alpha coefficient was used to gauge the instrument's dependability. Inferential statistics were used to analyze the data, and the results were presented using cross-tabulations, frequency diagrams, and percentages. The data analysis made use of multiple regressions and Pearson's correlation. The Statistical Package for Social Sciences was used to aid the analysis. The study established that public procurement methods have a statistically significant influence on procurement performance in public universities in Nairobi Metropolitan Region, Kenya. Thus, each public procurement practice; tendering process, supplier evaluation and purchase monitoring statistically affects procurement performance in terms of costs, lead times and quality aspects. The study was expected to serve as a foundation for developing procurement policies in Nairobi Metropolitan region's public universities and as a springboard for additional research in the area.

Keywords: Procurement, Performance, Procurement Methods, Public Universities.

1. Introduction

1.1 Background of the Study

The economic climate in today's world is very unstable. Customers demand high-quality products and services put a lot of pressure on businesses all over the world. The survival of public institutions, client satisfaction, the interest of the general public, fair play, and honesty depend on effective procurement (OECD, 2020). Procurement performance can be affected by defective procurement activities and proper procurement activities can increase performance of the procurement department; improper procurement activities can result to poor performance which can lead to collapse of the organization (Kiage, 2013). Effective procurement practice is seen as the surest way of boosting procurement performance (Forsgren & Rahkonen, 2019). A procurement activity's effectiveness depends on its foundation being a complex procurement policy. A thorough procurement procedure that ensures that all parts of the procurement process are outlined will ensure the success of the next contract. The steps the purchasing organization takes to regulate and coordinate its performance in order to boost productivity while reducing costs and time are known as procurement procedures (Carr and Smeltzer, 1997). Thus, it is predicted that the practice of procurement would enhance procurement performance. The procurement process outlines the conditions of the offer, such as the terms of the supplier, contract, agreement, and response list (Findlay, 2021).

The term "procurement performance" refers to a metric used to gauge how effectively the procurement function achieves goals and objectives at the lowest possible cost (Nasra,2014). In an effort to enhance the performance of the procurement sector, the PPADA (2015) was implemented as regulations for procurement. The national government still spends about Kshs. 234 billion on procurement each year, in spite of these policies. But due to inflated procurement quotations, the national government loses close to Kshs. 121 billion annually, or about 21% of the national budget (KISM 2020). The government of Kenya through a presidential notice suspended chief officers pending clearance by anti-corruption agency in 2020, 60% of those who were not cleared were in public universities and half of those were public procurement officers of universities in Nairobi Metropolitan region (GoK, 2020). Only 7 (2%) of the 322 contracts audited by PPOA at the end of 2019 in Nairobi Metropolitan region universities were compliant, according to the audits. According to successive audit checks (PPOA compliance reports, 2019, 2020; PPOA Baseline survey report, 2019; and PPOA Capacity Building Strategy Report, 2020), Kenya's compliance with procurement regulations is still low and insufficient. Procurement performance can be measured by determining cost reduction aspects, lead times that is organization should reduce the time between ordering and delivering and quality aspects in an organization where the quality should be of standard.

According to Public Procurement Regulatory Authority reporting guidelines (2015) there are 14 components of procurement methods namely; descriptions of goods; quantity; procurement method; funding source; estimated cost; time process; invite/ advertise tender; open tender; analyse tender; committee award approval; notification of award; contract signing; total time to contract signature and total time to contract completion The components of the procurement methods have been generalized into the following four variables as suggested by ISO 10845-

1:2020, Singh et al, (2020), Changanima et al.(2021) and section (VI) in the Public Procurement and Asset Disposition Act (2015); procurement methods, tendering process, supplier evaluation and purchase monitoring . Procurement methods are the procedures used to coordinate the acquisition of the goods and services required for a company to function effectively (Findlay, 2021). The precise method will employ strategies like bulk buying, the creation of a set list of suppliers, and the implementation of a reorder schedule in order to maintain low inventories and reduce costs associated with the acquisition of such goods and services (Gadde, 2017). Because procurement procedures control costs and clearly define how purchases will be made, the organization benefits from them. The procurement process may be altered as the needs of the entity change to take into account those brand-new circumstances. This is necessary to maintain the practice's efficacy in serving the interests of the business or non-profit organization as well as to maintain the simplicity and orderliness of the acquisition procedure (Günther, 2007). The regulatory framework governing procurement methods in Kenya is provided by PPADA 2015, which provides public entities with guidelines on the procurement methods to be used by the organizations. The act lays out the guidelines and requirements for the procurement methods. On the actual influence of public procurement methods on the efficiency of procurement in public universities in Nairobi Metropolitan region, Kenya, there are, however, very few studies that are in conflict with one another. An organization's downfall could be brought on by a lack of transparency in handling procurement activities, corruption, and financial misappropriation as a result of bad procurement procedures(Tukuta & Saruchera,2015).

Procurement methods involve procurement methods, tendering process, supplier evaluation and purchase monitoring as the main aspects which affect procurement activities (Abdullah & Maharjan, 2003). This study primarily focused on the four aspects of procurement methods because they may have an impact on the procurement activities of public universities. The process of haggling over terms and buying products, services, or works from a third party is known as a procurement method. Techniques like competitive bidding or tendering are frequently used to achieve this (Hibberd & Djebarni, 1996). Utilizing procurement techniques ensures that customers will continue to be supplied with their needs by assessing the supplier's capacity (Remko, 2020). Lack of proper procurement procedures causes delays in meeting customer demands and project completion (Mpofu et al., 2017). Determining how procurement methods impact public universities in the Nairobi area is the researcher's primary goal. Cost-cutting measures may be affected if procurement procedures are not handled properly. The procurement methods can reduce lead times if they are done properly and are ordered at the right time and also, they can improve quality aspects if done according at the right organization specifications.

Basheka (2008) claims that the primary activity that establishes the framework for later procurement activities is tendering process. The planning ideals, suggest that tendering process can be carried out in a perfectly harmonious setting (James, 2004). The purpose of tendering process, according to the study, is to address the issues of what to buy, when to buy it, and where to acquire it. Among the factors that must be taken into account are the availability of resources, the methods of procurement that will be used, the impact of timely procurement on the user of

the item(s), the procuring and disposing entity, the effectiveness of the procurement process, and the parties involved in the procurement. The responsibilities included in planning include figuring out the scope, the main purpose, the client requirements, and carrying out procurement activities, according to Brown and Hyer (2010). Another basis for time estimation is the provision of products and services at the price quoted. Tendering process is very critical as it affects cost reduction where organization tries to minimize expenses, ensure quality and reduce on lead times.

1.1.1 Public Procurement methods

Public Procurement methods involves the activities used by the procurement department to control procurement of goods from suppliers and to ensure efficient delivery of customer needs. Effective use of procurement procedures guarantees timely delivery of goods and services to clients and uninterrupted project progress. Procurement methods include procurement techniques like supplier evaluation and tendering, tendering process, supplier evaluation, and purchase monitoring , all of which are crucial for an organization's purchasing decisions. According to a 2017 investigation by Odero & Ayub to determine the impact of procurement methods on the performance of public sugar manufacturing firms in Western Kenya, staff competence had a positive and significant impact on performance, while tendering process had a positive but insignificant impact. Mokogi et al. (2015) conducted research on the effects of procurement methods on the performance of commercial state-owned firms in Nairobi Metropolitan region, using organizational capability, buyer-supplier relationships, supplier selection processes, and procurement process management as independent variables. The results of the study showed that organizational competencies, procurement process management, relationships between buyers and suppliers, and supplier selection processes all had an impact on the performance of the state-owned firms. To ascertain whether the findings of the current study differ from those of Odera et al. (2017) and Mokogi et al. (2015), which used some of the same variables as supplier evaluation and tendering process, the current study used procurement methods, tendering process, supplier evaluation, and purchase monitoring . Anane et al., (2019) examination into how procurement methods affect service delivery in VRA Ghana found that sustainable procurement, tendering process, and procurement policy had a beneficial influence on VRA's capacity to provide services. According to Matunga et al. (2013), their study to ascertain the influence of e-procurement on effective procurement in public hospitals: a case of Kisii level 5 hospital found that e-tendering, e-quotations, and e-sourcing had a significant impact on service delivery. The only issues were a lack of finance and insufficient staff training on how to use the online system. These studies—done in Ghana and Kisii, respectively—were not conducted in Nairobi Metropolitan region; the present study gathered data from seven public universities in the county. To compare the results of the current study to those of Anane et al. (2013), who used an explanatory research approach, the study adopted a cross sectional descriptive research design. This study used all, procurement methods, supplier evaluation, and purchase monitoring to evaluate their impact on procurement performance because the majority of these studies used tendering process, supplier evaluation, and tendering as the primary components of procurement methods. By utilizing various contexts in these studies, the research was driven to ascertain how

public procurement methods affect the procurement performance of public universities in Nairobi Metropolitan region.

1.2 Problem Statement

Kenya's procurement performance has presented significant difficulties. In an effort to enhance the performance of the procurement sector, the PPADA (2015) and the PPDAR (2006) were implemented as regulations for procurement. The national government still spends about Kshs. 234 billion on procurement each year, in spite of these policies. But due to inflated procurement quotations, the national government loses close to Kshs. 121 billion annually, or about 21% of the national budget (KISM 2020). The government of Kenya through a presidential notice suspended chief officers pending clearance by anti-corruption agency in 2020, 60% of those who were not cleared were in public universities and half of those were public procurement officers of universities in Nairobi Metropolitan region (GoK, 2020). Only 7 (2%) of the 322 contracts that were audited at the end of 2019 in Nairobi Metropolitan region Universities by PPOA were in compliance. Similar empirical studies on procurement methods and performance have been criticized in a number of ways. Consecutive audit checks reveal that Kenya's compliance with procurement regulations is still low and insufficient (PPOA compliance reports, 2019, 2020; PPOA Baseline survey report, 2019, and PPOA Capacity Building Strategy Report, 2020). First, the findings have shown contradicting findings with some reporting positive relationship between procurement methods and procurement performance (Betty, 2015; Musau, 2017) while others have reported negative relationship (Mutinye, 2018). Secondly, there have been conceptualization challenges in that the studies have not conceptualized procurement methods based on its four components; procurement methods, tendering process, budgetary allocation and purchase monitoring. Hussein (2017) related procurement performance and operational efficiency; African development bank (2016) did a critical literature review on procurement methods and procurement performance but failed to gather original findings on the area. Both studies recommended a study to be done on procurement methods and procurement performance using primary data. Finally, public universities have not looked into procurement methods and performance. The current study aimed to fill this knowledge gap by investigating the connection between procurement methods and performance in public universities in Nairobi Metropolitan region, Kenya.

1.3 Specific Objective

To determine the relationship between procurement methods and procurement performance of public universities in Nairobi Metropolitan region, Kenya.

1.4 Research Questions

What is the effect of procurement methods on procurement performance of public universities in Nairobi Metropolitan region, Kenya?

2. Literature Review

2.1 Conceptual Framework

The independent variable in this study is public procurement methods, which are further divided into, tendering process, supplier evaluation, and purchase monitoring.

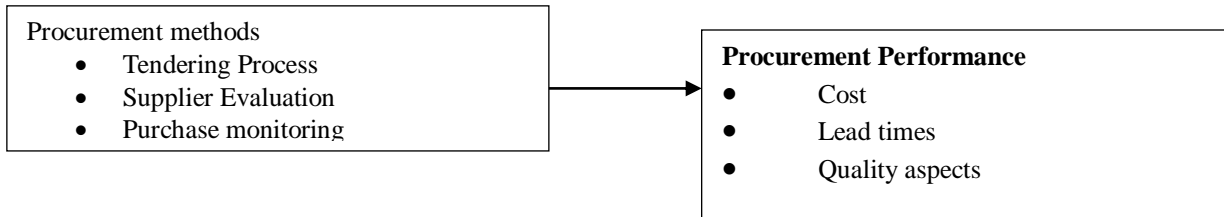


Figure 1: Conceptual Framework

2.2 Empirical Review

Oladiran et al. (2013) conducted a study to evaluate how procurement methods affected the success of construction projects in Nigeria. Given that Lagos State hosts the majority of Nigeria's construction activity, structured questionnaires were given to participants in the sector to gather information for this study. The majority of the inquiries centered on the various procurement methods frequently used in Nigeria's building sector. The data analysis employed descriptive statistics. The outcome showed that in Nigeria, the most popular method for project execution is through traditional methods of procurement. While construction management system outperforms design and build in terms of cost, it falls short in terms of quality. The study came to the conclusion that no procurement method is a one-size-fits-all solution because different procurement methods may succeed in some situations while failing in others. To see if the findings would differ, the current study concentrated on public universities in Kenya while the previous study focused on Nigeria. Rashid et al. (2006) conducted a study to determine the effect of procurement methods on the performance of building projects. Among the many procurement systems, there are differences in the organizational strategy for project delivery, the assignment of duties, the order in which activities are completed, and the technique and procedure. How effectively a project works in relation to the established aims or objectives that make up the project parameters is described by the phrase "degree of achievement of given endeavor or endeavor." The three primary project performance characteristics of time, money, and quality are the emphasis of this study, even though there are numerous additional elements that also have an impact on project success. This study aimed to investigate how different procurement approaches impacted the project's success. It is appropriate for the presentation's objectives to concentrate only on the most frequently used project procurement strategies, which are traditional system, design-build, and management contracting, given that there are numerous project procurement strategies available. These procurement methods have always had an effect on the project's effectiveness.

In order to ascertain the effects of procurement strategies on the cost-effectiveness of public secondary school supplies in Nyatike District, Kenya, Oketch, (2011) conducted a study. It has been discovered that many public secondary schools purchase supplies at exorbitant prices due to

their disregard for the procurement regulations. Due to the increase in high school tuition, it is now more difficult for many children from low-income families to access higher education. In this study, which sampled 20 secondary schools from the district, the descriptive survey method was used. Then, in the sampled schools, twenty head teachers, twenty deputy head teachers, and twenty teachers who are also members of the tendering committee were each given a questionnaire. The data that had been gathered was examined using both qualitative and quantitative techniques. Additionally, there were tables, percentages, the mean, and correlation coefficients (r). Quantitative data was analyzed by writing the data down on note cards. The objectives served as the foundation for the study's conclusions. In summary, the study discovered that open tendering was not utilized by the majority of the 20 schools it examined. To see if the results differ, this study concentrated on public universities rather than secondary schools.

3. Research Methodology

3.1 Research Design

This study adopted a cross sectional survey design. Cross sectional survey designs are either descriptive or analytical. This study adopted both descriptive and analytical cross sectional survey designs.

3.2 Target Population, Sampling Procedure and Sample Size

The 125 heads of the user and procurement departments at the seven public universities in Nairobi Metropolitan region made up the study's target population (Universities Manual, 2018). The 125 department heads are actively taking part in the procurement process. PPADA (2015), which governs how public entities in the area conduct procurement activities, is the primary legal framework under which public universities in Nairobi Metropolitan region are primarily focused. The census technique was used in the study. Because the researcher specifically targets all user departments in the 7 Public Universities in Nairobi Metropolitan region, census sampling was used.

3.3 Data Collection Procedure

A structured questionnaire was the main tool utilized to collect data for the study. The study utilized closed-ended questions.

3.4 Data Analysis

Means, standard deviation, relative frequencies, and percentages were used to do a descriptive analysis. Regression was used to analyse inferential data. The multiple regression equation for predicting public procurement methods was expressed as follows: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$. Where; Y =Procurement performance, β_0 =Constant Term, X_1 =Tendering Process, X_2 =Supplier evaluation, X_3 =Purchase monitoring, $\beta_1 \dots \beta_3$ =regression coefficient of four variables and ϵ =Error Term

4. Research Findings and Discussions

4.1 Response Rate

The study aimed to gather information from 125 heads of the user/functional departments and procurement departments at the seven public universities in Nairobi Metropolitan region. The 125 department heads actively take part in the procurement process. Only 115 of the 125 participants were successfully recruited for the study, yielding a response rate of 92 %. Table 1 shows the response rate for each stratum.

Table 1: Response rate

PARTICIPANTS	EXPECTED RESPONDENTS	ACTUAL RESPONSES	RESPONSE RATE (%)
UNIVERSITY OF NAIROBI	24	23	96 %
JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY	22	19	86 %
KENYATTA UNIVERSITY	21	21	100 %
TECHNICAL UNIVERSITY OF KENYA	19	17	89 %
MULTIMEDIA UNIVERSITY OF KENYA	19	18	95%
THE CO-OPERATIVE UNIVERSITY OF KENYA	20	17	95%
GRAND TOTAL	125	115	92%

The result presented in Table 1 indicated that all universities targeted had a response rate of above 86 % while the average response rate was 92%. The high response rate in the current study could be attributed to good logistical preparations prior to and during data collection which enhanced social acceptability of the data collection assistants by the respondents

4.2 Descriptive Analysis of the Study Variables

This subsection examines the descriptive statistics that examined the relationship between procurement methods and performance in public universities in Nairobi Metropolitan region, Kenya. Extant literature has shown that procurement methods may involve the tendering process, supplier evaluation and purchase monitoring. This methods minimises the risks associated with procurement, hence if they are carried out appropriately they may lead to procurement performance. First the study sought respondents opinion on the extent to which their universities depend on the tendering process. This was meant to identify their opinion on the significance of tendering process which if carried out properly is meant to enhance procurement performance in terms of cost reduction, lead times and quality aspects. This is presented in table2.

Table 2: Procurement Methods Indicators and Parameters

Extent the universities depend on the tendering process	Frequency	Percent	Cumulative Percent
No extent	19	16.3	16.3
Less Extent	2	2.0	18.3
Moderate Extent	12	10.2	28.5
Great Extent	53	45.9	74.4
Very Great extent	29	25.5	100.0
Total	115	100.0	

The study established that 45.9% of the respondents opined that their universities depended on the tendering process to a great extent, 25.5% indicated that their universities depended on the tendering process to a very great extent. Only 16% felt that their universities did not depend on the tendering process while 10.2% were neutral. Generally 71.4 felt that their universities depended on the procurement tendering. The implication of this result is that majority of the universities may enjoy the value for their money as expected from tendering process. This finding is similar to previous study by Nuwagaba et al., (2021) who found that more than average of all public institutions had included tendering process into their everyday procedures. The study however was based in public firms in Uganda while the current study was based in universities in Kenya. Therefore, the current study findings add to existing literature in procurement. Moreover, the implication of this finding as noted by Quale (2017) is that organisations need to embrace and develop a policy on tendering approach in their procurement methods in order to enjoy superior procurement performance. Thogori and Gathenya (2014) posit that to ensure procurement meets all the needs of the user departments, there is need for institutions to conduct a proactive tendering processes.

Second, the study also sought to ascertain how universities effected their tendering process. Respondents were asked to rate the extent to which the university effected tendering processes on a Likert scale where. 5-Strongly Agree, 4- Agree, 3- Neutral, 2-Disagree and 1- Strongly Disagree.

Table 3: Conduct of Tendering Practices

Descriptive Statistics	N	Std.	
		Mean	Deviation
Request for proposal is done on timely basis.	115	4.2653	.89155
Request for quotation is done either manually or through online system	115	4.4286	.87343
Trained procurement officers' conduct evaluation of qualifications of suppliers?	115	4.0816	.63690
Aggregate	115	4.2585	0.8006

The aggregate score obtained by the study showed that public universities in Nairobi metropolitan region, Kenya adopted effective tendering practices to a large extent (4.2585) with deviations as shown by the standard deviation (0.8006). The universities conducted request for proposal is done on timely basis to a large extent (4.2653) with deviations as shown by the standard deviation (0.89155). The results showed that the universities used a blend of online and manual rrequests for quotation to a large extent (4.4286) with deviations as shown by the standard deviation (0.87343). The universities used trained procurement officers' conduct evaluation of qualifications of suppliers to a large extent, with a mean of 4.0816 and a standard deviation of 0.63690. When compared to other questionnaire items, the overall standard deviation is rather small, which indicates that the average scores for the indicators of needs assessment techniques were near to one another. The implication of this finding is that universities are expected to have superior procurement performance in terms of customer

satisfaction, timely delivery and enhanced quality of goods and services. These findings are consistent with a research by Nyambura and Mwenda (2022) which discovered that effective tendering practices was widely used in Kenyan public enterprises to fulfil procurement demands. By demonstrating that universities have incorporated the tendering process as suggested by section 130 of the procurement laws (2015), the current study's findings add to the body of existing material. Third the study aimed to determine how supplier evaluation affects the effectiveness of procurement in Kenya's public universities in Nairobi Metropolitan region. Respondents were asked to rate the extent to which the university effected tendering processes on a Likert scale where. 5-Strongly Agree, 4- Agree, 3- Neutral, 2-Disagree and 1- Strongly Disagree.

Table 4: Supplier Evaluation and the Effectiveness of Procurement

Descriptive Statistics	N	Mean	Std. Deviation
Supplier are normally assessed to check their performance.	115	3.8776	1.02811
Once a disparity in these processes is discovered, corrective measures are taken.	115	4.0612	.95049
Periodic supplier evaluations are conducted to assure high-quality products, services, and price.	115	3.5000	1.12378
In order to control costs, purchases are closely monitored.	115	3.9796	1.03525
Aggregate	115	3.8718	1.0294

The aggregate score of all supplier evaluation practices revealed that the respondents agreed that their universities had adopted supplier evaluation practices with a aggregate mean if (3.8718) with deviations as indicated by the standard deviation (1.0294). These findings suggest that the majority of universities have the capacity to estimate costs, and as a result, they may anticipate improving their procurement performance through improved customer satisfaction, prompt delivery, and higher-quality products and services. These findings are encouraging because public organizations are required by ISO/DIS 10845-1 of 2008 to incorporate supplier evaluation practices in their procurement methods. According to Wright (2019), when this occurs, the organization's procurement process will be more successful, resulting in user departments receiving high-quality goods and services that will guarantee client happiness and lower costs. Mutegi (2017) adds that organizations that perform cost estimations benefit from cost savings, effective business operations, and greater value for money, and good service delivery as a result.

4.3 Pair Wise Correlation between the Study Variables

Person correlation was used to establish the relationship between the variables. The decision criteria was that if the correlation coefficient (r), ranged between 0.00 to 0.20 then the study would assume that there is no relationship, a correlation between 0.21 to 0.40 would be assumed to be weak, as posited, by Hair et al. (2006). Moreover if the correlation coefficient was between 0.81 to 1.0 then the study assumed a strong relationship.

Table 5: Pearson Correlation between Study Variables

Correlations		Procurement Methods
Procurement Performance	Correlation	.373**
	Sig.	.000
	N	115

** . Correlation is significant at the 0.01 level (2-tailed).

The procurement methods and procurement performance are positively and significantly connected, according to the correlation results shown in Table 23 ($r = 3.73$, $p = 0.00$). This implies that regular and efficient implementation of procurement methods in public universities in the eastern area of Kenya improves procurement performance. The findings support (Koelsch, 2016) who concluded that effective procurement methods is a key component of improving procurement performance in a company. The study examined the effects of techniques used by businesses to increase procurement performance. His findings revealed that businesses with effective procurement methods performed better in terms of quality, lower prices, and shorter lead times.

4.4 Multiple Regression Analysis

The multiple regression (R) symbols represent the model's prediction of the relationship between the independent variables and the dependent variable. The variations in the dependent variable's variance that are jointly explained by the independent variables are determined by the multiple coefficient of determination (R^2). The values of R and R^2 are displayed in the table below.

Table 6: Multiple Regression Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.629 ^a	.396	.374	.33354

a. Predictors: (Constant), Purchase monitoring, Budgetary Allocation, Tendering process

Table 6 multiple coefficient of variation (R) value of 0.629 indicates a high and positive relationship between public procurement methods and procurement performance among public universities in Nairobi Metropolitan Region, Kenya. According to the R-Square value of 39.6 percent, public procurement methods which was conceptualized as purchase monitoring, procurement methods, budgetary allocation and tendering process explained 39.6 percent of variations in procurement performance among public universities in Nairobi Metropolitan Region, Kenya, while random error or other factors account for 60.4 percent of those variations.

The conclusions reached in this objective can be explained on a number of different empirical bases. First, with regard to the study's main concern, the research's findings highlight the significance of procurement methods in improving procurement performance in public universities among public universities in Nairobi Metropolitan Region, Kenya in terms of cost reduction, lead times and quality aspects. The institutional theory of Meyer and Rowan (1970),

which is centered on strengthening institutional positive environment to boost performance of formal structures in an organization, can be used to explain the study's findings. According to Meyer and Rowan (1970), organizations that improve their functioning outperforms rivals in terms of lower costs, improved lead times, and increased customer satisfaction. In order to achieve procurement performance, universities and other public institutions need to improve their user procurement methods in terms of purchase monitoring, procurement methods, budgetary allocation and tendering process as in the case of the current study. The results can potentially be explained by Kaplan's (2009) balanced score card theory. According to this theory, an effective organization in terms of customer satisfaction, on-time delivery, and the quality of goods and services is the end result of a cohesive environment in terms of improved procedures. This has been empirically proved by the findings of the current study that improvement of procurement methods (purchase monitoring, procurement methods, budgetary allocation and tendering process) improves procurement performance in terms of cost reduction, lead times and quality aspects. Third, the results of this study are in line with those of Anane et al., (2019), who found that organization stakeholders can improve procurement performance through procurement measures to reduce costs, lead times, and quality factors. The suppliers and public procuring bodies will have clear expectations and guidelines to follow in order to perform effectively in their procurement activities when these factors—purchase monitoring, procurement methods, budgetary allocation and tendering process—are taken into account. The findings of this study also support a study by Miriti (2018) that found that user interaction, tender assessment, and specification methods greatly increase and enhance efficiency in terms of shorter lead times and quality of goods, services, and materials provided by suppliers.

4.4.1 Anova

Table 7: ANOVA

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.028	4	2.007	18.042	.000 ^b
	Residual	12.237	110	.111		
	Total	20.266	114			

a. Dependent Variable: Procurement Performance
 b. Predictors: (Constant), Purchase monitoring, Budgetary Allocation, Tendering process

The F test determines if a set of variables is collectively significant. In general, the combined effect of all the factors is significant if the estimated F value in a test is more than the F statistic. The p-value was also taken into account in this study to ascertain whether the probability outcomes might have occurred by coincidence because the statistic is simply one measure of significance in an F Test. The processed data, which are the population parameters, had a significance level of 0.00 according to the ANOVA statistics in the above table, indicating that the data is perfect for drawing conclusions about the population's parameter. The F was 18.042 when it was assessed at the 5% level of significance. The entire model was significant, i.e., there is a substantial association between procurement methods and the procurement performance

among public universities in Nairobi Metropolitan Region, Kenya because the estimated F is more than the F critical (value = 4.76) and the significance level of 0.00 obtained was less than 0.05.

4.4.2 Test of Significance of Regression Coefficients

The regression coefficients were assessed using a t-test at the 5% level of significance to establish the cause-effect link between the dependent variable and the explanatory variables.

Table 8: Test of Significance of Regression Coefficients

Coefficients ^a	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Model					
1 (Constant)	2.134	.349		6.108	.000
Budgetary Allocation	.298	.117	.379	2.550	.012
Tendering process	.318	.108	.442	2.936	.004
Purchase monitoring	1.563	.278	1.426	5.631	.000

a. Dependent Variable: Procurement Performance

The intercept and slope coefficients for the model are displayed in Table 8. The study's goal was to ascertain how procurement methods affected procurement performance of public universities in Nairobi Metropolitan Region, Kenya. All of the null hypotheses were rejected because of the regression coefficients, which were 0.298, 0.318, 1.563, and 0.487 with (p-values. 012,.004,.000, and.000 <0.05). As a result, there is a statistically significant positive relationship between procurement methods (purchase monitoring, procurement methods, budgetary allocation, tendering process and procurement performance among public universities in Nairobi Metropolitan Region, Kenya. Therefore increase in procurement methods (purchase monitoring, procurement methods, budgetary allocation and tendering process will lead to increase in procurement performance among public universities in Nairobi Metropolitan Region, Kenya. Therefore for every unit increase in procurement methods, budgetary allocation, tendering process and purchase monitoring; procurement performance will increase by 0.298, 0.318, 1.563, and 0.487 units, respectively. The following model was developed using the coefficient of regression from the table above:

$$Y = 2.134 + .0.298X_1 + .0.318X_2 + .1.563X_3 + +\epsilon \text{ where;}$$

Y = procurement performance, 2.134 = constant of regression or the Y intercept, 0.298, 0.318 and 1.563, respectively are the slope of regression model in regards to purchase monitoring, budgetary allocation and tendering process, ε = error term.

This study contributes to extant literature in many ways. First, the study results contribute to development of existing theoretical literature. The postulates of the resource based theory by Penrose in (1959) advocated for adoption of superior resources in order to boost organisational outcomes. This study adds that resources such as purchase monitoring, procurement methods, budgetary allocation and tendering process aid the achievement of procurement performance as a critical organisational outcome. Second, the research gaps found in the literature evaluated for this study have been filled by the study's findings. For instance, Kimani et al. (2015) reported findings that were comparable to those of the present investigation. The study was conceptualized differently from the current study and had a distinct industry of origin. The findings of Miles' (2017) study, which was a critical assessment of the literature, showed that various organizational processes performed differently depending on how well they were with. The results of the present study provide empirical support for this claim.

5. Conclusions and Recommendations

5.1 Conclusion

Based on the results, which showed that procurement methods have a statistically significant impact on procurement performance among public universities in Nairobi Metropolitan region, Kenya. The study's findings suggest that in order to ensure effective procurement, organizations should stress the use of procurement methods such tendering process, supplier evaluation and purchase monitoring. As a result, incorrect procurement methods may result quality aspects, increase procurement costs and lead-times.

5.2 Recommendations

The study makes the following recommendation for universities: In order to improve procurement performance among Public Universities in the Eastern Region of Kenya, universities should maintain and consistently improve their requirement assessment activities. This can be accomplished by funding appropriate research and involving user departments. In order to boost customer satisfaction by delivering high-quality goods, works, and services at lower prices, universities should be able to develop their specifications based on data obtained from research and input from user departments. Public institutions should have a policy on how to organize and carry out their management tasks and procurement expenses in an efficient manner. When such a policy is in place, it should be strictly adhered to, and anyone who deviates from the processes should be held accountable. This study also suggests that user departments be involved in the cost estimation process to improve procurement performance by lowering costs, lead times, and quality concerns.

5.3 Suggestions for Further Studies

A similar study should be conducted on other factors that affect the procurement performance such as staff competency, user department and supplier related challenges and other procurement legal frameworks.

References

- Abdullah, R., & Maharjan, K. (2003). Critical elements of supplier development in the Malaysian automobile industry: parts and components procurement and supplier development practice in proton. *Journal of International Development and Cooperation*, 9(2), 65-87.
- African Development Bank (2016). The Changes to the World Bank's Procurement Policy and the Implications for African Borrowers. *African public Procurement Law Journal*, 1(1).
- Anane, A., Adoma, V., & Awuah, G. (2019). The effect of procurement methods on service delivery: a case study of VRA, Ghana. *Asian Journal of Economics, Business and Accounting*, 13(1), 1-23.
- Basheka, B. C. (2008). Tendering process and accountability of local Government procurement systems in developing countries: Evidence from Uganda. *Journal of public procurement*.
- Betty, J. H. (2015). Procurement and use of chert from localized sources in Trinidad. *Journal of Caribbean Archaeology*, 15, 1-28.
- Brown, L. M & Hyer, K (2010). Helping nursing homes prepare for disasters.
- Carr, A.S., & Smeltzer, L.R.(1997). An empirically based operational definition of strategic purchasing. *European Journal of Purchasing & supply Management*, 3(4),199-207.
- Changalima, I. A., Ismail, I. J., & Mchopa, A. D. (2021). A review of the forms, rationale, and challenges of supplier development in public procurement: lessons for public buyers in Tanzania. *Future Business Journal*, 7(1), 63.
- Findlay, M. A., (2021). Component processes of detection probability in camera-trap studies: understanding the occurrence of false-negatives. *Mammal Research*, 65(2), 167-180.
- Forsgren, P., & Rahkonen, T. (2014). Specification of customer and user requirements in industrial control system procurement projects. *Proceedings of 2014 IEEE International Symposium on Requirements Engineering (RE'95)*. doi:10.1109/isre.1995.512548
- Gadde, L. E., (2017). What does it take to make the most of supplier relationships?. *Industrial Marketing Management*, 83, 185-193.
- Government of Kenya (2020). *The Public Procurement Bill 2001*. Government Printers, Nairobi.
- Government of Kenya, (2001). *Statistical Abstracts", various Issues*. Government Printers, Nairobi.
- Günther, S., (2007). Applying game theory in procurement. An approach for coping with dynamic conditions in supply chains. *Contributions to Game Theory and Management*, 7, 326-340.
- Hibberd, P., & Djebarni, R. (1996, September). Criteria of choice for procurement methods. In *Proceedings of COBRA* (Vol. 96).
- Hussein, A. (2017). Procurement challenges analysis of Iraqi construction projects. *Journal of the Mechanical Behavior of Materials*, 31(1), 112-117.
- ISO, I. (2018); ISO 3 ISO 10845-1:2020,:2020. Procurement–Principles and guidelines. *International Organization for Standardization, Geneva, Switzerland*.
- James, L., (2004). Counterpoint: does normothermic regional perfusion violate the ethical principles underlying organ procurement? No. *Chest*, 162(2), 290-292.

- Kaplan, R. S. (2009). Conceptual foundations of the balanced scorecard. *Handbooks of management accounting research*, 3, 1253-1269.
- Kiage, J. O. (2013). Factors affecting procurement performance: A case of ministry of energy. *International journal of business and commerce*, 3(1), 54-70.
- Kimani, N. H., Ngugi, P. K., & Orwa, G. (2015). Challenges of Micro and Small Enterprises“(MSEs”) Finance Accessibility on Participation in Public Procurement Market in Kenya. *International Journal of Innovative Finance and Economics Research*, 3(4), 1-15.
- KISM, M. N. (2020). *Contract Management on Procurement Performance in Public Universities in Kenya* Handbooks of management Procurement, 3, 1253-1269.
- Koelsch, G. (2016). What Makes a Good Requirement? *Requirements Writing for System Engineering*, 31-74. doi:10.1007/978-1-4842-2099-3_2
- Matunga, D. A., Nyanamba, S. O. & Okibo, W. (2013). The Effect of E-Procurement methods on efficient procurement in public hospitals.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American journal of sociology*, 83(2), 340-363.
- Miles, G. Human Factors and Procurement: Lessons Learnt from a High-Value Procurement Exercise. *International Journal of Scientific and Research Publications*, 5(6), 2250-3153.
- Miriti, L. K. (2018). Effect of Tendering process On Supply Chain Performance of Kenya Medical Supplies Authority. *Journal of International Business, Innovation and Strategic Management*, 1(4), 1-19.
- Mokogi, W. N., Mairura, C., & Ombui, K. (2015). Effects of procurement methods on the performance of commercial state owned enterprises in Nairobi Metropolitan region. *International Journal of Scientific and Research Publications*, 5(6), 2250-3153.
- Mpofu, B., Ochieng, E. G., Moobela, C., & Pretorius, A. (2017). Profiling causative factors leading to construction project delays in the United Arab Emirates. *Engineering, Construction and Architectural Management*.
- Musau, E., (2015). Effects of e-procurement implementation practices on procurement of goods, works and services in the national youth service, Nairobi City County. *Int Acad J Procure Supply Chain Manage*, 3(2), 63-82.
- Mutegi, T. M. (2017). Effect of security risk control programmes on safety in universities in tharaka nithi and meru counties. *International Journal in Management & Social Science*, 5(9), 97-134.
- Mutinye, C., (2018). Effect of procurement procedures on delivery of services in selected devolved units in Kenyan Western Region. *The Strategic Journal of Business & Change Management*, 9(4), 609-617.
- Myeza, L., Nkhi, N., & Maroun, W. (2021). Risk management factors contributing to transgressions in the procurement methods in South African SOEs. *Journal of Accounting in Emerging Economies*.
- Nasra, B. H. (2014). *Procurement performance and operational efficiency in telecommunication industry in Kenya* (Doctoral dissertation, University of Nairobi).

- Nuwagaba, I., Molokwane, T., Nduhura, A., & Tshombe, L. M. (2021). Tendering process and Procurement Performance for Operations and Projects in Public Sector Entities-A Case of Uganda Management Institute. *Int. J Sup. Chain. Mgmt Vol, 10(6)*, 11.
- Nyambura, M. T., & Mwenda, M. T. (2022). Legal Framework Specification and Procurement Performance In Water Companies In Kiambu, Kenya.
- Odera, M., (2017). Assistive technology policy: a position paper from the first global research, innovation, and education on assistive technology (GREAT) summit. *Disability and Rehabilitation: Assistive Technology, 13(5)*, 454-466.
- Odero, J. A., & Ayub, S.E. (2017). Effect of procurement methods on procurement performance of public sugar manufacturing firms in Western Kenya. *International Journal of Management Research and Reviews, 7(4)*, 521.
- OECD Publishing (2020). Schleicher, Andreas. "The Impact of COVID-19 on Education: Insights from" Education at a Glance 2020". *OECD Publishing (2020)*.
- Oketch, G. O. (2011). *Effects of procurement methods on cost effectiveness of public secondary school supplies in Nyatike District, Kenya* (Doctoral dissertation, University of Nairobi, Kenya).
- Oladirin, O. T., Olatunji, S. O., & Hamza, B. T. (2013). Effect of selected procurement methods on building project performance in Nigeria. *International journal of sustainable construction engineering and technology, 4(1)*, 48-62.
- Penrose, J. (1959). Nations, states and homelands: territory and territoriality in nationalist thought. *Nations and nationalism, 8(3)*, 277-297.
- PPADA (2015); Public procurement and Asset Disposal Act (2015). Government Printers, Nairobi.
- PPDAR (2006) Public Procurement and Disposal Act Regulations (2006) Government Printers, Nairobi.
- PPOA (2019) Public Procurement Oversight Authority (PPOA, 2019) Baseline survey report, 2019. Government Printers, Nairobi.
- PPOA (2019) Public Procurement Oversight Authority (PPOA) (2019) Government Printers, Nairobi.
- PPOA (2020) Public Procurement Oversight Authority (PPOA, 2020) Capacity Building Strategy Report, 2020). Government Printers, Nairobi.
- PPOA (2020) Public Procurement Oversight Authority (PPOA, 2020) compliance reports, 2020. Government Printers, Nairobi.
- Public procurement Act and Disposal (2007). Nairobi.
- Public Procurement Regulatory Authority reporting guidelines (2015) Government Printers, Nairobi.
- Quale, S., (2017). Impact of e-procurement: experiences from implementation in the UK public sector. *Journal of Purchasing and Supply Management, 13(4)*, 294-303.
- Rashid, R. A., Taib, I. M., Ahmad, W. B. W., Nasid, M. A., Ali, W. N. W., & Zainordin, Z. M. (2006). Effect of procurement methods on the performance of construction projects. *Padang, Indonesia*.

- Remko, V. H. (2020). Research opportunities for a more resilient post-COVID-19 supply chain—closing the gap between research findings and industry practice. *International Journal of Operations & Production Management*, 40(4), 341-355.
- Singh, P. K., Ismail, F. B., Wei, C. S., Imran, M., & Ahmed, S. A. (2020). A framework of E-Procurement technology for sustainable procurement in ISO 14001 certified firms in Malaysia. *Adv. Sci. Technol. Eng. Syst. J*, 5, 424-431.
- Thogori, M., & Gathenya, J. (2014). Role of inventory management on customer satisfaction among the manufacturing firms in kenya: a case study of delmonte Kenya. *International journal of academic research in business and social sciences*.
- Tukuta, M., & Saruchera, F. (2015). Challenges facing procurement professionals in developing economies: Unlocking value through professional international purchasing. *Journal of Transport and Supply Chain Management*, 9(1), 1-9.