



EFFECT OF ELECTRONIC TENDERING ON THE PUBLIC PROCUREMENT FUNCTION EFFICIENCY: A CASE OF MOROGORO MUNICIPAL TANZANIA

Monica Ewald MINJA

Assistant lecturer Tanzania Institute of Accountancy (TIA), United Republic of Tanzania

Asha Ramadhan KADEGE

Assistant Lecturer Mzumbe University (MU), United Republic of Tanzania

Perazia MAGESSA

Assistant Lecturer Collage of Business Education (CBE), United Republic of Tanzania

Received: Jan 10, 2025

Accepted: Apr 08, 2025

Published: June 01, 2025

Abstract:

Generally, the study assessed the effect of E-tendering on procurement function efficiency in public sector organizations. The study was conducted in Morogoro municipality where a total of five public organizations were selected for the study. The population consisted of 147 PMU, finance and ICT personnel from the selected organizations of which 108 were sampled. Data was collected through a questionnaire since the study adopted a quantitative approach. The data were analyzed through descriptive analysis as well as multiple regressions analysis to establish a causal relationship between independent and dependent variables. According to the findings of the study, it was revealed that e-tendering has significant effect on the procurement function efficiency. Therefore; the study recommends that other studies to focus on other electronic tools in procurement and go beyond the effect of e-tendering on procurement efficiency. Also policies can be made in both public and private sector to enhance the use of e-tendering for better procurement function efficiency.

Keywords:

Electronic tendering, Procurement function, efficiency

1. Introduction

Chebet and Kihara (2022) state that the primary factor that contributes to the malfunctioning of public institutions is the inefficient and improper utilisation of public funds during the procurement procedures. This is the primary way in which public institutions fail to function properly. During the procurement process, it is essential to recognize the importance of delivering value for money and effectively implementing performance across all levels of the community. This is necessary in order to reduce the number of instances of speculative performance and to achieve sustainable performance (Masudin et al., 2021). This is due to the fact that it is also the only way to achieve performance that is sustainable.

The global procurement has recently experienced changes due to rapid increase in technology. One of the remarkable changes is the adoption of electronic tendering system. According to Kumar & Nanda (2021) e-tendering refers to the process of soliciting bids for goods, works and services online which inflates transparency, efficiency and accountability in procurement functions.

OECD (2020) and Zhang et al (2021) worldwide organization adopt e tendering in public procurement functions. This shift is driven by need to reduce paper work, corruption, inefficiency and enhance competition and communication between suppliers and procurement officials. Various benefits have been reported due to the implementation of e tendering. E tendering can lead to cost saving, increase compliance with regulations, transparency and accountability (Gonzalez & Houghton, 2022).

Recently in Africa there is transformation of technological advancement specifically on implementation of E tendering as a broader strategy to improve public procurement functions by reducing competition and ensure development (Kisaka & Nkhumwa, 2020).

The Tanzania government has recognize the importance of e tendering as a tool to solve critical procurement challenges such as corruption, inefficiency and lack of accountability through enhancement of efficiency, transparency and accountability of public procurement process (Mhando, 2022 and Kisaka & Nkhumwa, 2020). Regions which experiencing great urbanization such as Morogoro face procurement challenges such as delay in tender submission and inadequate communication between procurement officials and suppliers. Implementation of e tendering seeks to solve those challenges and ensure compliance with regulatory frameworks and ensure economic growth (Mhando, 2022& Agyekum et al 2019).

2. Literature Review

2.1 Agency theory

The agency theory served as the basis for this research. In 1973, Stephen Ross and Barry Mitnick developed the agency theory by drawing on the idea of the agency relationship. An agency is a contractual arrangement that is established through the mutual agreement of two parties. In this arrangement, one party which is referred to as the agent agrees to act on behalf of the other party, which is known as the principal. The theory is however built based on three major assumptions: (1) individuals have a tendency to prioritize their own interests, which are commonly referred to as self-interest; (2) human perception of the future is limited by bounded rationality; and (3) individuals consistently strive to minimize risks. This theory postulates that, there is a conflict of interest between the shareholders and the managers of a corporation (Davis, 1986). As such, it is the responsibility of the agent to maximize the interests of the shareholders, while at the same time there is a personal incentive for the agent to do so. According to Jensen and Meckling (1976), it is possible that agents like procurement officers focus on quick procurement or ease of operations rather than long-term value or ethical considerations.

Thus, the implementation of e-tendering aligns with agency theory, which emphasizes on the alignment of interests between principals (government entities) and agents (procurement officials and suppliers). By promoting transparency and accountability, e-tendering mitigates conflicts of interest and fosters efficiency in public procurement (Jensen & Meckling, 1976). In this study, the theory serves to explain the fundamental principles underlying the use of electronic procurement as a technological advancement with the potential to enhance the efficiency of an organization's procurement processes. It further defines the overt relationships existing between agents and principals in e tendering processes. According to the theory, the procuring entity (PE) interacts with various stakeholders. It then emphasizes on the adoption of e-procurement systems that enable the PE to integrate its tendering activities with these stakeholders by reducing information asymmetry. This is achieved through features such as dashboards, analytics, and real-time reporting, which allow principals (PE) to monitor documents, evaluate suppliers, track transactions, and support informed decision-making.

2.2 TAM and UTAUT Theories

2.2.1 Technology Acceptance Model (TAM),

According to the Technology Acceptance Model (TAM), perceived usefulness (PU) and perceived ease of use (PEOU) are the two main determinants of technology adoption and use (Davis, 1989). The degree to which public sector workers think that e-tendering would improve their job performance is known as perceived usefulness, or PU, in the context of e-tendering. E-tendering solutions can improve overall efficiency by lowering administrative costs, speeding up procurement procedures, and expanding access to a larger pool of providers (Venkatesh & Davis, 2000). The degree to which users feel the e-tendering system easy to use is known as perceived ease of use, or PEOU. To promote adoption among public sector workers, a user-friendly interface, thorough training, and dependable technical support are crucial (Davis, 1989).

2.2.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) extends the understanding of technology adoption by identifying four core determinants: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions (Venkatesh et al., 2003).

- **Performance Expectancy:** Like PU in TAM, Performance Expectancy in UTAUT evaluates how much employees expect e-tendering to improve their job performance. Public sector organizations can raise performance expectancy by demonstrating the observable benefits associated with e-tendering, like cost savings and process efficiency (Venkatesh et al., 2003).
- **Effort Expectancy:** This construct pertains to how easy it is to use the e-tendering system. Training programs, user-friendly design, and ongoing assistance are crucial for meeting employees' effort expectancy (Venkatesh et al., 2003).
- **Social Influence:** Social Influence refers to the degree to which employees perceive that important others (e.g., supervisors, colleagues) believe they should use the e-tendering system. Positive endorsements and support from senior management can significantly impact the adoption of e-tendering (Venkatesh et al., 2003).
- **Facilitating Conditions:** This construct involves the availability of resources and support necessary for using the e-tendering and e-registration system. Adequate IT infrastructure, access to necessary tools, and organizational support are essential to facilitate the adoption and efficient use. (Venkatesh et al., 2003).

The adoption of e-tendering in public sector organizations can lead to significant improvements in procurement efficiency. By applying the insights from the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), public sector organizations can address key factors influencing technology acceptance and use. This approach can ensure the successful implementation and optimization of e-tendering systems, ultimately enhancing procurement function efficiency.

2.3 Empirical Literature Review and Hypothesis Development

The studies by Gathima and Njoroge (2018) and Waithaka and Kimani (2021) about transparency and efficiency in Kenya revealed that e-tendering reduces costs, accelerates procurement timelines, and enhances transparency. It was further reported that organizations using e-tendering access a broader supplier base, improving competition and procurement outcomes. Faheem and Ahmed (2020) conducted a study on the influence of e-tendering in cost savings. The study reported that e-tendering significantly lowers operational costs, particularly in tender documentation and supplier communication, while ensuring compliance with procurement regulations. Another research in South Sudan by Pierre et al. (2024) highlights the importance of secure e-tendering systems in promoting organizational performance. Their findings suggest that e-tendering can improve efficiency only if supported by robust ICT infrastructure and adequate user training.

Mathias (2021), carried out an investigation to ascertain the level of performance that Tanzanian public institutions exhibited in relation to the acquisition of information technology. The decision was made to employ a descriptive research design in conjunction with a mixed-methods approach to the research to be conducted. Interviews and questionnaires with predetermined answers were both utilized in the process of data collection that we participated in. The analysis of the data was carried out with the assistance of descriptive statistics in addition to content analysis. The findings of the study indicate that electronic procurement provides supplier organizations with a number of benefits that are beneficial to them. The simplification of the procurement process, the reduction of supply loss, the enhancement of transparency in tender competition, the acceleration of transactions, the standardization of supplies, the reduction of record-keeping errors for suppliers, and the assurance of improved performance for suppliers are some of the advantages that are included in this category.

The study by Assey (2021) analyzed the Tanzania National Electronic Procurement System (TANePS). The study examined the effectiveness of the TANePS in the performance of e-tendering. It was revealed that e-tendering accelerates fast evaluation of tenders and awards timely awards. However, the limited adoption of the system due to inadequate ICT infrastructure and lack of awareness among users were noted as challenges. Mushi and Nsimbila (2022) conducted a study on e-tendering. Their study examined the efficiency of e-tendering in terms of time and cost effective. It was reported that e-tendering significantly reduces procurement lead times and costs, improving overall procurement function efficiency in Tanzanian public sector organizations.

Danga et al. (2021) scrutinized the effectiveness of e-tendering on procurement processes. In particular, the study examined challenges hinders e-tendering processes. The study reported that unreliable internet connectivity, insufficient technical skills, and limited market coverage are leading factors affecting the effectiveness of e-tendering systems like TANePS.

Hypothesis: E-tendering is positively related to Public procurement function efficiency.

3. Methodology

3.1 Research Design and Approach

The study used a causal/explanatory research design which looks into the causes of events. With the aid of this research design, researcher increases the comprehension of a subject, determine the cause or mechanism underlying a specific phenomenon, and create predictions about what will happen (Creswell, 2014). This study utilized a quantitative research approach. According to Allen (2017), a quantitative approach makes use of statistics to perform an analysis of the numerical data that researchers have gathered in order to provide answers to the questions that they have posed. The decision was made that a quantitative approach would be suitable for the study because the objective of the investigation is to provide answers to questions on "what."

3.2 Target Population

The study's participants comprised the staff members of the designated public authorities located in Morogoro Municipality. Only employees who are directly involved in the procurement function through NeST were included in the population, though. Thus, the Procurement Management Unit (PMU), the Finance department, and the ICT staff were all involved in the study. These served as the study's analytical unit. The selection of the three departments was predicated on the fact that they regularly handle procurement procedures. As a result, the participants from the two departments were well-positioned to offer insightful information for the research. The distribution of the population is indicated in Table 1

Table 1. Population Distribution

Organization	Department	Number of Staff	Percentage
MORUWASA	PMU	11	7.5
	Finance	8	5.4
	ICT	4	2.7
TANESCO	PMU	12	8.2
	Finance	11	7.5
	ICT	5	3.4
TANROADS	PMU	17	11.5
	Finance	10	6.8
	ICT	9	6.1
TARURA	PMU	12	8.2
	Finance	7	4.8
	ICT	6	4.1
TRA	PMU	12	8.2
	Finance	15	10.2
	ICT	8	5.4
TOTAL		147	100

3.3 Sample and Sample Size

The sample size for the study was derived from the population of the finance and procurement departments at TANESCO, TANROADS, TARURA, MORUWASA AND TRA. The sample obtained based on the Yamane (1967) sample size formula as follows;

$$n = \frac{N}{(1 + N e^2)}$$

Where;

N = Population Size = 147,

n = Sample Size and

e = Error term = 5% (0.05)

Substituting in the Formula; $n = 147 / (1 + 147 \times 0.05^2) = 108$

Therefore, Sample size was 108 staff. This sample size resulted to a confidence interval of 95% and a margin of error of + 5%. The sample size distribution was divided as shown on Table 2

Table 2. Sample Size Distribution

Organization	Department	Percentage	Sample Size
MORUWASA	PMU	7.5	8
	Finance	5.4	6
	ICT	2.7	3
TANESCO	PMU	8.2	9
	Finance	7.5	8
	ICT	3.4	4
TANROADS	PMU	11.5	1
	Finance	6.8	7
	ICT	6.1	6
TARURA	PMU	8.2	9
	Finance	4.8	5
	ICT	4.1	4
TRA	PMU	8.2	9
	Finance	10.2	11
	ICT	5.4	6
TOTAL		100	108

3.4 Sampling Procedure

The term "sampling techniques" was coined by Saunders et al. (2009), to describe the procedures that are utilized in order to select a sample from the population. The selection of respondents for the study was carried out through the use of a stratified random sampling method. The process of stratified random sampling is a method of sampling that involves the division of a population into smaller subgroups that are referred to as strata or strata. Stratification, also known as stratified random sampling, is a method of sampling in which the strata are formed on the basis of the shared attributes or characteristics of the members (Sheppard & Fennell). Consequently, the respondents were divided into strata, which in this instance were the departments, and then, from within each department, they were chosen at random to be a part of the study. The PMU, finance, and information and communications technology departments were chosen because the study is centered on NeST. Additionally, the 108 members of the staff were chosen at random.

3.5 Data Analysis

A descriptive statistic such as frequency and percentage were utilized in order to analyze the demographic data. In order to conduct an analysis of the characteristics of the respondents, such as their gender, age, level of education, and years of work experience, descriptive statistics were utilized. A similar method was also utilized in order to present the responses obtained from the questionnaires. In order to determine the nature of the relationship between the variables, a multiple regressions model was utilized. In order to carry out the analysis, SPSS version 26 was utilized. It was decided to work with the multiple regression model;

However, before the multiple regression analysis is conducted; four diagnostic tests such as model fitness test through ANOVA, normality test through Kolmogorov-Smirnov test, Multicollinearity through Variance Inflation Factor and Heteroscedasticity test through scatter plots was examined.

4. Finding and Analysis

4.1 The Profile of Respondents

The profile of respondents in terms of gender, age, education level and working experience were assessed in Table 3 presents the demographic results.

4.1.1 Gender of Respondents

In relation to the gender of the participants, this research encompassed individuals of both male and female sexes in Table 4.1. The data was obtained from a sample of 71(65.7%) males and 37(34.3%) females. The observed distribution aligns with expectations, as the public authorities examined consists of a higher proportion of male individuals compared to female individuals as cited by Assey (2021). However, the sample was representative as both male and female individuals were involved.

4.1.2 Age of Respondents

Looking at the age distribution of the participants in Table 4.1, it was found that 55(50.9%) of the people who filled out the survey were in the 28–37 age bracket. And hence, 24 (22.2%) of the whole sample fell into the 38–47 age group. While 20(18.5%) of the respondents were 18 - 27 in age, and the remaining 9(8.3%) were 48 years and in age. Thus, the respondents' age distribution is diverse, covering a wide range of generations, which enriches the plurality and diversity of perspectives stated.

4.1.3 Education Level of Respondents

An evaluation was conducted to determine the educational attainment of the participants in order to analyze the distribution of respondents across different levels of education. The findings of the study presented in Table 4.1 indicate that the participants are distributed among different levels of education. The results of the study indicated that a majority of the participants had bachelor's degree level of education 46 (42.6%), followed by diploma 30 (27.8%) and master's degree and 22 (20.4%). The few remaining respondents 10 (9.3%) had a certificate level of education. Therefore, the opinions on the effect of NeST on the supply chain efficiency were supplied by people with different levels of education.

4.1.4 Respondents' Work Experience

Respondents' work experience was considered in the study. Respondents with more experience have a better grasp of the efficiency of the procurement function as a result of NeST introduction. A considerable majority of the participants 40 (37.0%) had 4 to 6 years of experience or more, with the next largest group of 38 (35.2%) having 6 and years of experience. While a minority of respondents had less than a year of professional experience 4 (3.7%), a smaller percentage 26 (24.1%) had 1 - 3 years of experience. Based on the statistics, it seems like a lot of participants had enough experience to notice the effect of NeST on the procurement efficiency in their organizations. The distribution is shown in Table 3.

Table 3. Profile of Respondents

Variable	Category	Frequency	Percentage
Gender	Male	71	65.7
	Female	37	34.3
Age	18 - 27 Years	20	18.5
	28 - 37 Years	55	50.9
	38 - 47 Years	24	22.2
	48 Years and	9	8.3
Education	Certificate	10	9.3
Level	Diploma	30	27.8
	Bachelor's Degree	46	42.6
	Master's Degree and	22	20.4
Working	Less than a year	4	3.7
Experience	1 - 3 Years	26	24.1
	4 - 6 Years	40	37.0
	6 Years and	38	35.2

Source: Research Findings (2024)

4.2 Findings Analysis and Interpretation

The Effect of Electronic Tendering on the Procurement Function Efficiency in Public Sector Organizations.

The second specific objective of the study examined the effect of electronic tendering on the procurement function efficiency in public sector organization. Electronic tendering was measured by four indicators which were annual procurement plan, tender initiation, tender submission and tender evaluation. Regarding annual procurement plan, the findings of the study indicate that e-tendering help to make sure users follow the annual procurement plan. A significant majority of respondents expressed strong agreement 58 (53.7%) and agreement 36 (33.3%) with this statement. Conversely, a small percentage strongly disagreed 2 (1.9%), disagreed 8 (7.4%) while 4(3.7%) remained undecided. Therefore, it is easy to follow the annual procurement plan through the use of NeST. The study additionally revealed that tender initiation is made simple and efficient through e-tendering. The aforementioned results were obtained from the collected responses, with a majority of participants expressing strong agreement 69 (63.9%) and agreement 19 (17.6%). Conversely, a small percentage of respondents disagreed 10 (9.3%), while 10 (9.3%) maintained a neutral stance.

Moreover, it has been demonstrated that e-tendering reduces cost and saves time for suppliers when submitting tenders. This assertion is supported by a significant proportion of 57 (52.8%) participants strongly agreeing and 39

(36.1%) agreeing. Conversely, a small percentage of respondents disagreed 11(10.2%), and held a neutral stance 1 (0.9%).

The study additionally revealed that e-tendering reduces cost and saves time for procuring entities during tender evaluation. The aforementioned data was derived from a significant proportion of 64 (59.3%) participants expressing strong agreement, and an additional 32(29.6%) indicating agreement. However, it is worth noting that 8(7.4%) of respondents disagreed with the aforementioned statement. A small percentage of 4 (3.7%) participants remained undecided on the matter. Findings are portrayed in Table 4

Table 4. Electronic Tendering

Statement	SD		D		N		A		SA	
	F	%	F	%	F	%	F	%	F	%
e-tendering help to make sure users follow the annual procurement plan	2	1.9	8	7.4	4	3.7	36	33.3	58	53.7
Tender initiation is made simple and efficient through e-tendering	0	0.0	10	9.3	10	9.3	19	17.6	69	63.9
Tender initiation is made simple and efficient through e-tendering	0	0.0	11	10.2	1	0.9	39	36.1	57	52.8
e-tendering reduces cost and saves time for suppliers when submitting tenders	0	0.0	8	7.4	4	3.7	32	29.6	64	59.3
e-tendering reduces cost and saves time for	0	0.0	8	7.4	4	3.7	32	29.6	64	59.3

procuring
entities during
tender evaluation

Source: Research Findings (2024)

4.3 Multiple Regressions Analysis

A multiple regressions analysis was conducted to assess the effect of each independent variable (electronic registration and electronic tendering) on the dependent variable (procurement function efficiency). Before running the multiple regression analysis, model fitness test, normality test, multicollinearity test and heteroscedasticity test were conducted as assumptions of multiple regression. Each diagnostic test is discussed and presented;

4.3.1 Goodness of Fit Test

To quantitatively test how well the model explained the data, an analysis of variance (ANOVA) was utilized. The model successfully explains procurement function efficiency to the tune of 87.7% (87.947 out of 100.234) when looking at the sum of squares in Table 10. A p-value of 0.000, which is generated by the model's F value, indicates a significant departure from the null hypothesis. Commonly used to assess goodness of fit test, the p-value is much lower than the specified significance level of 0.05. Statistical significance is high according to the study's F-statistics, which have a P-value of 0.000 (Tabachnick & Fidell, 2001). Based on these findings, it seems the model can significantly predict the dependent variable. Table 6 displays the results;

Table 6. ANOVA Goodness of Fit Test

Model		Sum of Squares	Df.	Mean Square	F	Sig.
1	Regression	87.947	3	29.316	248.133	0.000 ^b
	Residual	12.287	104	0.118		
	Total	100.234	107			

Source: Research Findings (2024)

4.3.2 Normality Test

The data was tested for normal distribution using a Kolmogorov-Smirnov test at a confidence level of 0.05 in the study. Before performing multiple regression analysis, it is necessary to ascertain if the data followed a normal distribution. So, a Kolmogorov-Smirnov test with a 5% level of significance was run. The data follows a normal distribution, since both the independent and dependent variables were statistically significant at a level 0.05 (P=0.000) (Berry & Feldman, 1985). The findings are displayed in Table 7;

Table 7. Kolmogorov-Smirnov Normality Test

Variables		Kolmogorov-Smirnov		
		Statistic	df.	Sig.
Electronic Tendering		0.277	108	0.000
Procurement	Function	0.255	108	0.000
Efficiency				

Source: Research Findings (2024)

4.3.3 Multicollinearity Diagnostic Test

Multiple regressions can be performed when there is no presence of Multicollinearity in the dataset. This assumption is based on the premise that the independent variables exhibit a low degree of correlation. Consequently, a Multicollinearity test was performed utilizing the Variance Inflation Factor (VIF), with a VIF value threshold of 5, as recommended by Gujarati (2004). According to Kim (2019), VIF equal to 1 = variables are not correlated. VIF between 1 and 5 = variables are moderately correlated. VIF greater than 5 = variables are highly correlated. Thus, all the independent variables had a VIF value 10, indicating a lack of substantial correlation. The findings are shown in Table 8;

Table 8. Multicollinearity Test Results		
Variable	Collinearity Statistics	
	Tolerance	VIF
Electronic Tendering	0.207	4.820

Source: Research Findings (2024)

4.3.4 Heteroscedasticity Test

A heteroscedasticity test was performed using scatter plots to determine the presence of heteroscedasticity prior to conducting a multiple regression analysis. The heteroscedasticity results suggest that the scatter plots lack any discernible pattern. This implies the absence of heteroscedasticity, allowing for the execution of multiple regression analysis. The results of the heteroscedasticity test are shown in Figure 1;

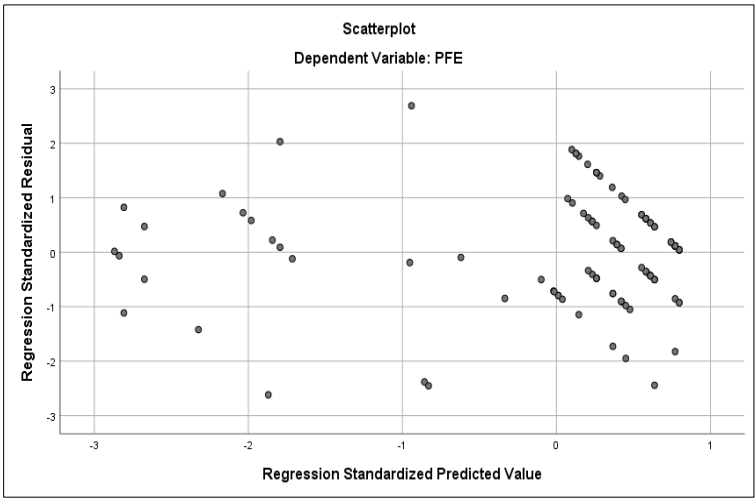


Figure 1. Heteroscedasticity Test
Source: Research Findings (2024)

4.3.5 Multiple Regression Model Summary

To examine the relationship between the dependent variable and the independent components, a multiple regression analysis was carried out. Multiple regression analysis showed that the dependent variable was strongly correlated with independent variables ($R = 0.937$), with a robust positive correlation of 93.7%. In addition, the variables accounted for 87.7% of the variance in the efficiency of internal control ($R^2=0.877$), which is an acceptable since according to Pedhazur (1997) an R squared value of 0.5 and above implies that the model is good in explaining the dependent variable. Table 9 displays the results;

Table 9. Multiple Regression Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.937^a	0.877	0.874	0.34372

Source: Research Findings (2024)

4.3.6 Multiple Regression Coefficients

Statistically significant associations were evaluated and presented on table 10;

Table 10. Multiple Regression Coefficients					
	Unstandardized		Standardized	T	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	-0.266	0.201		-1.327	0.187
Electronic Tendering	0.435	0.057	0.427	7.584	0.000

Source: Research Findings (2024)

5. Discussion of Study Findings

The Effect of Electronic Tendering on the Procurement Function Efficiency in Public Sector Organizations

The findings of the study indicated that electronic tendering has a positive and substantially significant impact on the efficiency of the procurement function. This was said to be the case in relation to the impact that electronic tendering has on the efficiency of the procurement function. The coefficient was found to be 0.435, which indicates that an increase of one unit in electronic tendering leads to an increase of 0.435 units in overall procurement function efficiency. This conclusion was reached based on the findings of the multiple regression analysis. Additionally, a p-value of 0.000 was generated, which indicates that the relationship is significant because it is lower than the level of significance of 0.05 when it is taken into consideration. This also indicates that the relationship is significant. The results are somewhat different from those that have been discovered by other researchers. An example of this would be the research that Waithaka and Kimani (2021), carried out to investigate the connections between e-procurement operations and supply chain performance. They placed a strong emphasis on the effectiveness and efficiency of the supply chain, which may have been influenced by the implementation of the e-procurement system. According to the findings, one of the ways in which successful e-procurement initiatives, such as e-registration and e-tendering, contribute to the success of an organization is by making it possible to acquire products of a high quality at prices that are competitive. Given that the studies were conducted in a variety of countries, each of which has its own electronic procurement system, it is possible that the inconsistent findings are the result of contextual differences. This is because the studies were carried out in different countries.

Furthermore, Kioko and Mwangangi (2017), conducted research on the influence that electronic procurement had on the operational efficiency of parastatals in Kenya so that they could better serve their constituents. According to the findings of the study, e-tendering, e-registration, e-informing, and e-payment are not only considered to be potential ways to improve the efficiency of parastatals, but they are also considered to be potential ways to improve efficiency. In addition, Gathima and Njoroge (2018), carried out research to investigate the impact that electronic tendering has on the efficiency of organizations that are part of the public sector. According to the findings of the correlation analysis, which stated that the correlation coefficient was 0.307 and the P-value was 0.041 0.05, with a confidence interval of 95%, it was discovered that e-tendering procedures have a positive and significant relationship with performance in the Nairobi City County Government. This was the conclusion reached by analyzing the correlation between the two variables.

6. Conclusion and Recommendations

The use of electronic tendering has positive impact and significantly improve the efficiency of procurement in institutions that are part of the public sector. e-tendering help to make sure users follow the annual procurement plan; tender initiation is made simple and efficient through e-tendering; e-tendering reduces cost and saves time for suppliers when submitting tenders; e-tendering reduces cost and saves time for procuring entities during tender evaluation. This study assessed the effect of e-tendering on the procurement function efficiency in the selected procuring entities in Morogoro. Therefore, the study recommends that other studies focus on other electronic tools in procurement in and to go beyond the effect of e-tendering on procurement efficiency. However e-tendering has a positive contribution to the efficiency of the procurement function, then policies can be made in both public and private sector to enhance the use of e-tendering for better procurement function efficiency.

References

- Allen, M. (2017). The SAGE encyclopedia of communication research methods (Vols. 1-4). Thousand Oaks, CA: SAGE Publications, Inc doi: 10.4135/9781483381411
- Assey, E.P (2021). Effect of Tanzania National E-Procurement System Adoption on Performance of Public Procurement in Tanzania. A Case of Selected Procuring Entities in Morogoro Region. Masters Dissertation, Mzumbe University.
- Bag, S., Wood, L. C., Mangla, S. K., & Luthra, S. (2020). Procurement 4.0 and its implications on business process performance in a circular economy. *Resources, Conservation and Recycling*, 152(September 2019), 104502. <https://doi.org/10.1016/j.resconrec.2019.104502>
- Berry, W. D., & Feldman, S. (1985). Multiple Regression in Practice. Sage University Paper Series on Quantitative Applications in the Social Sciences, series no. 07-050). Newbury Park, CA: Sage.
- Burns, R. B. & Burns, R. A., (2008). Business research methods and statistics using SPSS. Los Angeles: Sage.
- Chebet, J. and Kihara, A. (2022). Influence of E-Procurement on Procurement Performance in Manufacturing Firms in Nairobi County. *International Journal of Social Sciences Management and Entrepreneurship (IJSSME)*, 6(1), 104-114.
- Creswell, J. W., (2014). Research Design: Quantitative, Qualitative and Mixed Methods Approaches. 4ed. Los Angeles: Sage Publications.
- Danga, M.M., Kapwani, J.C and Justus, S.N (2021). Factors Affecting the Effectiveness e-Procurement in Selected Local Government Authorities in Tanzania. *International Journal of Academic Management Science Research (IJAMSR)* 5(9), 175-182.
- Davis, F. D., (1986). A technology acceptance model for empirically testing new end – user information systems: theory and results. S.I.:Cambridge MA.
- Faheem, M and Ahmed, S.D (2020). The Impact of E-Procurement Practices on Supply Chain Performance: A Case of B2B Procurement in Pakistani Industry. SSRN, <https://ssrn.com/abstract=3510616>
- Fidele, G (2022). Assessing the Effect of Electronic-Procurement Implementation on Public Expenditure Performance in Rwanda. *Global Scientific Journals* 10(11), 1 – 18.
- Gathima, J. I. & Njoroge, J. G., (2018). Effects of E-Tendering on Organization performance in public sector: A case of Nairobi city county government. *The Strategic Journal of Business and Change Management*, 5(3), 174-184
- Ghauri, P. N. & Grønhaug, K., (2005). Research Methods in Business Studies: A Practical Guide. London: Pearson Education.
- Hassan, A.J and Omwenga, J.Q (2023). Electronic Contract Management and Procurement Performance of State Corporation in Kenya. *International Journal of Social Science and Humanities Research* 1(1), 30-48.
- Jensen, M. C. & Meckling, W. H., (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, 3, 305-360.
- Kakwezi, P. & Nyeko, S., (2019). Procurement processes and performance: Efficiency and effectiveness of the procurement function. *International Journal of Social sciences, management and Entrepreneurship*, 3(1), 1-10.
- Kioko, M.M and Mwangangi, P (2017). Influence of E-Procurement on Performance of Parastatals in Kenya. *International Journal of Supply Chain and Logistics* 1(3), 19-45.

- Kothari, C. R., (2019). *Research Methodology: Methods and Techniques*. 4 ed. New Delhi: New Age International Publishers.
- Kweka, I. W. (2021). *The Effect of E-Procurement Practices on Timely Procurement of Goods in Selected Government Hospitals in Tanzania*. Dar es Salaam: College of Business Education.
- Maagi, B. and Mwakalobo, A. (2023) Practitioners' Perception of the Effect of E-Procurement Practices on Time Saving in Public Procurement in Tanzania. *Open Access Library Journal*, 10, 1-18. doi: 10.4236/oalib.1110075.
- Maagi, B. and Mwakalobo, A. (2023). Practitioners' Perception of the Effect of E-Procurement Practices on Time Saving in Public Procurement in Tanzania. *Open Access Library Journal*, 10: e10075. <https://doi.org/10.4236/oalib.1110075>
- Mafini, C., Dhurup, M. and Madzimure, J. (2020). E-procurement, supplier integration and supply chain performance in small and medium enterprises in South Africa. *South African Journal of Business Management*, 51(1), 1-12.
- Makoba, N., Nyamagere, G. & Eliufoo, H., (2017). E-procurement risks and mitigation: The case for Tanzania Construction Companies. *International journal of construction engineering and management*, 6(4), 180-186.
- Masudin, I., Aprilia, G.D., Nugraha, A. and Restuputri, D.P. (2021). Impact of E-procurement adoption on company performance: Evidence from Indonesian manufacturing industry. *Logistics*, 5(1), 16. <https://doi.org/10.3390/logistics5010016>.
- Mathias, W (2021). *The Impact of Electronic Procurement on The Performance of Public Institutions in Tanzania. A Case of Arusha City Council*. Masters Dissertation, Institute of Accountancy Arusha.
- Mugenda, O. M. & Mugenda, A. G., (2003). *Research Methods, Quantitative and Qualitative Approaches*. Nairobi: ACT.
- Mushi, G. O. & Nsimbila, P. M., (2022). Determinants of electronic procurement system adoption in Tanzania. *African Journal of Applied Research*, 8(1), 309-323.
- Obunde, S (2019). *Effect of E - Procurement on Supply Chain Performance of County Governments in Kenya: Case Study of Busia County Government*. A Research Project Submitted in Partial Fulfillment of The Requirements for the Degree of Master of Science in Supply Chain Management. School of Business and Economics, Maseno university.
- Oniyangi, H. A., & Ibrahim, U. A. (2024) Optimizing Project Timelines: The Impact of E-Procurement in Accelerating Public Sector Projects in Nigeria 9(3), 1- 16
- Pedhazur, E. J., (1997). *Multiple Regression in Behavioral Research* (3rd ed.). Orlando, FL:Harcourt Brace.
- Pieree, I., Muhanguzi, Z., & SSendagi, M. (2024). Effects Of E-Procurement on Organizational Performance in War Child South Sudan: A Cross Sectional Study. *SJ Business Research Africa*, 1(1), 9. <https://doi.org/10.51168/sjbusiness.v1i1.32>
- Saunders, M., Lewis, P. & Thornhill, A., (2009). *Research Methods for Business Students*. 4 ed. England: Pearson Education Ltd.
- Sheppard, V. A., & Fennell, D. A. (2019). Progress in public sector tourism policy: Toward an ethic for non-human animals. *Tourism Management*, 73, 134-142. doi: <https://doi.org/10.1016/j.tourman.2018.11.017>
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using Multivariate Statistics* (4th ed.). Needham Heights, MA: Allyn and Bacon.
- Venkatesh, V& Davis,F.D (200). A theoretical extension of the Technological Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*,46(2),186-204.
- Venkatesh,V.,Morris,M.G.,Davis,G.B., &Davis, F. D(2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425-478.
- Waithaka, R. K., & Kimani, J. G. (2021). Effect of E-Procurement Practices on Supply Chain Performance. *Global Journal of Purchasing and Procurement Management*, 1(1), 32–42. <https://doi.org/10.47604/gjppm.1200>
- Zhang, X., Shen, L., & Wu, Y. (2021). Green strategy for gaining competitive advantage in housing development: A China study. *Journal of Cleaner Production*, 19(2-3), 157-167.