EFFECT OF ELECTRONIC SOURCING ON PROCUREMENT PERFORMANCE IN SIAYA COUNTY, KENYA

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Abstract

The purpose of the study was to examine the effect of e-sourcing on procurement performance in Siaya County, Kenya which was anchored by unified theory of acceptance and use of technology. Descriptive research design was adopted in order to adequately explain the nature of electronic procurement and procurement performance. The target population consisted of all finance, procurement, and distribution employees in Siaya County whose total number was 160 out of which a sample of 114 was drawn using Yamane's (1967) formula. Data was collected using a closed ended questionnaire structured on Likert scale. Data was analysed using descriptive statistics namely mean and standard deviation. Furthermore, correlation analysis was used to assess whether the independent and dependent variables had a linear relationship. Regression analysis was conducted to predict the extent to which electronic sourcing explained procurement performance of Siaya County, Kenya. The findings were that e-sourcing had a significant effect on procurement performance. It was therefore concluded that electronic sourcing significantly explained procurement performance though the individual statement

indicated some diverse levels of agreement. The study recommended that the County Government can enhance the adoption and use of electronic sourcing capabilities. The government should find out if the departments involved in electronic procurement understood how the processes worked.
Keywords: Electronic Sourcing, Procurement Performance, County of Siaya, Kenya

INTRODUCTION

In the 2020s Electronic Procurement (E-procurement) has become increasingly significant for numerous businesses globally, driven by technological advancements that has streamlined operations, enhanced speed, and improved efficiency within a competitive international landscape (Davilla et al., 2016). The substantial transformations in the operational frameworks and marketing approaches of public sector organizations undoubtedly elevates the role of procurement, positioning it as a critical factor in achieving the set objectives. Johnson et al. (2021) explains that, e-procurement not only adds value to the organization but also enhances overall operational efficiency. Among the capabilities in corporate processes is the electronic sourcing which refers to the use of online tools and decision-support systems aimed at improving the interaction between buyers and suppliers. Its primary goal is to identify, evaluate, select, and engage with both current and prospective suppliers, while also collecting data regarding their products and pricing (Greunen et al., 2019). This approach employs information and communication technology (ICT) to optimize the supplier selection through various features that includes self-service supplier portal modules, standardized criteria for supplier evaluation, centralized access to supplier data, customized vendor registration forms, and the monitoring of supplier performance using Key Performance Indicators (KPIs). Additionally, it promotes diversity and manages insurance certificates (Ondieki et al., 2023).

Procurement performance encompasses the assessment of the procurement department's capability to obtain goods, services, and materials in a timely, cost-efficient, and strategic manner, while also ensuring quality, compliance, and satisfaction among stakeholders (Changalima et al., 2023). The evaluation of procurement performance is fundamentally based on two primary components: procurement effectiveness and procurement efficiency. By evaluating performance, an organization can measure its advancement towards established goals, identify areas of strength and weakness, and develop strategies for future improvements aimed at enhancing overall performance. Thus, procurement performance acts as a mechanism for monitoring and managing the effectiveness and efficiency of the procurement function (Chiappinelli, 2020). It is important to note that procurement effectiveness and efficiency are

distinct competencies within the procurement domain. Recognizing procurement as a critical function for effective county management, the leadership of Siaya County had invested in strategies that enhance the efficiency of its procurement processes, such as adoption of e-sourcing systems (Abdi & Barasa, 2023).

Siaya County government has had challenges such as corruption, funds embezzlement, pending bills and non-use of electronic procurement. The Auditor General report of the 2021/2022 financial year identified various incomplete projects with variances existing between the amount spent on projects and actual work undertaken. 'Further, the report provides a detailed account that during the period under review, the county executive spent Kshs.6,276,158 for diverse goods and services without using the e-procurement system which is more efficient in tracking the expenditure. This was contrary to regulation 49(2) of the Public Procurement and Asset Disposal Regulations (PPADR), 2020 which states that; the conduct of e-procurement procedures for the supply of goods, works and services shall be carried out by a procuring entity using an e-procurement system which is integrated to the state portal (Siaya County Executive, 2022). The recommendation was that county government of Siaya should implement the switch to e-sourcing to enhance its procurement performance Chepng'etich et al. (2020) report emphasized that e-sourcing was a government requirement to achieving improved performance of the devolved system. Additionally, the slow development of intergraded electronic system and requirement to retrain man power in the government sector, as well as localized uniqueness of the county politics provided the motivation to conduct the study. The overall question that the study aimed at answering was; what is the effect of e-sourcing on procurement performance of Siaya County in Kenya.

LITERATURE REVIEW

The Unified Theory of Acceptance and Use of Technology (UTAUT), Introduced by Venkatesh et al. in 2003 was thought to support the proposition of the study and therefore used to identify new constructs and moderators in electronic procurement which is relatively new in public sector procurement. The theory identifies key predictors of technology adoption, including performance expectancy, effort expectancy, social influence, and facilitating conditions, as established earlier by Davis et al. (1989). The first construct, performance expectancy, refers to the degree to which an individual believes that utilizing a specific digital tool can enhance performance in a particular task and help achieve a defined objective (Hanifi & Ali, 2017). For instance, if county government employees anticipate that e-procurement can effectively facilitate the procurement activity they are more likely to embrace technology faster. The second construct, effort expectancy, relates to the perception of the user regarding the minimal effort

required to utilize new technology (Venkatesh et al., 2016). If users of electronic procurement believe that operating t system demands less effort compared to traditional manual procurement methods, they are more inclined to adopt it swiftly. Additionally, UTAUT incorporates the social influence construct, which reflects the degree to which potential users of new technologies are influenced by significant others to engage with the technology. This construct encompasses the impact of social norms, subjective norms, and social pressures on a user's intention to adopt technology. In the context of county governments, where electronic procurement had been established as the primary technological tool for procurement activities, top leadership and procurement officers were obligated to adopt and utilize the system**.** A further component of the UTAUT model is the concept of 'facilitating conditions,' which pertains to the degree to which potential users of new technology believe that they have the necessary support to adopt it. This includes aspects such as training, technical assistance, and any additional resources required for effective usage.

Empirical Review

Electronic sourcing plays a vital role in enhancing the effectiveness of procurement functions, with empirical research generally indicating a favourable correlation between electronic sourcing and procurement performance. In Bangladesh, Blum et al. (2023) conducted a study on introducing e-procurement in Bangladesh: the promise of efficiency and openness which compared electronic procurement methods to traditional paper-based systems from 2011 to 2016. Using a regression model for prediction purpose, the study demonstrated that elements of e-procurement, such as e-sourcing and e-tendering, led to improved access to bidding opportunities, stimulated economic growth, increased administrative efficiency, reduced tender processing times, and enhanced government savings. This study was conducted at a macro-level and cannot be used to generalise contingent individual economic units, such as a devolved government system, and the context of Bangladesh, is significantly different from that of Kenya. In Tanzania, Silvester (2020) supported the findings of Blum et al. (2023) by examining the impact of e-procurement on procurement performance at Muhimbili National Hospital (MNH) that involved fifty participants where mixed research methods approach were applied by collecting data using questionnaires and structured interviews. Correlation and ordinary Least Squares (OLS) regression analysis indicated a positive relationship between e-informing, e-sourcing, and procurement-integrated systems and procurement performance. Given the small sample size and case study approach, the results cannot be used to explain a different situational set up. Contextually, Tanzania's governance systems are significantly

different from Kenya that is largely a democracy, presenting a distinct operational environment, further warranted a further investigation on similar parameters.

Previous studies in Kenyan context, but in different organizations outside the devolved governance framework, links e-sourcing to organizational performance, establishing a strong relationship between performance and the adoption of e-sourcing (Ochieng & Kamaara, 2023; Ntooki & Kyule, 2021; Kandie & Wachiuri, 2023). In a study focusing on state-owned enterprises, Ochieng and Kamaara (2023) explored the relationship between performance and e-procurement. A descriptive research design was applied in a study that focused on 419 employees from five state-owned corporations. By use of stratified random sampling, 55 participants were selected to from whom data was collected using a survey questionnaire. A regression analysis was conducted on the data and it indicated a significant enhancement in procurement performance due to e-sourcing. Additionally, the relationship between e-procurement and organizational performance was investigated within the Kenyan Judiciary by Ntooki and Kyule (2021). This study specifically aimed to determine whether e-sourcing could account for performance outcomes. Employing a resource-based view theory and a descriptive research design, the study targeted 215 staff members, ultimately receiving responses from 141 individuals. Consistent with the findings of Ochieng and Kamaara (2023), the results indicated that electronic sourcing significantly improved organizational performance within the judiciary. However, these studies cannot be used to explain electronic procurement in county governments because of the structure where stakeholders for procurement is very different from the more structured government entities such as the parasails, state departments and agencies.

METHODOLOGY

A descriptive research design was found to be suited to investigate the relationship between e-sourcing and procurement performance in order to describe the characteristics of the variables. Data was collected from 160 employees drawn from Management and non-management personnel from departments of Finance, Procurement, and Supply Chain Management. Yamane's (1967) formula was used to determine the sample size, expressed as follows:

$n = N / [1 + N(e^2)]$

Where: n = Sample size, N = Population size, e = error term (0.05)

Consequently, $n = 160 / [1 + 160(0.05 * 0.05)] = 114$

Consequently, sample size for the study comprised 114 respondents. Further a stratified sampling procedure was followed to select representative portions of departments that were a true representative of the entire stratum. This type sampling entailed dividing the target

population into distinct subgroups that included finance officers, procurement and supply chain from which elements were determined based on their relative size within the overall population. A structured questionnaire was developed with statements indicated on a 5-point Likert scale to evaluate responses each item. A preliminary pilot study involving 12 staff members from Kisumu County was conducted to evaluate the validity and reliability of the questionnaire that served as pre-requisite for dependability of the data that was to be collected. The number of respondents for the pilot study constituted 10% of the sample size, as recommended by Mugenda and Mugenda (2009).

The reliability of a data collection instrument was conducted by employing the internal consistency measure, which is determined through the assessment of Cronbach's alpha coefficient (Anastasiadou, 2006). As supported by Betancourt et al. (2009), data collection instrument is said to be reliable when Cronbach's alpha is a least 0.70. Content validity was examined by getting the opinion of procurement experts including the supervisors for evaluation. Further, to examine face validity and content validity, the instruments were filled during the pre-study to establish clarity and comprehensiveness from the point of view of respondents. The response from procurement experts and pre-study were utilized to improve the instruments as also adopted by other researchers (Amuyunzu & Kisimbii, 2020).

Prior to coding and inputting the completed questionnaires into Statistical Package for Social Scientists (SPSS) version 25, a comprehensive review was conducted to ensure data completeness. The analysis consisted of descriptive and inferential statistical methods where he general trends were determined by use of mean and standard deviation, while inferential analysis involved determination of correlation coefficient to show whether there was a linear relationship between the variables. A linear regression analysis followed to predict the extent to which e-sourcing explained procurement performance in Siaya County, Kenya. The results were presented in tables along with detailed explanations. Regression model was as follows-

$PP = \beta_0 + \beta_1 X_1 + \varepsilon$……………………………………………………………..[1]

Where: PP – Procurement Performance

β_0 = is y-intercept Term

β_1 = Beta   of E-Sourcing

ε = unobserved variables affecting procurement performance

RESULTS

A total of 114 questionnaires were sent out to the identified respondents in form of Google forms and shared the links to the through the emails. Out of the number delivered 96 of them were adequately filled and returned. This translated to 84.2% response rate hence an

adequate sample for analysis. Mugenda and Mugenda (2009) explained that 70% response rate suffices a condition for further analysis of research data.

The distribution of responses on the statements capturing electronic sourcing as implemented in Siaya County government, Kenya was examined in the survey. The items on the closed ended questionnaire were rated as follows on a Likert scale. Strongly Disagree was weighted by (1), disagree (2), neither agree or disagree (3) agree (4) and strongly agree (5). These items wre indicators of the independent variable, electronic sourcing Mean and standard deviation of each item was determined and presented on Table 1 below.

Table 1: Electronic Sourcing

Electronic Sourcing Statements	Mean	Std. Dev.
The requirement identification is done done on the electronic platform	4.25	.83
The county requests prospective suppliers to submit proposals on the online platform of the county.	3.93	1.09
The procurement department uses electronic means to manage long-term relationships with Suppliers	3.81	1.07
The county evaluates received bids using the electronic system	3.75	1.20
The county selects and informs successful bidders using the electronic platform	3.68	.92
The procurement department requests information from suppliers based on the electronic platform	3.68	1.10
The tender committee negotiation and Contract award are done via electronic means	3.68	1.26
The management of the contract performance is done via the online platform	3.56	1.22
The county procurement identifies prospective suppliers using electronic means	3.43	1.17
Overall Mean Score	3.75	1.09

The items were rated as follows; electronic sourcing requirement identification was done on the electronic platform had a mean of 4.25 and standard deviation of 0.83, county requested prospective suppliers to submit proposals on the online platform of the county, 3.93 and 1.09, procurement department used electronic means to manage long-term relationships with Suppliers, 3.81 and 1.07, the county evaluated received bids using the electronic system, 3.75 and 1.20, procurement department requested information from suppliers based using the electronic platform, 3.68 and 1.10, tender committee negotiation and Contract award were done via electronic means, 3.68 and 1.26, management of the contract performance was done via the online platform, 3.56 and 1.22 and the last item was, the county procurement identified

prospective suppliers using electronic means with a mean of 3.43 and standard deviation of 1.17. These results indicate that the average means ranged between 3.43 and 4.25 while the standard was between 1.09 and 0.83. Therefore the statement, electronic sourcing requirement identification was done on the electronic platform had the highest mean and lowest standard deviation. Conversely, the statement that county procurement identified prospective suppliers using electronic had the lowest mean and relatively high standard deviation. The overall scores were 3.75 mean and 1.09 standard deviation.

The same procedure was followed in analysis of indicators of procurement performance and results were as shown in Table 2.

Table 2: Procurement Performance

Procurement Performance	Mean	Std. Dev.
The procurement lead time has improved over the past year due to process optimization efforts.	4.00	1.00
The county procurement department has achieved cost efficiency in its functions.	3.81	1.19
The procurement processes are done according to existing procure laws.	3.75	1.25
Procurement specifications align with the actual needs and requirements of end-users or stakeholders.	3.75	.97
Inventory levels are monitored and adjusted on the online platform hence optimal quantities are maintained.	3.75	1.07
The inside users and the public are satisfied with goods and services procured by the county government.	3.68	1.16
The procurement process in our organization consistently delivers goods and services of high quality.	3.62	1.11
The county's procurement department is transparent and accountable to the electorates	3.56	1.22
Overall Mean	3.74	1.12

Extracting the items from the Table 2 above, the statement that procurement lead time had improved over the past year due to process optimization efforts had a mean of 4.00 and a standard deviation of 1.00. The others had the following results county procurement department had achieved cost efficiency in its functions, 3.81 and 1.19, procurement processes were done according to existing procure laws, 3.75 and 1.25. Procurement specifications aligned with the actual needs and requirements of end-users or stakeholders, 3.75 and .97. Inventory levels were monitored and adjusted on an online platform hence optimal quantities were maintained,

3.75 and 1.07. The inside users and the public are satisfied with goods and services procured by the county government, 3.68 and 1.16. The procurement process in our organization consistently delivers goods and services of high quality, 3.62 and 1.11. The county's procurement department is transparent and accountable to the electorates, 3.56 and 1.22. The overall scores were 3.74 mean and 1.12 standard deviation.

A linear regression analysis was conducted to examine whether the portion of procurement performance that was predicted by E- sourcing (Table 3).

Table 3: Effect Electronic Sourcing on Procurement Performance

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		Durbin-Watson
1	.802[a]	.643	.639	.58139		1.455
ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	57.190	1	57.190	169.197	.000[b]
	Residual	31.773	94	.338		
	Total	88.963	95			
Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.331	.269		1.231	.222
	e-source	.908	.070	.802	13.008	.000
a. Dependent Variable: PP=Procurement performance						
b. Predictors: (Constant), e-source = Electronic Sourcing						

The model summary in Table 3 above indicates that E- sourcing had a positive and high correlation with procurement performance (R= .802). E- sourcing explained 64.3% (R-Square= .643) of the variation in procurement performance with the residual variation of 35.7% .The analysis of variances (ANOVA) posted F-statistic of 169.197 and p-value of .000. (F= 169.197 and P-value = .000).

Further, the regression coefficients were β_0= .331 β_1 =0.908, t= 13.008 and p=0.000 and therefore the estimated model was as follows.

PP = 0.331+ .908 X $_1$ + ε …….………………….…………………...………..……

DISCUSSIONS OF THE RESULTS

The item, electronic sourcing requirement identification was done on the electronic platform had the highest mean of 4.25 implying that the respondents were in agreement that procurement electronic platforms were used to clearly determine the actual needs of the users. This was supported by a standard deviation of less than one (0.83) meaning that the responses did not have much variation. The other items had means ranging between 3.43 and 4.00 which was interpreted to mean that respondents were either not sure if the E-sourcing elements suggested by the items took place or not. Some might have been genuine that e-sourcing was not done as proposed while a few might not have given the full disclosure. The standard deviations also attested to the same direction because they were slightly above 1 standard deviation. The overall mean of 3.75 and 1.09 standard deviation further confirmed the probable state of responses and consequently the contribution of electronic procurement to the procurement performance in the county. The statement that, the county procurement identified prospective suppliers using electronic means had the lowest mean of 3.43 and standard deviation of 1.17 meant that there was a very high probability that those responsible of procurement did identify suppliers electronically. These results cannot confirm the findings of (Ondieki et al., 2023) that e-sourcing leverages information and communication technology to streamline the supplier selection process through features such as self-service supplier portal modules, standardized supplier evaluation criteria, centralized access to supplier information, tailored vendor registration forms, and monitoring of supplier performance based on Key Performance Indicators. This can be also be said of Rahman, (2019) that use of electronic sourcing for organizational needs assessment can significantly enhance procurement processes and improve overall efficiency.

Concerning the items that measured procurement performance, the statement that procurement lead time had improved over the past year due to process optimization efforts had a mean of 4.00 and a standard deviation of 1.00. This high score implied that respondents were in agreement that electronic sourcing had improved lead times. However the overall scores of a mean of 3.75 and 1.09 standard deviation showed that a number of respondents agreed to some extent that electronic sourcing influenced procurement performance while others had some level of contrary opinion.

Contrary to descriptive analysis, E- sourcing had a positive and high correlation with procurement performance (R= .802) and explained 64.3% (R-Square= .643) of the variation in procurement performance with the residual variation of 35.7%. This meant that on average of those who agreed that electronic sourcing influenced procurement performance in Siaya county was slightly above 50% and the ANOVA showed that the model was fit for analysis of the

relationship between electronic sourcing and procurement performance in Siaya county. Therefore electronic sourcing was a significant predictor of procurement performance in the county. The results had similarity with those of Blum et al. (2023) that aspects of e-procurement such as e-sourcing resulted in improved access to bidding opportunities, enhanced administrative efficiency, made tender processing time faster, and increased government savings. Silvester (2020) equally concluded that e-sourcing and procurement-integrated systems had a positive relationship with procurement performance. Ochieng and Kamaara (2023) observed that e-sourcing enhanced procurement performance while Ntooki and Kyule (2021) showed that electronic sourcing enhanced organizational performance and the same opinion was given by Kandie and Wachiuri (2023).

CONCLUSION AND RECOMMENDATIONS

While regression analysis showed that electronic sourcing predicted performance, the responses on the individual items showed a weak agreement to what the statements proposed. There was agreement that sourcing of suppliers was done electronically and it improved lead times of procurement sourcing. The study recommended that Siaya county government should enhance electronic procurement beyond sourcing for suppliers. It is important to investigate whether all those concerned with electronic procurement understood how electronic processes worked and possibly institute training so that optimal usage of electronic procurement was achieved,

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