INFLUENCE OF ELECTRONIC PROCUREMENT SYSTEM ON THE PROCUREMENT PERFORMANCE OF THE COUNTY GOVERNMENT OF BUNGOMA, KENYA

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ABSTRACT

This study investigated the influence of electronic sourcing, electronic data transmission and electronic ordering on procurement performance of the county government of Bungoma, Kenya. This study adopted descriptive research design and targeted 119 respondents in Bungoma County. Data was collected using structured questionnaires; descriptive statistics summarized data into meaningful forms while for variable relationships, inferential statistics was computed using SPSS 23. From the values of unstandardized regression coefficients with standard errors in parenthesis, all the independent variables (e-sourcing, e-data transmission and e-ordering were significant predictors of procurement performance (dependent variable). The study concluded that;, e-sourcing is a significant predictor of procurement performance in the sense that organizations whether private or public that engages in e-sourcing as a salient aspect of electronic procurement really saves on costs and the speed of the procurement process; two; electronic ordering significantly influenced procurement performance implying that electronic ordering of goods and services is a faster and cost effective way of running an electronic procurement system which definitely has a positive bearing on the performance of the procurement function. The study recommended that county governments should engage in secure electronic sourcing practices on electronic procurement platform so as to save on procurement costs; and that county government should foster electronic ordering of goods and services so as to enforce transparency and accountability in the electronic procurement systems.

Key Words: Electronic Sourcing, Electronic Data Transmission, Electronic Ordering, Procurement Performance

INTRODUCTION

Electronic procurement system plays a fundamental role in B2B purchasing by streamlining the buying process and providing the information needed to make more effective purchasing decisions (Osmonbekov et al., 2002). Previous studies allude to the fact that many organizations whether public or private have found benefits from their implementation of e-procurement system. The adoption of Web-based e-procurement system in the B2B purchasing transaction allows firms to reduce transaction costs, improve internal procurement process efficiency, and increase collaboration with suppliers (Barbieri & Zanoni 2005). The benefits of technology-based supports for procurement activities can be organized into two broad categories: organizational level and inter-organizational level. In organizational level, previous studies suggested that implementing e-procurement system could make company's procurement process more efficient and effective through automating procurement process, reengineering the internal processes and enhancing inter-organizational coordination (Barbieri & Zanoni, 2005).

For instance, Davila et al. (2003) thought that implementing e-procurement the firm could shorten the order fulfillment cycle time, lower inventory levels and the price paid for goods, and reduce administrative costs of procurement. Eakin (2003) argued that the benefits of e-procurement can be classified to hard benefits (such as price savings and process cost reductions), soft benefits (such as individual time freed up through more efficient processes), and intangible benefits (such as cultural change, financial approval for all spending, and high

visibility of supplier performance). Presutti (2003) found e-procurement system can bring benefits to the company such as reducing time to- market cycles, reducing material and transactions costs, and reducing stock levels. Chaffey (2004) argued that the benefits of electronic procurement include reduced purchasing cycle time and cost, enhanced budgetary control, elimination of administrative errors, increasing buyers' productivity, lowering prices through product standardization and consolidation of buys, improving the payment process, and improving information management.

Further, implementing web-based electronic procurement system not only could make the operational processes of the buyer organization more effective but also could make the order fulfillment process of the supplier organization more efficient and improve partner relationship management. The main objective of the order fulfillment process that buyer expected is supplier can deliver qualified products to fulfill its orders at the right time and right place (Lin and Shaw 2003). The order fulfillment performance can be improved if supplier can recognize the order, so that the order demand patterns are more transparent to the supplier. In order for supplier to enhance order fulfillment performance, buyer and supplier have to share information. For instance, Toyota shares its inventory and sales information with its suppliers. Having access to such information helps Toyota's suppliers plan and manage their operations better and Toyota can coordinate the inventory orders effectively; as a result, the implementation of just in time (JIT) delivery strategy can be achieved (Chopra & Meindl,

2005). Web-based e-procurement enables the information to be shared among trading partners, such as sales forecasts, production schedules, inventory levels, and product specifications.

In Ghana, e-procurement system holistically tackles underlying issues affecting hospital performance such as lack of access to information for civil society partners and the public. In South Africa, the implementation of the Preferential Procurement Policy Framework Act 5 of 2000, gave effect to section 217(3) of the Constitution of the Republic of South Africa of 1996, by providing a framework for the implementation of a fair public preferential procurement policy (Deloitte Consulting, 2001).

Before the introduction of Public Procurement and Disposal Act (2005), the government of Kenya through Financial Regulations gave the Ministry of finance now, the national treasury the overall responsibility of regulating the procurement of goods, works and services (Mose, 2012) thus, the Ministry of finance communicated all procurement issues to government departments through circulars. Later the government realized that this procurement system had several deficiencies that contributed to huge losses in public funds. The procurement system was noted to lack transparency, accountability and fair competition, the suggestion of electronic procurement.

Electronic procurement has been a key executive requirement among critical government agencies in Kenya (Taaliu, 2017). Traditionally, most public procurement operations were manual; this was deemed to lack transparency, accountability and fair competition (Matunga, Nyanamba, Okibo,

2013). The Kenyan Government's Procurement system was originally contained in the Supplies Manual of 1978, which was supplemented by circulars that were issued from time to time by the treasury (Orina, 2013). The Kenyan government, alongside developmental stakeholders such as the International Trade Center (ITC), the World Bank and the African Development Bank highlighted the importance of e-procurement in sealing of the aforementioned setbacks through accountability and effectiveness.

Statement of the problem

Electronic procurement has been hyped as the most transparent and effective way of saving costs and time in the procurement process; a practice that is being adopted by both private and public organizations. In this regard earlier researches focused on ways of improving the manual procurement system with little success, thus, with the advent of the world web technology, scholars began applying the innovation diffusion theory in electronic procurement systems (Les Robinson, 2009). While many researches; Steinberg, (2003); Wu et al. (2007); Stein, (2009); have focused on the general application of the electronic procurement system in the procurement performance of private organizations, there is little empirical evidence on the efficacy of the electronic procurement system in public organizations.

Furthermore, few researches on electronic procurement systems in public entities have revealed inconclusive results; Wu et al. (2007); Ordanini and Rubera (2008); Vaidya and Callender (2012); Lewis (2014); Canan et al.

(2015). This is because while some researchers insist on the cost savings advantages, some researchers reveal that electronic scams really compromises the security and integrity of the electronic procurement system thus making some affected public organizations revert to the manual procurement system.

Therefore, the inconclusive empirical information on the efficacy of the electronic procurement system in the public sector coupled with techno phobia in some county governments in Kenya that have reported massive embezzlement of public funds through the manual procurement system motivated this study to investigate the influence of electronic sourcing, electronic procurement system management, electronic data transmission and electronic ordering on procurement performance of the county government of Bungoma, Kenya.

Objectives of the study

The general objective of this study was to investigate the influence of electronic procurement on procurement performance of the county government of Bungoma, Kenya. Specific objectives were:-

- To determine the influence of electronic sourcing on procurement performance of the county government of Bungoma, Kenya
- To determine the influence of electronic data transmission on procurement performance of the county government of Bungoma, Kenya
- To assess the influence of electronic ordering on procurement performance of the county government of Bungoma, Kenya

Research hypotheses

- H_{01}: There is no significant relationship between electronic sourcing and

procurement performance of the county government of Bungoma, Kenya
- H_{02}: There is no significant relationship between electronic data transmission and procurement performance of the county government of Bungoma, Kenya
- H_{03}: There is no significant relationship between electronic ordering and procurement performance of the county government of Bungoma, Kenya

LITERATURE REVIEW

Theoretical review

Innovation Diffusion theory

This theory asserts that innovation is characterized into five sets; innovators, individuals who want to be the first to try the innovation, Early Adopters, people who represent opinion leaders, Early Majority individuals who need to see evidence that the innovation works before they can adopt it, Late Majority, skeptical individuals who only adopts an innovation after it has been tried by the majority and Laggards, individuals who are very skeptical of change and are the hardest group to involve in the innovation process (Rogers, 1997).

In this regard, the rate of adoption of innovative strategies can be looked at in terms of; relative advantage given to the organization, compatibility, complexity, trial-ability of the new strategies and observability to the stakeholders within the social system. The second factor is communication that lays information and creating and sharing information relating to innovative initiatives in the organization. The third element is time that considers the duration involved in the innovation-decision process. The

last element is the social context of the new systems (Rogers, 1997). Diffusion of innovation strategies requires evolution and reinvention of products and people so that they are able to perform better (Les Robinson, 2009).

Therefore, the innovation diffusion theory was relevant to this study since electronic procurement is an innovative activity meant to ensure online transaction of all procurement activities so as to minimize procurement costs, time and improve transparency in the procurement process.

Actor Network theory

This theory abbreviated as ANT was developed in the early 1980's by scholars Michel Callon, Bruno Latours and John Law while working on a publication for the science and technology subject (Tatnall & Gilding, 2009). The Actor-network theory explains that the world is full of hybrid entities containing both human and non-human elements, and was developed to assess situational contexts where identifications of these elements is complex (Tatnall & Gilding, 2009). ANT deals with interactivity between two elements in a network and how various components in the two elements can be identified. In the desire to evaluate all interactive elements in a system both human and nonhuman, the ANT theory is based on the approach to such systems is sustained in a level playing field. The theory highlights that, when consideration for selection is done there has to be a level playing field and the choice settled on must be the best in a the list (Tatmall & Gilding, 2009).

Thus the ANT theory recognizes the interaction of numerous elements in a level playing field

(Cusumano & Selby, 2014) and this theory connects to this study in the sense that the electronic sourcing platform makes it possible for the interaction with numerous elements, which in procurement can be numerous possible suppliers, and also makes it possible to identify the best who can match the requirements as advertised on the electronic procurement platform.
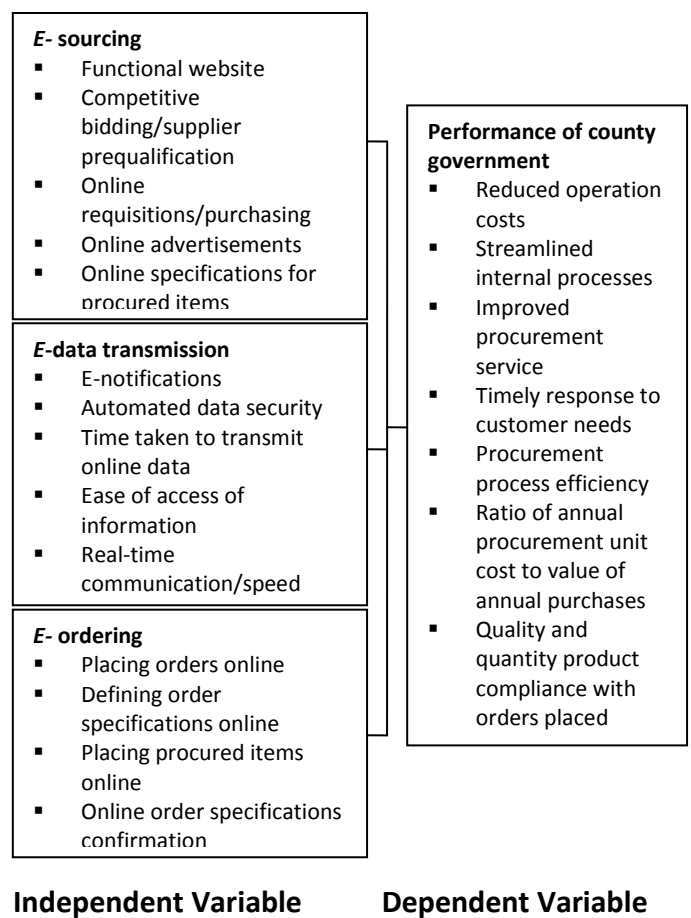
Conceptual framework

Independent Variable   Dependent Variable

Figure 1: Conceptual Framework

Source: Author (2019)

Empirical Review of Related literature

Giaconda et al. (2010) studied the impact of e-procurement on procurement practices and performance. The study was motivated by the fact that there was a gap in analyzing e-procurement systems where previous literature had limited the studies to internet-based procurement only. The findings of the study showed that e-procurement is not widely used but at least 30 percent of multinational firms surveyed had implemented a basic e-procurement system. The study concluded that procurement managers should seriously consider adopting electronic buying to continuously improve their information gathering, supplier contact, contracting, intelligence and analysis practices. Previous studies have also linked supply chain processes integration with operational agility, lower costs, superior product or service design and enhanced profitability. The studies revealed significant relationship between firm size and e-procurement applicability (Gesuka et al., 2013), thus future studies were to assess hoe e-procurement management system affects procurement performance. Further, any good e-procurement software system today is designed to greatly reduce effort and time required to complete purchasing transactions by eliminating traditional paper chain of payment reconciliation, approvals, requisitions and receiving. The key features of e-procurement approaches enables users to find an item in an electronic catalog, create a requisition, route the order requisition for approval, create and transmit the order to vendors, and also help to automate the invoicing and payment process (Berger & Zeng, 2006).Thus to attain the greatest benefits, procurement system processes should

be evaluated and improved before adopting e-procurement tools since internet technologies enable integration with trading partners to amplify the need for fundamental organizational change; thus E-procurement system is more likely to be beneficial in dispersed supply chains as it facilitates its coordination (Chaffey, 2002).

Berger and Zeng (2006) also found that any good e-procurement software system today is designed to greatly reduce effort and time required to complete purchasing transactions by eliminating traditional paper chain of payment reconciliation, approvals, requisitions and receiving. The key features of e-procurement approaches enables users to find an item in an electronic catalog, create a requisition, route the order requisition for approval, create and transmit the order to vendors, and also help to automate the invoicing and payment process.

In terms of maintaining cost of an electronic procurement system, Billinge (2000) exemplifies the bank of Ireland, which took the lead on e-procurement by one million Irish Pounds in one year upon implementing full e-procurement initiatives including data transmission, vendor rationalization programs, process improvement and system implementation. The bank of Ireland took this decision after finding out that its suppliers had not been rationalized in many years and had some 37 standalone purchasing systems plus procurement processes. For purchasing operating resource management materials, the bank of Ireland normally spend an average of 330 million Irish Pounds every year. The company reported saving 30% in one year. So, attaining a great deal of cost savings from an electronic procurement system can definitely be

a great achievement for any organization whether private or public.

Electronic Sourcing

Electronic sourcing is considered a strategic process to establish, manage and monitor contracts and as an essential part of e-procurement; thus a well-managed sourcing process should prioritize organizational requirements, understand supply market, select the supplier best placed in satisfying organizational needs, negotiate for the best overall value, establish and manage relationships with suppliers, develop cost reduction strategies and enhance long term performance of the purchasing operations and in turn the procurement performance. Aberdeen group developed a seven stages e-sourcing cycle that can be adopted in implementation of e-sourcing (GroupA, 2005).

In this regard, Lewis (2004) developed a guide for implementation of e-sourcing. In the guide, the first factor emphasizes on configuration for capacity which involves understanding of the needs of the organization and developing a system take such needs. The second factor is an understanding that an e-sourcing platform will not automatically come with resource savings. Other actors are identified as selection of appropriate tools and development of the right skills is the third point he pointed. The organization need to train employees on the required skills and manage change in the work place (Lewis 2004).

Further, Monczka et al. (2015) asserts that e-sourcing tools used to manage the flow of different types of documents for example by either automating the document creation process or electronically transmitting documents to the suppliers. More so, B2B e-sourcing systems such as e-RFxs, e-auctions and market exchanges aim to automate workflows and leverage organizational spending power. (Davila, Gupta & Palmer, 2013) also indicate that e-sourcing tools can be buy side applications of B2B e-business. E-Sourcing system is thus an online trading and processing platform to support electronic acquisition of product and materials, plant and equipment, labor and services.

Electronic Data transmission

Electronic transmission of data over the internet involves two facets. These are security and messaging agents. Messaging and data tools enable the Internet-based exchange of transactional data between different buyers and suppliers in the e-procurement marketplace. In order to do this, transactions are sent via the Internet as messages and then integrated into the back-office system thus enabling financial postings that coincide with the payment, invoicing and processes receipt (Chan et al., 2007).

In this regard, efficiency measures the usage of electronic data processing resources in an organization. E-procurement thus impacts this dimension allowing the employees to achieve reliable result compared to traditional paper-based procedure, but using less time, and energy (Chan et al., 2007). Effectiveness involves comparing goals and results of the organization. Furthermore, for organization to minimize disputes, appeals and clarification requests from the suppliers, e-procurement plays a key role in efficient electronic data transmission.

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The Strategic Journal of Business & Change Management. **ISSN** 2312-9492 (Online) 2414-8970 (Print). www.strategicjournals.com

Thus efficient data transmission in an e-procurement system increase information sharing which can decrease operational costs by reducing transaction cost as well as improving management and control in the supply chain. Furthermore, maintaining information sharing through fast procurement data transmission decreases the extent of uncertainty and this leads to increase in procurement performance (Chang et al., 2013).

Electronic ordering

Electronic ordering is defined as the formal electronic request of goods and services including all processes from the identification of a need to purchase of products, to the payment for these purchases, including post-contract/payment activities such as contract management, supplier management and development. E-ordering in this study is defined as the process of creating and approving purchasing requisitions, placing purchase orders as well as receiving goods and services ordered using internet based platform to execute electronic commands such as, e-requisitions, e-cataloguing, e-authorization, e-receipt, and e-inspection (Ghazaly, 2010).

E-ordering is driven by automated procurement process, integrating the functional processes and purchase management (Son & Benbasat, 2007). The emergence of Web-based e-procurement; e-requisitions, e-cataloguing, e-authorization, e-receipt, and e-inspection is expected to reduce the order fulfillment cycle time, lower the inventory levels, reduce the administrative cost of procurement, cost of procurement, and enhance the order fulfillment and performance of suppliers (Subramaniam & Shaw, 2009). The

benefits of e-procurement have been verified by many leading companies worldwide and e-ordering is a significant tactic in most companies' e-requisitions, e cataloguing, e-authorization, e-receipt, and e-inspection strategies (Croom, 2010). The consensus is that e-procurement benefits organizations with respect to procurement cost and process efficiency associated with procurement activities (Choudhury & Hartzel, 2008). This is because web-based e-procurement solutions can support procurement performance in organizations (Croom, 2010).

Initially, ordering process between various parties was organized through mail, phone, fax and electronic data interchange (EDI) and more recently internet. E-ordering has evolved into the use of electronic technologies to streamline and enable the ordering activities of an organization (Hawking et al., 2014). The benefit of e-ordering has contributed great saving in bottom line procurement costs of many companies worldwide and hence technology use is a significant tactic in most companies e-business strategies. It is claimed that a company engaging in e-ordering can cut procurement cost by 8 to 15% (Ghazaly, 2010).

METHODOLOGY

This study adopted the descriptive survey design. A descriptive survey involves collecting data that answers questions about the participants of the study, thus appropriate when the researcher wishes to provide an accurate representation of persons, events or situations and make inferences about the target population (Saunders et al., 2012). The target population of those cases that contained the desired information consisted

of procurement officers, ICT officers, internal auditors, accountants, economists and finance officers that were perceived to influence the procurement system in the county government of Bungoma. Primary data was collected from respondents directly using self- administered structured questionnaires (closed ended questions). Data collected was edited, cleaned, coded; and then SPPS version 24 was used to analyze the data. The following multiple regression equation was applied;

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where Y= Dependent variable [Procurement performance of Bungoma county government]

α=Constant; the y intercept or the average response when both predictor variables were 0

X_1= Independent variable 1 [e-sourcing]

X_2= Independent variable 3 [Data transmission]

X_3= Independent variable 4 [e-ordering]

ε= error term

$\beta_1...\, B_3$ = Beta Coefficients

FINDINGS

Descriptive statistics

Descriptive statistics are the summarized responses in terms of frequencies and percentages as per each statement measuring the three independent variables (e-sourcing, e-data transmission, e-ordering). That is, the descriptive statistics tables indicated the outcomes of responses to each of the statements on study variables using Likert scale with values ranging from 5 to 1; that was; 5=Strongly Agree, 4=Agree, 3= Uncertain, 2=Disagree and 1= Strongly Disagree.

E-sourcing and procurement performance

This assessed descriptive responses on objective one of the study; that is, the influence of electronic sourcing on procurement performance of the county government of Bungoma, Kenya. The responses were presented in table 1.

Table 1: Descriptive statistics: E-sourcing

Statement	5	4	3	2	1	mean	Std.dev
1.There is e-sourcing platform to improve search of prospective suppliers to the county government.	13(15.7)	43(51.8)	4(4.8)	21(25.3)	2(2.4)	3.53	0.908
2. There competitive bidding on the e-sourcing platform	8(9.6)	39(47.0)	6(7.2)	23(27.8)	7(8.4)	3.22	0.900
3.The county government uses e-sourcing to reduce the costs associated sourcing of materials, goods and services	12(14.5)	44(53.0)	7(8.4)	15(18.1)	5(6.0)	3.52	0.830
4. There is online requisitions/purchasing in the e-procurement system	9(10.8)	38(45.8)	6(7.2)	20(24.1)	10(12.0)	3.19	0.864
5.The county uses e-sourcing to improve negotiation speed and value for all purchases by the county government	13(15.7)	45(54.2)	8(9.6)	11(13.3)	6(7.2)	3.58	0.927
6.There are online specifications for procured items on the e-sourcing	11(13.3)	41(49.4)	9(10.8)	13(15.7)	9(10.8)	3.39	0.818

platform
Valid listwise 83
Grand mean = 3.405

From table 1, most respondents agreed (51.8%) and strongly agreed (15.7%) that there was e-sourcing platform to improve search of prospective suppliers to the county government while 25.3% disagreed to the statement. This implied that in as much as there was an e-sourcing platform, may be all sourcing of county government's procured goods and services did not go through that platform; thus a source of procurement malpractice.

Secondly, most respondents agreed (47.0%) and strongly agreed (9.6) that there was competitive bidding on the e-sourcing platform. However, 27.8% disagreed to statement implying existence of cases of lack of competitive bidding on the e-sourcing platform, which definitely bred procurement malpractices that could negatively affect the procurement performance in the county government.

Further 53.0% and 14.5% of respondents agreed and strongly agreed respectively that the county government used e-sourcing to reduce the costs associated sourcing of materials, goods and services. This implied that e-sourcing platform was an effective cost cutting measure of the procurement function. Similarly, 45.8% and 10.8% of respondents agreed and strongly agreed respectively that there was online requisitions/purchasing in the e-procurement system, which definitely reduced a lot of paper work and centralizing of the procurement system on an online platform where all online requisitions/purchasing was reflected on an e-procurement system for all buyers and suppliers to see; thus increasing transparency in the procurement process.

More so, most respondents agreed (54.2%) and strongly agreed (15.7%) that the county used e-sourcing to improve negotiation speed and value for all purchases by the county government; which was supported by 49.4% and 13.3% of respondents who agreed and strongly agreed respectively that there were online specifications for procured items on the e-sourcing platform. This confirmed that e-sourcing improved negotiation speed and value of all procured goods and services by the county government. This was supported by Kamotho (2014) who conducted a study in Kenya to examine the role of e-sourcing and procurement performance among the state corporations in Kenya and found a strong relationship between e-sourcing and procurement performance.

E-data transmission and procurement performance

This assessed responses on the influence of e-data transmission on procurement performance and a summary of responses was presented in table 2.

Table 2: Descriptive statistics: E-Data transmission

Statement	5	4	3	2	1	mean	Std.dev
1. There is e-notifications of procurement information	3(3.6)	34(41.1)	29(34.9)	9(10.8)	8(9.6)	3.18	0.914
2.There is automated data security of procurement information	11(13.3)	39(47.0)	17(20.5)	10(12.0)	6(7.2)	3.47	0.897
3. e-procurement has improved time taken to transmit online data	15(18.1)	44(53.0)	5(6.0)	11(13.3)	8(9.6)	3.57	0.912
4.There is ease of access of procurement data/information	14(16.9)	43(51.8)	4(4.8)	12(14.5)	10(12.0)	3.47	0.872
5. There is real-time and faster communication of procurement data	3(3.6)	38(45.9)	9(10.8)	26(31.3)	7(8.4)	3.05	0.925
6.Generally, the e-procurement system is efficient in the transmission of procurement data	16(19.3)	47(56.7)	6(7.2)	8(9.6)	6(7.2)	3.71	0.910

Valid listwise 83

Grand mean = 3.408

From table 2, there were mixed reactions about the view that there was e-notifications of procurement information; that is while 41.1% agreed, 34.9% were uncertain implying that possibly in as much as there was e-procurement platform in the county government there was a need for improvement of e-notifications on the system to allow buyers and or suppliers be electronically notified on procurement decisions.

Secondly, there were also mixed reactions about the statement; there was automated data security of procurement information'. This was because while 47.0% agreed, 20.5% were uncertain while 12.0% disagreed to the statement. This implied that in as much there was automated data transmission by the electronic procurement system, there was need to improve on the security of the automated information since it could be prone to hacking. However, most respondents agreed (53.0%) and strongly agreed (18.1%) that e-procurement had

improved time taken to transmit online data. This implied that saving on tome definitely improved the speed of the electronic procurement system. This was supported by 45.9% and 3.6% of respondents who agreed and strongly agreed respectively that there was real-time and faster communication of procurement data which definitely saves on time wasted on manual procurement systems.

Further, most respondents agreed (51.8%) and strongly agreed (16.9%) that there was ease of access of procurement data or information, thus revealing importance of ease of use of the electronic procurement system. On overall response, most respondents agreed (56.7%) and strongly agreed (19.3%) that generally, the e-procurement system was efficient in the transmission of procurement data. This was supported by Giaconda et al. (2010) who studied the impact of e-procurement on procurement practices and performance and concluded that

procurement managers should seriously consider adopting electronic procurement data transmission to continuously improve their information gathering, supplier contact, contracting, and intelligence and analysis practices.

E-ordering and procurement performance

This assessed responses on objective three of the study, that was, influence of electronic ordering on procurement performance. The summary of responses was presented in table 3.

Table 3: Descriptive statistics: E-Ordering

Statement	5	4	3	2	1	mean	Std.dev
1.The e-procurement system allows placing orders online	6(7.2)	39(47.0)	12(14.5)	21(25.3)	5(6.0)	3.24	0.910
2.There is defining of order specifications online	3(3.6)	37(44.6)	9(10.8)	23(27.7)	11(13.3)	2.98	0.889
3.There is placing of procured items online	5(6.0)	38(45.8)	11(13.3)	20(24.1)	9(10.8)	3.12	0.873
4.There is online order specifications confirmation	4(4.8)	35(42.2)	10(12.0)	21(25.3)	13(15.7)	2.95	0.829
5. The e-ordering system enhances buyer/supplier collaboration	9(10.8)	48(57.9)	7(8.4)	11(13.3)	8(9.6)	3.47	0.951
6. Generally, e-ordering enhances performance of the procurement function in the county government	11(13.3)	49(59.1)	6(7.2)	10(12.0)	7(8.4)	3.57	0.928
Valid listwise 83							
Grand mean = 3.222							

From table 3, there were mixed reactions to the statement that the e-procurement system allowed placing orders online. This was because 47.0% agreed, 14.5% were uncertain while 25.3% disagreed. This implied that place of orders online had not been really embraced by the county electronic procurement system thus need an improvement. Similarly, 44.6% agreed, 10.8% were uncertain while 27.7% disagreed that there was defining of order specifications online, implying that electronic ordering system had not really been well affected on the county electronic procurement system.

More so, only 45.8% agreed, 13.3% were uncertain while 24.1% disagreed that there was placing of procured items online, thus implying existence of procurement malpractices in as far

as electronic ordering of goods or services was concerned. Similarly, 42.2% agreed, 12.0% were uncertain; while 25.3% of respondents disagreed that there was online order specifications confirmation.

However, most respondents agreed (57.9%) and strongly agreed (10.8%) that the e-ordering system enhanced buyer/supplier collaboration and on overall response, most respondents agreed (59.1%) and strongly agreed (13.3%) that generally, e-ordering enhances performance of the procurement function in the county government. This meant that in as much as electronic ordering had not perfectly implemented on the county's electronic procurement platform, most respondents felt that electronic ordering could enhance the

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The Strategic Journal of Business & Change Management. **ISSN** 2312-9492 (Online) 2414-8970 (Print). www.strategicjournals.com

performance of the county government's procurement function. This was supported by Croom (2010) who asserted that the benefits of e-procurement have been verified by many leading companies worldwide and e-ordering is a significant tactic in most companies' e-requisitions, e-cataloguing, e-authorization, e-receipt, and e-inspection strategies.

Inferential analysis

Table 4: Correlations

		E-sourcing	E-data transmission	E-ordering	Procurement performance
E-sourcing	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	83			
E-data transmission	Pearson Correlation	.685**	1		
	Sig. (2-tailed)	.000			
	N	83	83		
E-ordering	Pearson Correlation	.669**	.655**	1	
	Sig. (2-tailed)	.000	.000		
	N	83	83	83	
Procurement performance	Pearson Correlation	.819**	.755**	.746**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	83	83	83	83

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

Table 5: Direct influence of e-sourcing on procurement performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.819[a]	.671	.667	.63664	.671	165.169	1	81	.000

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	66.946	1	66.946	165.169	.000[a]
	Residual	32.831	81	.405		
	Total	99.776	82			

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.897	.217		4.143	.000
	E-sourcing	.808	.063	.819	12.852	.000

a. Dependent Variable: Procurement Performance

The model summary in table 5 showed that R^2 = 0.671, which implied that 67.1% variation in the procurement performance in Bungoma county government was explained by electronic sourcing while other variables not in the study model accounted for 32.9% variation in the procurement performance in Bungoma county government. Further, coefficient analysis indicated that there existed a positive and significant effect of e-sourcing on the procurement performance in Bungoma County government (β= 0.808 (0.063); *at p<.01*). This implied that a single increase in effective e-sourcing practices would yield 0.808 unit improvement in the procurement performance in Bungoma County government. Therefore, the linear regression equation was;

(i) y = **0.897+ 0.808X₁**

Where;

y = procurement performance

X_1 = e-sourcing

Direct influence of e-data transmission on procurement performance

This tested the direct (linear) influence of e-data transmission on the procurement performance of the county government of Bungoma. The results are indicated in table 6.

The model summary showed that R^2 = 0.57.0, which implied that 57.0% variation in the procurement performance in Bungoma county government was explained by electronic data transmission while other variables not in the study model accounted for 43.0% variation in the procurement performance in Bungoma county government. Further, coefficient analysis indicated that there existed a positive and significant effect of e-data transmission on the procurement performance in Bungoma County government (β= 0.670 (0.065); *at p<.01*). This implied that a single increase in efficient e-data transmission practices would yield 0.670 unit improvement in the procurement performance in Bungoma county government. Therefore, the linear regression equation was;

(ii) y = **1.430+ 0.670X₂**

Where;

y = procurement performance

X_2 = e-data transmission

Table 6: Direct influence of E-data transmission on procurement performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
					Change Statistics				
1	.755[a]	.570	.565	.72759	.570	107.477	1	81	.000

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	56.896	1	56.896	107.477	.000[a]

	Residual	42.880	81	.529
	Total	99.776	82	

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.430	.218		6.567	.000
	E-data transmission	.670	.065	.755	10.367	.000

a. Dependent Variable: Procurement Performance

Direct influence of e-ordering on procurement performance

This tested the direct (linear) influence of e-ordering on the procurement performance of the county government of Bungoma. The results were indicated in table 7.

Table 7: Direct influence of e-ordering on procurement performance

Model Summary

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.746^a	.556	.551	.73929	.556	101.558	1	81	.000

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	55.506	1	55.506	101.558	.000^a
	Residual	44.270	81	.547		
	Total	99.776	82			

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.330	.233		5.708	
	E-ordering	.724	.072	.746	10.078	

a. Dependent Variable: Procurement Performance

The model summary in table 7 showed that R^2 = 0.556, which implied that 55.6% variation in the procurement performance in Bungoma county government was explained by electronic ordering while other variables not in the study model accounted for 44.4% variation in the procurement performance in Bungoma county government. Further, coefficient analysis indicated that there exist a positive and significant effect of e-ordering on the procurement performance in Bungoma county

government (β= 0.724 (0.072); *at p<.01*). This implied that a single increase in efficient e-ordering practices would yield 0.724 unit improvement in the procurement performance in Bungoma county government. Therefore, the linear regression equation was;

(iii) y = **1.330+ 0.724X₃**

Where;

y = procurement performance

X_3 = e-ordering

Table 8: Multiple regression analysis

					Model Summary				
						Change Statistics			
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.894[a]	.800	.792	.50271	.800	105.271	3	79	.000

		ANOVA[b]				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	79.812	3	26.604	105.271	.000[a]
	Residual	19.965	79	.253		
	Total	99.776	82			

a. Predictors: (Constant), E-ordering, E-data transmission, E-sourcing

b. Dependent Variable: Procurement performance

Table 8 showed the multiple regression results of the combined effects of the three independent variables (e-sourcing, e-data transmission, e-ordering). The multiple regression results showed the F statistics was significant (F = 105.271; significant at *p<.001*), thus confirming the fitness of the model. For an R^2 of 0.800 showed that the study explained 80.0% of variation in procurement performance in the county government of Bungoma, while other factors not in the study model accounted for 20.0%, hence, it was a good study model.

Further, from the values of unstandardized regression coefficients with standard errors in parenthesis, all the independent variables (e-sourcing; β = 0.444 (0.081) at *p<0.01*; e-data transmission; β = 0.346 (0.056) at *p<0.01;* e-

ordering; β = 0.177 (0.078) at *p<0.05,* significantly predicted procurement performance in Bungoma county government (dependent variable). Thus the multiple regression equation was;

 (iv) Y= 0.458 +0.444X₁+0.346X₂+ 0.177X₃

Where;

y= procurement performance

X_1= e-sourcing

X_2= e-data transmission

X_3= e-ordering

Table 9: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.458	.182		2.518	.014
	E-sourcing	.444	.081	.450	5.458	.000
	E-data-transmission	.346	.056	.390	6.162	.000
	E-ordering	.177	.078	.183	2.271	.026

a. Dependent Variable: Procurement performance

Hypothesis testing

Study **hypothesis one** stated that there is no significant relationship between electronic sourcing and procurement performance of the county government of Bungoma, Kenya. The study results indicated that there exists a positive and significant relationship between electronic sourcing and procurement performance of the county government of Bungoma (β = 0.444 (0.081) at *p<0.01)*. **Hypothesis one was thus rejected.** The results implied that a single increase in effective e-sourcing practices will yield 0.444 unit improvement in the procurement performance in Bungoma county government. The results were supported by Davila, Gupta & Palmer,(2013) who also indicated that e-sourcing tools can be buy side applications of B2B e-business; consequently E-Sourcing system was thus an online trading and processing platform to support electronic acquisition of product and materials, plant and equipment, labor and services.

Study **hypothesis two** stated that there was no significant relationship between electronic data transmission and procurement performance of the county government of Bungoma, Kenya. The study results indicated that there existed a positive and significant relationship between electronic data transmission and procurement performance of the county government of Bungoma (β = 0.346 (0.056) at *p<0.01)*. **Hypothesis two was thus rejected.** The results implied that a single increase in efficient e-data transmission practices will yield 0.346 unit improvement in the procurement performance in Bungoma county government. The results were supported by Chang et al., (2013) assertion that efficient data transmission in an e-procurement system increase information sharing which can decrease operational costs by reducing transaction cost as well as improving management and control in the supply chain. Furthermore, maintaining information sharing through fast procurement data transmission decreases the extent of uncertainty and this leads to increase in procurement performance.

Further, Malone et al, (2009) found that one of the earliest forms of electronic commerce to be widely adopted was electronic funds transfer (EFT) between banks, using proprietary networks. These electronic systems formed the basis for the millions of transactions now undertaken every day with credit cards and other forms of electronic payment. In the airline industry, electronic reservations and ticketing systems were developed and connected between carriers and travel agents, to lower the cost of doing business and to improve customer service

through efficient electronic data transmission which can also be effectively applied in county governments.

Study **hypothesis three** stated that there was no significant relationship between electronic ordering and procurement performance of the county government of Bungoma, Kenya. The study results indicate that there exists a positive and significant relationship between electronic ordering and procurement performance of the county government of Bungoma (β = 0.177 (0.078) at *p<0.05)*. **Hypothesis three was thus rejected.** The results implied that a single increase in efficient e-ordering practices would yield 0.177 unit improvement in the procurement performance in Bungoma county government. The results were supported by Son & Benbasat 2007) assertion that E-ordering was driven by automated procurement process, integrating the functional processes and purchase management. The results were also supported by Lewis (2014) who conducted a study on performance of the electronic procurement platforms by evaluating the effectiveness of e-ordering module. The study revealed that e-ordering can be used as a tool to reduce process time, generate ordering savings and to drive incremental revenues. He further found out that the use of e-ordering starts with selection of an e-tool to complement an organizational strengths, followed by change management and training of the staff and other stakeholders where possible.

CONCLUSIONS

The study first concluded that e-sourcing is a significant predictor of procurement performance in the sense that organizations whether private or public that engages in e-sourcing as a salient aspect of electronic procurement really saves on costs and the speed of the procurement process

Secondly, the study concluded that e-data transmission is a significant predictor of procurement performance because, thus organizations that embrace electronic data transmission eases electronic procurement by electronic generation of receipts, notifications and all seemingly related advantages of running an electronic data transmission platform.

Thirdly, electronic ordering significantly influenced procurement performance implying that electronic ordering of goods and services is a faster and cost effective way of running an electronic procurement system which definitely has a positive bearing on the performance of the procurement function.

RECOMMENDATIONS

First, the study recommended that county governments should engage in secure electronic sourcing practices on electronic procurement platform so as to save on procurement costs.

Secondly county governments should invest in secure and upgraded electronic data transmission mechanisms on the electronic procurement platform so as to improve on procurement information transmission.

Lastly, the county government should foster electronic ordering of goods and services so as to enforce transparency and accountability in the electronic procurement systems.

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Areas for further research

First, a similar study can be replicated but focusing on the influence of electronic procurement management systems on the procurement performance.

Secondly, another study can be done on electronic procurements frauds to assess if truly the electronic procurement system is secured from internal and external system hacks.

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