



INFLUENCE OF ICT CAPITAL INFRASTRUCTURE ON PUBLIC PROCUREMENT PERFORMANCE. A CASE OF MIGORI COUNTY GOVERNMENT, KENYA

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ABSTRACT

Public procurement has evolved overtime by integrating information technology and internet to all functions of procurement. E-Procurement implementation was a reform undertaken by the government of Kenya to enhance public procurement operations while reducing costs and increasing efficiency at the national as well as the devolved levels. However, Migori County as a devolved government, still lags behind with e-procurement implementation due to factors like ICT infrastructural cost among others. The study explored the influence of ICT capital infrastructure on the procurement performance of Migori County Government. Correlational research design was adopted. Primary data were collected using structured questionnaires from all the 80 departmental heads. Regression results indicated that ICT capital infrastructure positively contributes to procurement performance ($R = .16, p > .05$). The study recommended that devolved governments should fully operationalize ICT infrastructure in their procurement processes to improve procurement performance.

KEY WORDS: *E-Procurement, ICT Capital Infrastructure, Procurement Performance, Devolved Governments*

1.0 INTRODUCTION

In today's dynamic global business competition scenario, web based technology is essential for all countries including Kenya. Electronic procurement (e-procurement) uses of internet-based (integrated) information and communication technologies (ICT) to carry out individual or all stages of the procurement process. Benefits of e-procurement can be derived if information technology equipment is available and used appropriately to offer: smoother and faster process flow, efficient distribution of information, decentralization of tasks and decisions, increased transparency and better control in public procurement in an organization (Mose, Njihia &

Magutu, 2013). According to Public Procurement Oversight Authority (2013), procurement processes in public institutions including county government are still manual with the internet only being used for e-mails and web browsing.

Migori County government is one the 47 counties that is exploring the use of ICT in electronic procurement (e-procurement) implementation to enhance their competitiveness and to improve service delivery. More than 50% of procurement processes in Kenya's public procuring entities are carried out manually including Migori County. The manual processes are costly, slow, and inefficient and data storage and retrieval is poor (Malela, 2010).

Currently, Migori County Government is in the process of combating with rapid procurement reforms and adoption of new technological innovation to enable it meets the competitive edge for globalized business environment. Despite the advent of internet and ICT applications compelling County governments to shift their operations from traditional way to e-procurement there are influential factors that affect implementation on procurement performance in Migori County (Geoffrey, Muma, Eunice Waruguru, 2015).

Migori county government seems to have partially implemented e-procurement. ICT capital infrastructure influence is one of the aspects that this study explores on how it impedes implementation. It involves the assessment of: cost implication, slow internet speed, unsuitability of software platforms and lack of strategic system integration and interoperability (Kamel, 2014). Additionally, employees' capacity and compliance regarding electronic procurement implementation influence may contribute procurement performance. This study explored the extent to which new technology acceptance and use on employees play a significant role in e-procurement implementation and performance.

1.2 Purpose of the Study

Previously, devolved governments in Kenya were using manual procurement processes which were too slow to meet competitive demand of stakeholders and porous to misuse of public funds.

With emergence of new technology in procurement processes, the devolved governments are in the process of adopting and using ICT in procurement processes in line with Public Procurement and Disposal Act (PPDA 2015) and international standards. However, the implementation of ICT in procurement processes in the devolved governments has been sluggish. This has been attributed to by ICT capital infrastructure such as poor internet connectivity among others. A number of studies have indicated that a number of factors affect electronic procurement implementation. However, literature on the level of influence of ICT capital infrastructure on procurement performance in the devolved governments is limited.

H₀₁: ICT capital infrastructure has no significant influence on procurement performance of Migori County government.

1.3 Conceptual framework

The study conceptualized that ICT capital infrastructure lays out the technological backbone of e-procurement implementation hence create enabling environment for better communication for contract and vendor management, timely and certainty of right supplies hence contributes to procurement performance. Independent variable in the conceptual framework above include ICT capital infrastructure therefore formed the independent variable whereas Cost reduction, Timely delivery of quality Commodities, and Certainty of right supplies were the dependent variables.

Independent Variable

Dependent Variable

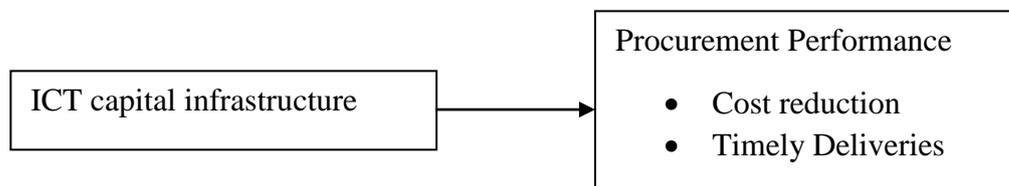


Figure 1: Conceptual framework for ICT capital infrastructure and procurement performance

Source: Self conceptualization (2017)

2.0 LITERATURE

2.1 Technology Acceptance Theory

This theory is based on two assumptions; perceived usefulness of the system such us; improved performance, enhanced productivity, effectiveness and efficiency in operations etc. and the perceived ease of use of the new systems such as ease to learn; ease to use, ease to control and ease to remember (Davis, 1986). The theory postulates that acceptance and use of new technology in e-procurements will improve procurement performance. The theory provides models that show systematic processes on how users come to accept and use a technology to support decision making, planning communication in the County Government of Migori.

2.2 Innovation Diffusion Theory

Diffusion of Innovation (DOI) Theory, developed by Rogers in 1962, is one of the oldest social science theories. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses through a specific population or social system. Adoption of a new idea, behavior, or product does not happen simultaneously in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others.

Innovation Diffusion Theory categorize adopters of innovation into five categories namely: 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- these are skeptical individuals who only adopts an innovation after it has been tried by the majority and finally Laggards - individuals who are very skeptical of change and are the hardest group to involve in the innovation process. This theory is significant as it attempt to explain about the extent to which people adopt new technology and implement especially the e-procurement implementation would be embraced among the Migori county government staff.

2.3 ICT capital infrastructure on procurement performance

An e-procurement process requires regular transaction on long term basis through negotiated contracts with selected customers hence accurate of information between the trading partner's efficiencies Devaraj, Vaidyanathan, Mishra (2012). Integration of suppliers and customers has improved over the years but challenges still exist for smaller manufacturers as lack of necessary information technology and financial resources required to adopt e-procurement technology (McNally, 2013). E-procurement is associated with increased efficiency, lower transactional costs, reduced corruption, enhanced control and monitoring of public procurement process. When e-procurement system is fully implemented, the county government is expected to realize reduce lead time, greater selection of goods and services from trading communities (Hunja, 2014).

A study by Aman and Kasimin (2011) on e-procurement implementation: a case study of Malaysia Government was carried out in order to understand the challenges of e-procurement implementation in the Government sector. The findings showed that challenges of e-procurement implementation in Government sector were due to ICT related factors such as information technology (IT) infrastructure.

A study by Rotich, Muma and Waruguru, (2015) on relationship between e-tendering and procurement performance among County Governments in Kenya showed that Enterprise Resource Planning (ERP) as a component of ICT infrastructure was a significant determinant of change in procurement performance. Their findings indicated that better performance in county governments can be realized when e-procurement implemented in all stages of the cycle of procurement system.

Orina (2013) did a study on e-procurement readiness factors in Kenya's Public sector to determine the extent of e-procurement levels in public institutions in Kenya. The results of the study also indicated that resistance to change, lack of enthusiasm, staff skills, and to some extent procurement policies impacted the readiness of e-procurement in public institutions. The study findings also showed that better procurement performance can be realized when the following main e-procurement readiness factors are well accomplished: technology, organization's finance, leadership and integrity, legal framework and technical preparedness, international law and employee attitude, procurement policy and national procurement law, e-procurement adoption and staff ICT adequacy, online marketplace and government support.

According to Neupane, Soar, Vaidya, and Yong (2012), E-procurement ensures greater access to suppliers via e-procurement portals where buyers have access to suppliers around the globe, which translates into a wider selection of goods and services. Global operability which involves e-procurement applications utilities like support to multiple languages and currencies, as well as international financing, taxation, and shipping regulations. Additionally, ease of configurability and scalability of web-based procurement applications, which are customized to meet the unique needs of buyers and sellers, be diversified and expanded for market base for the county government's vendors. Therefore e-procurement technology reduces corruption in government procurement through elimination of direct human interaction on bidding and other work and services.

3.0 METHODOLOGY

The study adopted correlational research design. Correlation design gave the relationship between the ICT capital infrastructure and procurement performance. Data were obtained through structured questionnaires from the 80 employees of the County's departments/ministries who are directly involved with IT and procurement operations. The data collection instrument was pilot-tested with 10% of the respondents and evaluated for reliability through Cronbach's Alpha (α) for internal consistency. This gave $\alpha = .818$ (Table 1) which is adequate for the reliability of the instrument.

Table 3.5 Reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
0.818	0.825	19

Source: Research data, 2017

Both descriptive and inferential statistics were used to analyse the data. The regression model below was used to relate the study variables.

$$Y = \beta_0 + \beta_1 X_i + \epsilon$$

Where:

- Y- Procurement Performance
- X - ICT capital infrastructure
- ϵ -error term

4.0 RESULTS AND DISCUSSIONS

Regression results of the relationship between ICT Capital Infrastructure and Procurement Performance were as per Table 2 below. From Table 2, ICT Capital Infrastructure predicts 16% change

($R^2 = .160$) in procurement performance of Migori County Government. This implies that if the County government of Migori spends on ICT infrastructure towards their procurement processes, performance will increase.

Table 2: ICT Capital Infrastructure and Procurement Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.400 ^a	.160	.127	1.112

a. Predictors: (Constant), Availability and use ICT infrastructure

Source: Research data, 2017

Table 3 shows that $\beta_1 = .131$, $p < .05$. This indicates that ICT capital infrastructure significantly predicts procurement performance in the County Government of Migori. Availability and use IT infrastructure ($\beta_1 = 0.131$, $p > 0.05$) top management

support ($\beta_2 = 0.382$, $p > 0.05$) and ease of use and training ($\beta_3 = 0.033$, $p < 0.05$).
Table 4.9 Results of the Regression of Performance on Influence of E-procurement

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	1.261	.717		1.758	.083
	Availability and use of ICT infrastructure	.589	.476	.131	1.238	.220

a. Predictors: Availability and use ICT infrastructure

Source: Research data, 2017

To determine the influence of electronic procurement implementation on procurement performance of Migori County Government, Kenya multiple regression analysis was conducted. As shown from the ANOVA table presented in Table

4.2, the F-test was not significant $F(0.05; 3, 76) = 4.821$, $p < 0.05$. This indicates that the hypothesized multiple regression model was statistically adequate.

Table 2: ANOVA Results of the Suitability of the Proposed Regression Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.898	3	5.966	4.821	.004 ^b
	Residual	94.052	76	1.238		
	Total	111.950	79			

a. Dependent Variable: ICT Infrastructure

b. Predictors: (Constant), Availability and use ICT infrastructure

Source: Research data, 2017

The study sought to find out the level of influence of ICT capital infrastructure on procurement of Migori County Government. The results revealed ICT capital infrastructure has significant positive influence on procurement performance ($\beta_1 = 0.131$, $p < 0.05$). This means that a unit standard increase ICT capital investment would increase performance by 0.131. This implies that whenever Migori county Government increases ICT capital infrastructure like internet, networking and computer and its accessories by 13.1% then would result into increase on procurement overall performance though insignificant.

The findings agree with those of a study by Aman and Kasimin (2011) on e-procurement implementation: a case study of Malaysia Government. The findings showed that addressing ICT infrastructure needs such as related software integration, data management and roll-out strategy, information technology (IT) infrastructure, outsourcing contract and IT skills legal and administration procedures on online trading would increase performance.

The findings also agree with those of a study by McIvor, McHugh & Cadden, (2002) showed the use internet infrastructure has created opportunities for Government to facilitates the exchange of information between public sector agencies and their trading partners. It also agrees with a study by Geoffrey, Muma & Eunice, (2015) which showed that Enterprise Resource planning as a component of ICT infrastructure was a significant determinant of positive change in procurement performance.

5.0 CONCLUSION AND RECOMMENDATION

ICT capital infrastructure has a positive insignificant influences on procurement performance, the null hypothesis was accepted and it was concluded that ICT capital infrastructure had no significant influence on procurement performance of

Migori County Government. The study recommends that counties should seek for influence of top management support to procurement performance since it had a positive significant influence on the overall performance.

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