



DETERMINANTS OF E-PROCUREMENT PERFORMANCE IN COUNTY GOVERNMENTS. A CASE OF KAJIADO COUNTY, KENYA

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ABSTRACT

The general objective of the study was to assess the determinants of e-procurement performance in county governments. The specific objectives were: an assessment of the influence of procurement function e-procurement performance; an examination of the influence of system integration and an analysis of the stakeholder management on e-procurement performance in county governments. Kajiado county government was selected because with the advent of devolution in Kenya and being one of the county government units within the public sector and to a large extent the integration of various stakeholders through the government's initiative to create opportunities to its population were among others the worst hit by non-compliance to public procurement regulations and hence a general decline in procurement performance. The study adopted a descriptive survey research design. The study involved 47 employees of Kajiado County government, and guided by research questions based on the objectives aforementioned. The study found that most respondents believed that procurement function affected e-procurement performance in the county as accounted for by 60% of the respondents. E-procurement contributed to improved customer satisfaction by improving employee contribution through e-procurement performance. The study also found that influence of improved information transmission and user access to the procurement process through the adoption e-procurement had a significant impact on the configuration and structure of supply chains. Procurement staff should focus on strategies of improving on the procurement function of the organization, lay emphasis on integration of e-tools to enhance transparency and accountability and communication protocols, and also involve at every stage of procurement processes, all the stakeholders to create a good environment of performance. Finally the study gave recommendations that further studies could be done on other variables apart from the ones the study explored which seemed overlooked in the performance of e-procurement.

Key Words: E-Procurement Performance, Stakeholder Management, Kajiado County Government

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INTRODUCTION

The advent of the internet as a business system platform has been a catalyst for major changes in the operation and status of organisational procurement (Croom & Brandon-Jones, 2007). E-procurement has been around for over thirty years and widely used in certain sectors but not commonly used in the public sector until very recently (Tonkin, 2003). E-procurement is simply aspects of the procurement function support by various forms of electronic communication and its use in both public and private sectors takes many forms (Knudsen, 2002). Public e-procurement is embedded in and shaped by diverse socio-technical and institutional contexts (Attorney General, 2005).

Hashim and Idris (2013) revealed that the key factors that influenced e-procurement adoption among 178 contractors were perceived usefulness of e-procurement technologies in handling procurement work, and the complexity of e-procurement technologies. Similarly, Tran and Huang (2014) noted that the adoption of e-procurement in developing countries was influenced by technological, organizational, environmental, and managerial factors.

The use of information technology in procurement has been known to aid in maximizing the use of resources because the technology can help to monitor resource utilization and also enable the institution like schools to highlight areas where they are not making the most use of their resources. Tangible benefits also consist of reduction of employees, inventory reduction, improved productivity, faster closing of financial cycles, improvements in order management, enhancement of cash flow management, reduction in procurement costs, reduction in logistics and transportation costs, increase of revenue and profits, improvement in on-time delivery performance, reduction in the need for system maintenance, improved information and processes, internal

integration, and improved customer service (Sundram, Chandran, & Bhatti, 2016).

The adoption of e-procurement has many challenges. The integrated Financial Management Information System (IFMIS) initial launch and development by Ministry of Finance began in 1998 and roll out to ministries began in 2003. It has only played a partial role in the public finance management (PFM). Out of ten modules targeted, only three have been configured and operating in 48 ministries/departments. It was limited to the general ledger (GL), purchasing order (PO) and Accounts Payable (AP) modules suffering from technical limitations with functionalities insufficiently interlinked leading to fragmented approach to its use. Usage resistance was high leading to poor adoption. Design flaws prevents purchasing orders from being properly formatted and validated. Poor combination of automated and manual processes undermine quality and accuracy of data. Requisitions, purchase orders, payment vouchers, delivery notes and approvals were done manually.

In the construction sector, a number of studies have attempted to explore the factors influencing an organizations' decision to adopt e-procurement. For example, (Rankin & Johnson, 2017) found that the decision to adopt e-procurement

by 226 organizations in the Atlantic Canadian AEC industry was influenced by the perceived benefits of e-procurement in gaining access to a larger market and increased opportunities; reduction in paperwork; increased productivity; and reduction in the procurement cycle time and transaction cost. Brandon-Jones (2017) also found that e-procurement quality comprises five universally applicable dimensions namely processing, content, usability, professionalism and training. The sixth dimension that is specification appears to be applicable but content specific. In the UK Eadie, Browne, Odeyinka, McKeown and McNiff (2013) observed that in public and private

sector organizations, there was a correlation between the size, procurement spending and sector an organization belonged to and e-procurement use. The authors found that the perceived benefits in time and cost savings, increased quality, visibility in the supply chain, efficiency, and effective communication associated with e-procurement were the key factors that influenced e-procurement use. Other factors identified in that study were improved inventory management, elimination of errors and convenience of archiving of completed work.

Statement of the Problem

Moon (2005) Information technology (IT) has helped solve many administrative problems in the public sector and electronic procurement has been introduced as a way to achieve better, more cost effective procurement systems. Matunga *et al.*(2013) attributed the desire of governments to be at the forefront of technological advances and public procurement, including e-procurement to be used as a vehicle for achievement of a raft of public policy objectives, which complicates the situation. Kinyae (2017) posits that the e-procurement strategy can be actualized through the use of an integrated financial management system. The partial and low utilization of e-procurement has not guaranteed full utilization of expected gains in accountability, efficiency and transparency (GOK, 2011;Ngeno, 2015).

Manual and semi-automated procurement processes, would reduce administrative costs. E-procurement is a promising technology, but managerial and technical challenges still remain (Moon, 2005). Following an assessment carried out in February, 2015 on the usage of e-procurement showed low utilization of the module despite its immense benefits (Kinyae, 2017). This prompted the President of Kenya to issue an Executive Order on 6th March, 2015 directing all ministries, departments and state agencies to urgently migrate from manual to the electronic system developed by Government of Kenya (GOK, 2015). Most public procuring and disposing entities do not

know how to adopt electronic systems due to lack of understanding of procurement process automation (Ahimbisibwe, et al. 2016).

According to Chegugu (2017) despite the modern online procurement currently taking place, many public institutions in developing economies are still lagging behind in their rate of adoption. Muinde and Shalle (2018) reiterates that the procurement function in Kenya has been plagued by massive scandals and indignity which has been attributed to poor handling of procurement information thus leading to unprecedented corruption. The particular interest in this study relate to procurement function, system integration and stakeholder management.

According to Ken (2007), IT has reached almost every aspect of procurement and may enhance and deepen the effort of procurement reform. Specifically, information technology (IT) promotes economy and efficiency, significant savings of public funds by increasing competition, transparency by making procurement information of all sorts such as bidding opportunities, bidding documents, notices, texts of applicable rules readily available and in diminishing the opportunities for discretion (and hence corruption), and public confidence in the integrity of government.

Objectives of the Study

The main objective of this study was to assess the determinants of e-procurement performance in county governments: A case study of Kajiado County, Kenya. The specific objectives were:-

- To assess the relationship between procurement function and e-procurement performance in Kajiado County.
- To examine the relationship between system integration and e-procurement performance in Kajiado County.
- To analyse the relation between stakeholder management and e-procurement performance in Kajiado County.

LITERATURE REVIEW

Theoretical Review

Procurement Transaction Theory

Procurement transaction theory was associated most prominently with the work of Macneil (2005) who argued that procurement exchange transactions occur in a 'social matrix' and follow characteristic of 'relational patterns' and therefore a manager with knowledge of social relation will be required to ensure smooth running of procurement process. Macneil (2005) suggested, therefore, that a purely economic analysis of buyer–supplier relationships, based on rational calculations of advantage in single, discrete exchanges, was only a single dimension of the process. Moreover, procurement cannot be understood solely in terms of the contract that creates its legal basis, because there were also important 'relational norms' such as flexibility, solidarity and reciprocity that derive from the social context of an exchange. The idea of a strategic procurement is used to complement this concept of a focused procurement by suggesting that specific networks can be intentionally designed, created and managed as partially closed systems to deliver enhanced value either through innovation or cost reduction or through a combination. Each one of the members of a specific network, in turn, has jointly agreed-upon roles and responsibilities aimed at achieving the chosen value creating goals (Kassim & Hussin, 2010).

There is an underlying contingency principle here, in that the particular value-creating goals of procurement are assumed to influence how it is structured and governed and the managerial capabilities that are required. The theory of procurement transaction provides a conceptual framework identifying four basic power structures (buyer dominance, supplier dominance, interdependence and independence) and proposes that the nature of the structures underpinning buyer–supplier relationships have an impact on the scope for

collaborative interactions to improve supply network performance (Lu, 2011). This is because such interactions represent a substantial investment, which organization will undertake only if they have a strong incentive to do so. It is argued that this incentive to collaborate is strong either where one supplier is dependent on another or where supplier is interdependent. It is further argued, that the incentive to collaborate is much weaker in circumstances of buyer–supplier independence (Doherty & Ellis-Chadwick, 2012).

Conceptual Framework

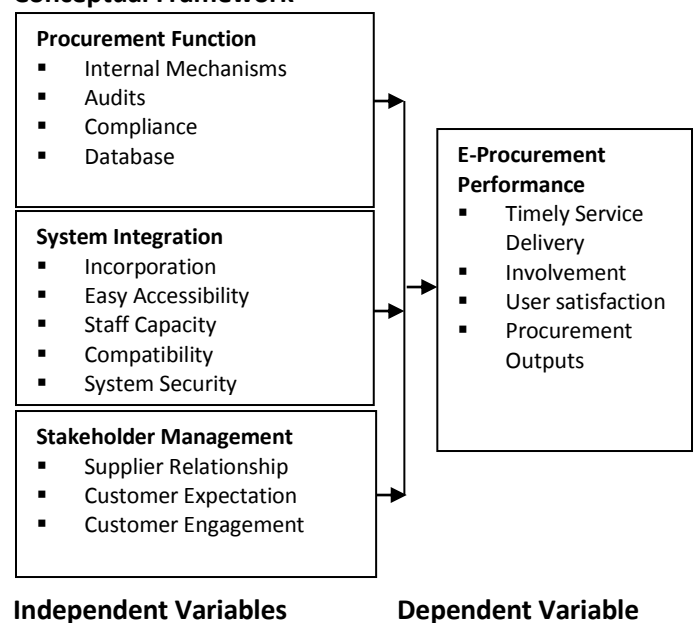


Figure 1: Conceptual Framework

Source: Author (2019)

Procurement Function and Performance

The influence of improved information transmission and user access to the procurement process through the adoption of e-procurement has a significant impact on the configuration and structure of supply chains (Croom, *et al.* 2007). Nderitu (2016) affirms that IT plays a great role towards supporting adoption of centralized procurement systems in public sector organizations. Centralized procurement system leads to a central procurement database that creates a favourable environment for effective automation of

procurement processes. Chopra and Meindl (2009) affirms that there are two primary types of procurement systems: electronic procurement and standard procurement

Wanyama (2012) states, the increasing challenges of the procurement activities in different procurement entities have led to the need of increasing amount of procurement audit. Procurement audit, therefore, is targeted to improve the knowledge on how procurement, regulatory frameworks, and risks on all aspects of the procurement cycle and contract supervision are executed in compliance with the procurement laws (Oh, Yang, & Kim, 2014). Increasing the effectiveness, efficiency and transparency of procurement systems is an on-going concern of governments and the international development community. All countries have recognised that increasing the effectiveness of the use of public funds, requires the existence of an adequate national procurement system that meets international standards and that operates as intended (UNCTRAL Procurement Modal Law.

The fundamental innovation-related activity comes when a public purchaser, in making its choice of what to buy, either seeks to trigger innovation by demanding goods or services that do yet exist, or responds to it by favoring goods or services that have innovative characteristics. No matter what policy goals are formulated, to design public procurement as an innovation policy tool still means that it is necessary to improve the cost–benefit of a public organization performing its function (Reddick, 2004).

The analysis of public procurement innovation is built around a functional approach to procurement, which can track the sequence of events involved (often called the procurement cycle) but is not identical to it. Procurement environment seeks to plot the various policy instruments designed for public procurement of innovation against the various functions that seek to support and the deficiencies it seeks to remedy. The

starting point can be described as the framework conditions for procurement, including the legislative background, and the broader governance that determines, for example, the degree of centralization, autonomy or devolution that applies in public bodies for particular types or sizes of purchase (Pereira, Christopher, & Lago Da Silva, 2014). Moreover, the use of public procurement as an instrument of innovation policy has posed fresh challenges to policymakers. Most had their experiences founded in a universe of supply-side policies, which typically sought to address deficiencies in the resources or capabilities available to potential innovating firms (Manganaro, 2014).

METHODOLOGY

The study adopted descriptive survey design (census approach). The study applied random sampling procedures to obtain the respondents for questionnaires. According to data from Kajiado County Government office, 47 employees work in five different departments namely; finance, planning, internal audit, procurement and ICT. The researcher will take the whole population as its sample size. The respondent were selected from the headquarters and from the 6 sub-counties of Kajiado North, Kajiado West, Kajiado Central, Kajiado East, Kajiado South and Mashuuru. The respondents were informed about the intention of the study by phone calls, e-mail and a personal visit. A pilot study was conducted in Kajiado County to ascertain the validity and reliability of the instrument used.

The target population comprised of all procurement staff and other staff from line departments working within Kajiado County Government. According to the statistics from Kajiado Public Services Board (2017), there were 47 employees from the procurement, finance and planning, internal audit, budgeting and ICT departments. Purposive sampling technique was used in determining the sample for the study; this involved all the employees in the aforementioned

departments of Kajiado county government. The researcher collected primary data using well designed questionnaires. The data collected from the respondents produced both quantitative and qualitative data. The data was coded and edited for completeness and consistency. Quantitative data was analysed by employing descriptive statistics and inferential analysis using Statistical package for Social Science (SPSS). The data was then presented using frequency distribution tables, bar charts and pie charts for better understanding.

FINDINGS

Procurement Function

The study found that most respondents believed that procurement function influence e-procurement performance in the county as accounted for by 78% of the respondents. This implied that procurement function contributes to improved customer service,

customer satisfaction by improving employee contribution using procurement software, conforming with the views of Alshehri and Drew (2010) who asserts that a professional duty is to maintain professional knowledge, skills and ethics to ensure a client receives competent professional service. Adoption of newer technology and implementing the systems has become the hallmark of better service delivery. This also coincides with Nderitu (2008) affirmation that IT plays a crucial role towards the adoption of centralised procurement systems in the public sector. Procurement audit targets to improve the knowledge on how procurement, regulatory frameworks and risks on all aspects of the procurement cycle and contract supervision are executed in compliance with the procurement legislation by instituting periodic procurement audit as required by procurement laws. (Mohammed, 2010)

Table 1: Statement on Procurement Function

Statement	Mean	SD
The organisation has internal mechanisms/strategies that support adoption of centralised procurement systems.	1.860	.683
The organisation's centralised system provides a database that creates a favourable procurement function.	1.992	.738
Management and organisation allows regular procurement audits to improve knowledge and assessment of e-procurement systems.	2.051	.706
Our e-procurement platform complies with government regulations and is guided by it.	4.639	.584
Management provides funding and support to facilitate e-procurement processes.	4.860	.683
The organisation has enhanced efficiency to processes.	1.992	.738

The study found that the following statements were regarded as valid; respondents agreed without doubt that organisation had internal mechanisms /strategies that support centralised procurement systems as shown by a mean of 1.860, which also affirmed the views of Nderitu (2008). Similarly, most respondents agreed without doubt that the organisation's centralised systems provided a database that creates a favourable procurement function as shown by a mean of 1.992 as well as that management and organisation allows regular procurement audits to improve knowledge and assessment of e-procurement systems as shown by a mean of 2.051.

However, majority disagreed without doubt that their e-procurement platform complied with government regulations and was guided by it as shown by a mean of 4.639 and strongly disagreed that management provided funding and support to facilitate e-procurement function. Finally, they agreed without doubt that the organisation had enhanced efficiency to processes with a mean of 1.992. The analysis of public procurement innovation was built around a functional approach to procurement. These findings agreed with Croom and Brandon-Jones (2007) who emphasized the critical component of system specifications in the uptake of e-procurement. This

was because advances in information technology had influenced commercial businesses in several areas. Procurement function seeks to plot the various policy

instruments designed for public procurement innovation against the various functions that seek to support the deficiencies it seeks to remedy.

Table 2: Qualitative Comments on Procurement Function

Statement	Frequency (f)	Percentage (%)
Training of Employees	8	20
Sub-contracting	2	5
Develop research capacity	2	5
e-security	2	5
Transparency and integrity	2	5
Funding of department	14	35
Develop fully procurement standards within organisation	1	2.5
Organisation need to be fully aligned with procurement function	8	20
Need for internal organisation of procurement entity	1	2.5
Total	40	100

E-procurement is a process of procurement of required resources or services by making use of ICT. To make the e-procurement more effective and efficient, integration of financial, transportation, legal and communication infrastructure is important (Caldwell, *et al.* 2002). Other than these four factors, which are training and development of the personnel handling e-procurement activities, security concerns, readiness of the society to utilize the information and

communication technologies and the impact of wireless technology should considered. Regression analysis in this study was used to determine whether procurement function is a determinant of e-procurement performance. The result of the analysis was presented in the model summary and analysis of variance tests. The regression model was based on the following regression model.

Table 3: Model Summary for Procurement Function and e-procurement performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.902 ^a	.813	.652	.372

Predictors: (Constant),

Dependent Variable: Procurement Function

Adjusted R squared is coefficient of determination, which indicated the variation in the dependent variable due to changes in the independent variable. From the results the value of adjusted R squared was 0.813 an indication that was variation of 81.3% on dependent variable.

This means the model provided a good fit in relating to influence of procurement function on e-procurement performance in county governments in Kenya.

Table 4: ANOVA Summary for Procurement Function and E-procurement Performance

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.499	5	9.125	12.207	.000 ^b
	Residual	145.009	35	.747		
	Total	181.508	40			

Dependent variable: E-procurement Performance in County Governments

Predictors: (Constant) Procurement Function

From the ANOVA analysis results on the table ANOVA, the overall p-value was equal to 0.000, which was less than 0.05. The regression model was significant in predicting the e-procurement performance at 95% confidence level based on performance of e-procurement in county governments.

Regression Model

Regression analysis in this study was used in coming up with a model for determinant of e-procurement performance in county government of Kenya. The predictors or independent variables (procurement function, system integration and stakeholder management) regressed with the e-procurement performance. The result of the analysis has been presented in the model summary, analysis of variance tests and summary of co-efficients.

Model Summary

Regression model summary table provided information about the regression line’s ability to account for the total variation in the dependent

variable. Model summary demonstrated whether the observed y-values were highly dispersed around the regression line. Therefore, regression model explained proportion of the dependent variable’s total variation. The dependent variable’s total variation was measured by its variance. If the regression line was not completely horizontal that is if the b coefficient was different from 0, then sum of the total variance is accounted for by the regression line. This part of the variance was measured as the sum of the squared differences between the respondents’ predicted dependent variable values and the overall mean divided by the number of respondents. By dividing this explained variance by the total variance of the dependent variable, we arrive at the proportion of the total variance that is accounted for by the regression equation. This proportion varies between 0 and 1 and is symbolised by R² (R Squared). Adjusted R squared is coefficient of determination, which indicates the variation in the dependent variable due to changes in the independent variable.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.951	.904	.902	.372

Predictors: (Constant) Procurement Function, System Integration and Stakeholder Management.

Dependent

Variable:

E-procurement Performance

Table 6: ANOVA

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2660.449	8	332.556	19.438	.000 ^b
	Residual	1864.814	109	17.108		
	Total	4525.263	117			

Predictors: (Constant) Procurement Function, System Integration and Stakeholder Management.

Dependent Variable: E-procurement Performance

The next output table was the F-test. The linear regression’s F-test had the null hypothesis that the model explained zero variance in the dependent variable (R² = 0). From the ANOVA analysis results, the overall p value was equal to .000, which was less

than .05. The regression analysis results in the ANOVA output table indicated that the overall regression model was significant in establishing the determinants of e-procurement performance at 95% confidence level. Summary of the model and ANOVA was that a

significant regression equation was found $F(8, 117) = 19.438, p > .05$ with R^2 of .904.

Beta Coefficients

Beta coefficients is the size of the coefficient for each independent variable that gives the size of the effect that variable is having on the dependent variable. The sign on the coefficient (positive or negative) gives the

direction of the effect. In regression with a single independent variable, the coefficient revealed how much the dependent variable was expected to increase (if the coefficient was positive) or decrease (if the coefficient was negative) when that independent variable increases by one.

Table 7: Beta Coefficients

Model	Coefficients ^a							
	Unstandardized coefficients		Standardized coefficients	t	Sig.	Correlations		
	B	Std. error	Beta			Zero order	Partial	
Constant	8.375	3.822		2.191				
1 Procurement Function	.654	.650	.694	8.701	.020	.726	.640	
System Integration	.573	.284	.640	5.016	.046	.331	.190	
Stakeholder Management	.685	.296	.718	8.288	.000	-.068	-.028	

Results of the multiple linear regression indicated that there was a collective significant effect of $F(8, 117) = 19.438, p > .05$ with R^2 of .904 in the model for determinants of e-procurement performance using the predictors including procurement function, system integration and stakeholder management. When individual predictors were examined further it was found that procurement function had (Beta = 0.694, $t = 8.701, p = 0.02$), system integration had (Beta = 0.640, $t = 5.016, p = 0.046$) and stakeholder management (Beta = 0.718, $t = 8.288, p = 0.000$). All factors were e found to good determinants of e-procurement in county governments in Kenya.

CONCLUSION

The influence of improved information transmission and user access to the procurement process through the adoption of e-procurement has a significant impact on the configuration and structure of supply chains. Information technology has helped solve many administrative problems in the public sector and electronic procurement and electronic procurement

has been introduced as a way to achieve better, most cost effective procurement systems. Kinyae (2017) posits that the e-procurement strategy can be actualized through the use of an integrated financial management system. The partial and low utilization of e-procurement has not guaranteed full utilization of expected gains in accountability, efficiency and transparency.

RECOMMENDATIONS

The main objective of this study was to establish the determinants of e-procurement performance in the public sector and specifically narrowed down to Kajiado County. From the findings of the study, that adoption of newer technology and implementing e-procurement systems was found to be great significance in the improvement of procurement processes hence enhancing procurement performance. With the need of time in the midst of dynamic competitive environment, procurement staff should focus on strategies of improving on the procurement function of the organization through the various constructs of procurement audits, compliance

and creating reliable databases for the procurement function.

Suggestions for Further Studies

The study sought to establish the determinants e-procurement performance in the public sector with a

key focus on Kajiado county government. The study variables accounted for 70.2 percent changes in performance, the study therefore recommended that other variables accounting for 29.8% should be established and their effects assessed as well.

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