



Effect of Information Communication Technology Infrastructure on Performance of County Government of Migori, Kenya

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ABSTRACT

An adoption of electronic procurement aspects is currently indispensable in many organizations. However county government of Migori has not embraced this technological change as expected and hence affecting its performance. Most reviewed studies failed to link the aspects of electronic procurement adoption to the organizational performance. They were mostly exploratory in design and did not focus on the county government of Migori in particular. Small samples and convenient sampling techniques dominated these studies. The purpose of this study, therefore, was to establish the effect of information communication technology infrastructure on performance of county government of Migori, Kenya. This study was anchored on the following theories; diffusion of innovation (DOI), technology acceptance model theory (TAM), universality theory, contingency theory and organizational performance theory which formed part of this study. The study adopted a correlation research design. Census sampling was embraced. The target population was 50 comprising of procurement officers, procurement staff, top management and directors working in the county government of Migori. Questionnaires were used in collecting primary data while secondary data was obtained from existing literature. The findings revealed that ICT infrastructure had the strongest unique contribution on organizational performance ($\beta=.463, p=.000$). The study concluded that ICT infrastructure is a significant predictor of organizational performance and therefore have a positive effect. The study recommends that the county government of Migori provides more infrastructures for electronic procurement adoption. The study will be of significance to stakeholders in the enhancement of performance through electronic procurement and addressing the gaps especially in the county government of Migori. To the academia, it will add value to new knowledge for further research. To policy makers, the study will assist in the identification of issues raised in different areas to improve organizational performance more so in the county government of Migori.

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INTRODUCTION

Use of ICT Infrastructure in electronic procurement adoption is not imminent but here with us already as expected and has risen in its use in the recent past due to technological changes in various business environments. This has increased efficiency and effectiveness in most business sectors, hence, has made the world a global village (Sultan, 2010). A study conducted in higher economies of EU and relevant others like Turkey and Taiwan failed to show influence of ICT infrastructure and hence no strong relationship between electronic procurement adoption in and organizational performance (Oliveira et.al, 2010; Toktaş-Palut, Baylav, Teoman, and Altunbey 2014 and Lin, 2014). In another regional study conducted in South Africa and Nigeria

countries of Africa, there was a mixed responses on how ICT influences adoption of electronic procurement and hence organizational performance. (Ibem and Laryea, 2015; Aduwo, Ibem, Uwakonye, Tunji-Olayeni, and Ayo-Vaughan, 2016).

Studies conducted locally in various sectors in Kenyan economy found that ICT infrastructure showed a mixed of positive and non-positive influence in adoption of electronic procurement and hence organizational performance. Odago et al., (2013); Mambo et al., (2015); (Oliveira et.al, 2010). Empirically, Toktaş-Palut, Baylav, Teoman, and Altunbey, 2014; Lin, 2014; Ibem and Laryea, 2015; Aduwo, Ibem, Uwakonye, Tunji-Olayeni, and Ayo-Vaughan, 2016; Mambo, Oboe and Kagiri, 2015; Odago et al,

2013) found out that ICT infrastructure is an important tool in enhancing performance and success in the public and private sector.

Reviewed literatures here show that ICT infrastructure is an important component that plays a vital role in public and private sector. However, past studies were mostly exploratory and in design with sampling techniques such as convenience sampling. Further, they used stratified sampling techniques with small sample size in some studies with failed validity and reliability tests conducted on the part of the instruments. Therefore, there is need to study association of ICT infrastructure with organizational performance in the county government of Migori, Kenya.

LITERATURE REVIEW

ICT Infrastructure has risen in its use in the recent past due to technological changes in various business environments. The electronic age has made it hard to operate without involving ICT as it is a measure of efficiency and effectiveness in most business sectors, hence, has made the world a global village. (Sultan, 2010).

In an empirical study (Oliveira et.al, 2010; al., 2013) shows that ICT infrastructure is an important component that must be embedded and incorporated into systems of electronic procurement to boost efficiency and hence enhanced performance Toktaş-Palut, Baylav, Teoman, and Altunbey, 2014; Lin, 2014; Ibem and Laryea, 2015; Aduwo, Ibem, Uwakonye, Tunji-Olayeni, & Ayo-Vaughan, 2016; Mambo, Oboe & Kagiri, 2015; Odago et al. and success in the public and private sector.

A study conducted in a firm owned by the EU, Oliveira et.al, (2010) did not address the results to show clearly ICT infrastructure had a positive relationship on adoption but went ahead to suggest on a possible effect of organizational environment. Moreover, in a study conducted in Turkey by Toktaş-Palut, Baylav, Teoman, and Altunbey (2014) to investigate the effects of the barriers and benefits of adoption on electronic procurement, the study revealed that ICT infrastructure has a positive influence on the adoption of electronic procurement. Another study in the larger Taiwan was conducted by Lin, (2014) to investigate the determinants of electronic supply chain management system (e-SCM) adoption and non-adopters, the study showed no positive influence on the part of infrastructure as having any effect on adoption.

In a study carried out on construction industry in South Africa to investigate the use of electronic procurement, Ibem and Laryea, (2015) found that ICT infrastructure had a positive significance and hence influenced adoption of electronic procurement. They further suggested the use of other theories that would reveal more appealing results as they lamented on limitations and implications of culture affected adoption in their study. The study did not address sampling appropriately. Similarly, in a study to determine barriers to

uptake of electronic procurement in the Nigerian construction industries, Aduwo, Ibem, Uwakonye, Tunji-Olayeni and Ayo-Vaughan, (2016) found that high cost of ICT infrastructure had appositive influence on adoption. The study was not adequately illustrated in terms of methodology and analysis to show clear results. A

Mambo, Ombui and Kagiri (2015) in their study conducted to investigate factors affecting electronic procurement adoption in ministry of Interior and Coordination of National Government in Nairobi found that ICT infrastructure is a factor influencing adoption positively. The sample size being only 39.9% of the target population was small to produce reliable results. Sampling was ratified and not simple and could have affected results in anyway. A pre-test was not conducted to confirm validity and reliability of data for better results.

A study conducted by Odago et al., (2013) to determine the effects of electronic procurement implementation in the County governments of Kenya found that ICT infrastructure had a positive influence on adoption. However, the results could not be ascertained as there was no pre-test for data validity and reliability. Whereas, in a study to investigate the factors affecting implementation of electronic procurement in the ministry of Interior and Coordination of National government in Nairobi Kenya, Mambo et al., (2015) noted that the government has since recognised the importance of technology in its business and incorporated the same in the constitution.

Reviewed literatures here shows that ICT infrastructure is an important component that plays a key part in in any sector including public and private sector and that must be rooted within the systems for a better and an efficient output. This is evidenced on how most public and private offices have become paperless and turned to a hub of digital activities in daily activities. Past studies were mostly exploratory and survey in design with sampling techniques taken at convenience and hence not focused on better results. They went ahead to conduct studies on adoption of electronic procurement in other sectors including construction and other industries and international firms such AU owned, interior and coordination of national government and other county governments except Migori. Further, they used stratified sampling techniques in some studies and no pre-test conducted and sample size was reportedly small and pre-test failed in most of these studies hence failed to show reliability and validity of the instruments used. Therefore, there was no known study associating ICT infrastructure with organizational performance in the county government of Migori, Kenya.

METHODOLOGY

The study adopted a correlational research design. This approach was selected as it tried to define the association between quantitative variables. The design is used to establish

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the extent to which variables are related to each other. Correlational designs emphasizes on relationships in a study consisting of variables (Onwuegbuzie and Leech, 2006).

The study had a target population of fifty respondents comprising of procurement officers, procurement staff, top management and directors who forms part of the tender committee membership.

The study employed Census and covered all the respondents. Multiple regression analysis was conducted so as to determine the relationship between the independent variable and the dependent variables by use of SPSS.

The equation assumes the form

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \varepsilon$$

Where,

Y= Dependent Variable

X=Independent variable

β_0 =Intercept

$\beta_1, \beta_2, \beta_3$ =Beta coefficient

ε = Error (Epsilon knot).Its assumed to be zero.

Analyses were carried as per objectives of the study. The three objectives were represented by X1, X2 and X3 which are also the constructs of independent variable.

X1=Employee Competence in electronic procurement

X2=ICT Infrastructure

X3=Top Management Support in electronic procurement

Y=Organizational Performance (Performance of County government of Migori)

RESULTS AND DISCUSSIONS

The study hypothesis stated that ‘**H₀₂**: Information communication technology infrastructure has no effect on the performance of county government of Migori. Hardware and software as well as connectivity subscales were computed to obtain an overall mean. Organizational performance was then regressed against the mean and the findings presented as shown in Table 1.

Table 1: Effect of ICT Infrastructure on Organizational Performance of County government of Migori

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. Change	F
1	.829 ^a	.687	.680	.18161	.687	92.377	1	42	.000	
a. Predictors: (Constant), ICT Infrastructure										
Model	Unstandardized Coefficients			Standardized Coefficients		T		Sig.		
		B	Std. Error	Beta						
1	(Constant)	-.061	.342			-.178		.860		
	ICT Infrastructure	1.019	.106	.829		9.611		.000		
a. Dependent Variable: Organizational Performance										

Source: Researcher, 2020.

From the unstandardized coefficient findings as shown in Table 1, one unit increase in ICT infrastructure is associated with 1.019 unit increase in organizational performance. This is well presented in the model equation as follows.

$$Y_{org_performane} = -0.061 + 1.019X_{ICT_Infrastruature} + \varepsilon$$

However, without including ICT infrastructure in the model, organizational performance would drop by 0.061 units. Examining the standardized coefficient results, it is clear that ICT infrastructure had a unique significant contribution to the organizational performance ($\beta=.829, p<.05$). This implies that for every unit increase in ICT infrastructure, there is 0.829 unit increase in organizational performance when the scales are standardized and compared across.

The model R square value shows that ICT infrastructure accounts or explains 69.7% variance in organizational performance ($R^2=.687$). Therefore out of 100%, 31.3% was explained by other variables not in the model while the rest of variance is explained by ICT infrastructure. The overall model was also found to be significant, $F(1, 42) = 92.377$, implying that it was not by chance. Therefore the prediction

is more accurate as also indicated by the standard error of estimate which is small (error=.18161).

These findings agree with those of a study a study carried out on construction industry in South Africa to investigate the use of electronic procurement, Ibem and Laryea, (2015) and found that ICT infrastructure had a positive significance and hence influenced adoption of electronic procurement. Both studies indicate that ICT has a positive influence on performance or adoption. In addition, a study conducted by Odago et al., (2013) to determine the effects of electronic procurement implementation in the County governments of Kenya found that ICT infrastructure had a positive influence on adoption.

It is therefore imperative to note that ICT infrastructure is a very strong and significant predictor of organizational performance and therefore we reject the null hypothesis and adopt an alternative hypothesis that states that ICT infrastructure has a positive and significant effect on organizational performance.

CONCLUSIONS

ICT infrastructure was assessed using hardware, software and connectivity subscales. Based on the responses, there was a slightly higher rating of hardware and software availability as compared connectivity, although both were rated above average. The findings also established that ICT infrastructure has a positive and significant effect on organizational performance of County government of Migori. It was also clear that ICT infrastructure accounted for a significant variance in organizational performance.

ICT infrastructure comprising of hardware and software as well as connectivity are important factors in determining electronic procurement process. Improvement in these practices clearly makes the electronic procurement process more effective. ICT being the backbone of electronic procurement, availability of infrastructure, both hardware and software forms the platform to effectively comprehend in the system. In addition, availability of network makes the process easy. Therefore ICT infrastructure has a positive and significant effect on organizational performance. When there is more connectivity, available hardware and software pertaining to electronic procurement, the county government of Migori performs better.

ICT infrastructure in terms of hardware and software as well as connectively received a positive feedback although not very satisfactory. The study recommends that more consideration be made by the county government of Migori over acquisition required hardware and software materials for making the infrastructural process of electronic procurement easy. The study also recommends provision of more networks for electronic procurement processes for the success of county governments operations and improves on performance.

Based on the study findings, it is therefore timely for the following further studies to be carried out

- i. A detailed study can be carried out on the effect of employee competency in ICT on their overall performance in the county
- ii. A study be carried out on the effectiveness of use of ICT in the county and its value addition on county performance
- iii. Further studies can be carried out on the type of management and its effect on electronic procurement use and county government performance.

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