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ABSTRACT

As technology advances with time, ICT standards have become a critical factor for governments. There has been a growing trend in automation of government services which has made it to become a large consumer of ICTs. To ensure economies of scale and coherence in the acquisition, development, deployment and management of ICTs. The government has realized the need for ICT standards as a measure for regulating the ICT sector. The study adopted descriptive research design and target population of 150 key top management technical staff within ICT authority that consisted of ICT directors and ICT officers, network administrators, systems administrators and information security officers. A sample size of 110 respondents was selected through simple random sampling method from the target population of 150 employees at ICT Authority. Primary data was collected by the use administered questionnaire, interview guide and secondary data from Authority materials and records. The questionnaires were reviewed and evaluated for content validity and reliability. Descriptive and inferential statistics was utilized in the analysis of data and presented by means of Statistical Package for Social Sciences (SPSS V25). This was in the form of graphs, tables and charts while qualitative findings were presented thematically. The findings revealed that ICT policy standards as a factor is statistically significant to the influence of ICT standards on the performance of the ICT Authority projects. The study recommends that appropriate ICT governance structures in the form of an approved ICT policy should be put in place so as to ensure there is improved performance of ICT Authority projects.

Key Words: ICT Standards, Policy structure, Stakeholder engagement, Policy alignment, Vision 2030

INTRODUCTION

Kashiwagi (2018) defines project performance as implementation of a project that qualifies to be on time, on budget, and meeting customer satisfaction. The expectations on the performance of Information Communication Technology (ICT) projects goes a long way back in the 1960s during the invention of the internet in the United States (Owino, 2015). Globally, there has been perceptions of low performance of the ICT industry for many years given the numerous projects that have been implemented over time. The USA, United Kingdom, Australia and Netherlands are some of the countries that have tried solve issues related to ICT projects performance within their public institutions. In between the years of 2012-2014, an inquiry report by the Dutch government established that a loss of between 1 and 5 billion euros on ICT projects had been incurred annually (The House of Representatives of the Netherlands, 2014).

The Kenyan government has committed that in the course of the third medium term plan 2018-2022. It will ensure the closure of ICT projects that are in progress under MTP II as well as implement phase 3 of the County Connectivity Project, phase II expansion of the National Optic Fiber Infrastructure (NOFBI), Eastern Africa Regional Transport, Trade and Trade Development Facilitation Project (EARTTDFP), Government Core Network of the Government (GCCN) and the Northern Eastern Corridor Transport Improvement Project (NETIP) (MoICT, 2018).

The Information and Communication Technology (ICT) Authority of Kenya is a state corporation established by Legal Notice 183 in 2013 and has the primary authority to establish and implement ICT standards and guidelines for information and communication technologies. that include ICT governance, infrastructure, cloud computing, systems and applications, information security and ICT human capacity for the public service. A regulatory body normatively references established standards to simplify the process of discharging its mandate (Abdelkafi et al. 2019). According to Kashiwagi (2018), the information and communications technology (ICT) industry has experienced issues related to performance for years. The results of the research study will be helpful to the ICT authority of Kenya as it will provide insight on how successful implementation of ICT projects can be achieved through ensuring there is conformance to ICT standards.

LITERATURE REVIEW

Theoretical Review

The study was founded on the policy theory that explains how the development, implementation and appraisal of a policy is based on a particular agenda (Colebatch, 2002). Colebatch (2002) further discusses how policy influences the governance structures and makes it easier for all stakeholders to understand and appreciate the intended objectives.

Conceptual Framework

As indicated in Figure 1, the conceptual framework for this study is based on one independent variables and one dependent variable. According to the study, performance of ICT Authority projects was achieved through proper consideration of the ICT policy standards.

ICT Policy
- Policy alignment (Vision 2030, legal provisions, Big 4 Agenda)
- Policy structure
- Stakeholder engagement

Performance of ICTA projects
- Completed on budget
- Completed on time
- Return on investment (ROI)
- Internal Stakeholder satisfaction
- Clear processes and guidelines

Independent Variables
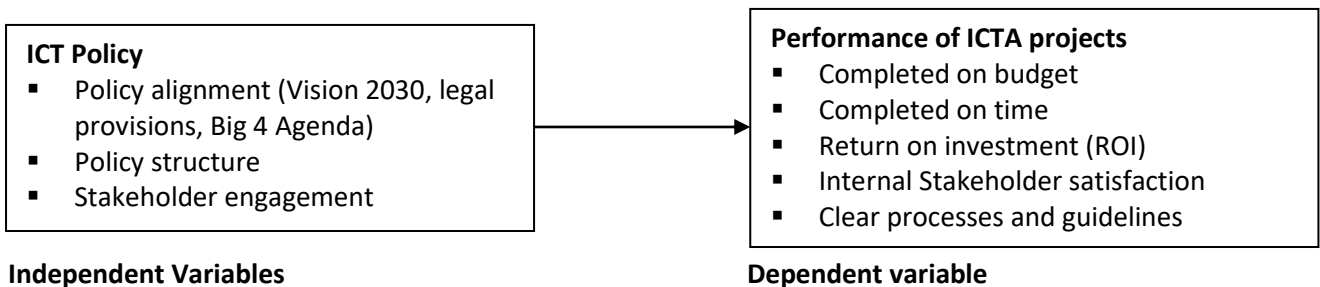
Dependent variable

Figure 1: Conceptual framework

ICT policy standards

European Union and national and regional governments have designed programs and policies that support and improve development and growth of ICT in those regions (Charles et al., 2009). ICT is inherently evolving and as such, policies and any other form of regulation need to be constantly revised to reflect current trends. According to Ball (2006), a policy acts as a document that validates specific visions and grants approval of specific course of actions. Colebatch (2002) further expounds that the developing a policy is basically intended to solve a problem that has the influence of the authority be it in government or organizations who identify problems and define goals to achieve specific agenda.

According to Ball (2006), discourse among stakeholders prescribe areas that require to be attended to, determine the positions of the stakeholders and put limits on expected policy outcomes. Given the context, the process of policy formulation is essentially about getting input that is spoken, contextualized and documented to validate a specific position and agenda and give entitlement to specific groups to act in authority. This study sought to examine the influence of ICT policy standards on performance of ICT Authority projects with respect to Policy alignment (Vision 2030, legal provisions, Big 4 Agenda), Policy structure and Stakeholder engagement.

Performance of ICT Authority projects

Several factors are considered by organizations in determining effective implementation of an ICT project. These include projects that are delivered of projects on time and on budget, stakeholder satisfaction, quality, return on investments among others (Ritson, Johansen & Osborne, 2012). Thomas and Fernandez (2008) argued that project success was associated with business success and was measured by user satisfaction and benefits to the organization. According to (Shenhar et al, 1997), the success of a project could be measured on the basis of the impact it had on the customer or end user which would be attributed to meeting functional

and technical requirements as well as performance measures. Shenhar et al. took into consideration the customer satisfaction level, the extent of their usage of the product and their intent to buy the next version of the product as parts of this dimension.

Rossiter (2012) found that the main issues with the management of ICT projects include poor planning and estimates, absence of quality measures and standards, lack of direction on decisions, the absence of means to enable visibility of progress, incorrect measures on determining success and poor definition of roles in projects. There are low number of projects that have higher chances of success even though they are delivered on time, meeting the expected quality, within the target project cost (KPMG, 2013).

Empirical Review

ICT Policy

The relationship between stated objectives and envisioned actions is the basis of formulation and implementation of a policy (Mofarreh & Ibrahim, 2016). According to Smith (2004), a policy outlines how people, systems and issues are linked to the world. Policies are developed to achieve certain goals (Birkland, 2005). The setting of an agenda is a critical in the development of a policy (Anderson, 2014). At this stage an organization shows the intent to act on a specific problem through allocating funds and other resources. According to Bacchi (2006), dialogue among stakeholders helps to define areas of interest, present their views and set points of action. Policy theory in the ICT sector in Kenya requires that through stakeholder engagement there is clear setting of the intended agendas and formulation of guidelines that drive the implementation of ICT projects.

The policy documents for the Kenyan government have failed to amalgamate the role of ICT as facilitator of various goals that have been earmarked to transform the country into a Newly Industrialized Country by the year 2020 (Kiveli, 2015). The purpose of adoption of the national ICT

policy within public institutions is to ensure improved service delivery from the manual processes to ICT enabled services (Prins, 2001). The absence of ICT policy leads to significant complications of unnecessary costs due to performance of same tasks and functions with similar objectives by different authorities (Janssen and Cresswell, 2005).

The Kenyan government is determined to achieve the vision 2030 and targets, which are more in line with the focus of the economic pillar on ICT adoption. Vision 2030 is one of the key forces behind the continuous development and updating of the national ICT policy. The Government 's mandate for many ICT-based initiatives, the creation of the Ministry of Information, Communications and Technology and ICT Authority are strong indicators of Government 's commitment to implementing and achieving the vision 2030 goals under National ICT Policy (Kiveli, 2015).

Performance of ICT Authority projects

Profitability is the sum of the income received over a period of time that surpasses the expenditure incurred during the same period mainly to generate revenue (Ayanda, EKPO & Adeniyi, 2013). Shenhar et al., (1997) identified important success factors of the project are business and direct success which inform the direct impact of a project to an organization (more turnover, profit, efficiency).

Atkinson (1999) used a square root model to measure the performance of a project in terms improved efficiency and effectiveness as well as increased profitability. Participation of users reduces the budget deviation through management of expectations and resolution of problems that might arise (Yetton et al., 2013). According to Jun et

al., (2011), IT developers and users are more likely to get satisfied with a system if their issues are resolved early enough through enhanced user participation. Therefore, the needs of agile users are met through effective participation of users. This will also guarantee some level of commitment on the ICT projects.

METHODOLOGY

The descriptive research design was adopted in this research since it ensures accurate description of the characteristics of the population that is being studied. The target population for this research comprised of 150 key top management technical staff within ICT authority that consist of ICT directors and ICT officers, network administrators, systems administrators and information security officers. Selecting an appropriate sample size was essential to the generation of data that reflects the characteristic of the population. This study used simple random sampling technique. Using the Cochran (1963) formula, a sample size of 108 respondents was selected for the study. Data was collected two forms: primary data that entailed the use of questionnaires and interview guide and secondary data from Authority materials and records.

Pilot Study

A pilot study of 16 ICT Authority employees was conducted to represent at least 10% of the target sample size. The purpose of the pilot test was to enable the researcher to obtain clarity on the questions contained in the questionnaire. Reliability of the instrument was assessed using Cronbach's alpha test. The findings in the table below indicated the Reliability analysis for the variable item of ICT policy standards.

Table 1: Reliability Analysis

Variable	Cronbach's Alpha	Number of items
Influence of ICT policy standards	0.782	5
Measures of performance of the (NoFBI) project	0.844	6
Measures of performance of the DLP ?	0.734	6
Measures of performance of the CCP project?	0.884	6
Measures of performance of the ERP project?	0.877	6

In a Cronbach's coefficient alpha, values are clustered into four different points of reliability: excellent (0.90 and above), high (0.70-0.90), highly moderate (0.50-0.70) and low (0.50 and below. A construct is reliable if the alpha (α) is greater than 0.70 (Hair et al 2013).

The finding in table 1 revealed that Influence of ICT policy standards on the performance of ICT Authority projects with 5 items has an alpha (α) of =0.782, Measures of performance of the (NoFBI) project with 6 items has an alpha (α) of 0.844, Measures of performance of the DLP with 6 items has alpha (α) of 0.734, Measures of performance of the CCP project with 6 items has an alpha (α) of 0.884, and Measures of performance of the ERP project with 6 items has an alpha (α) of 0.877. This shows that all the variables are reliable since the alpha value for all the variables were within the set limit.

Validity refers to how an instrument for research is able to measure that which its intended to measure (Mugenda and Mugenda, 2003). Through the guidance of the supervisors. The researcher checked the validity of the questionnaire to ensure that there were no instances of ambiguity. This also ensured that the tool was aligning to the objectives of the study and provided assurance on the levels of accuracy.

Data Processing and Analysis

Once the data was collected, its analysis was done using Statistical Package for Social Sciences (SPSS V25). Descriptive statistics that was used in the analysis included frequencies, percentages, mean, and standard deviation. The inferential statistics was used to establish correlation analysis that provided information on how the independent variable relate with the dependent variable. The following regression model guides the analysis:

$Y = \alpha + \beta 1X1 + \varepsilon$,
Where;
Y= Performance of ICT Authority projects
X1 = ICT policy standards

$\acute{\varepsilon}$ = is the error term

FINDINGS AND DISCUSSION

A sample size of 110 respondents was targeted in the research study out of which 96 respondents managed to return questionnaires that were filled completely. This made up a response rate of 87.3%. This enabled a satisfactory and sufficient conclusion to be reached concerning the study. A response rate of 70% is considered as sufficient for a descriptive study (Mugenda and Mugenda, 2003).

Information on the general demographic included details on the respondents' sex, age, academic qualifications & job designation. According to the findings, 56% of the respondents were male and 44% were female. An indication that both genders were considered in the study. The ages of respondents were given in age brackets. From the findings, fifteen respondents were between the age of 20 and 30 years (16%), fifty-four respondents were between the age of 31 and 40 years (56%), twenty-four respondents (25%) were between the age of 40 and 49 years and three respondents (3%) were above 50 years. According to the findings, 0% of the respondents had achieved primary level qualification, 0 % had achieved secondary level qualification, 0% had achieved diploma level qualification, 77% had achieved degree level qualification and 23% had achieved master's degree as their highest level of academic qualification. Majority of the respondents were ICT officers representing 34%, followed by Assistant ICT Officers at 30%. Senior ICT Officers represented 18% of the respondents, Principal ICT Officers at 13% while Deputy Directors and Directors represented 3% & 2% of the respondents respectively.

Descriptive Analysis

ICT policy standards

To assess the influence of the ICT Policy standards on the performance of the ICT Authority's projects, the study included a Likert scale containing five items in the questionnaire. Respondents were asked to specify their agreement with each of these

items on five-point scale (1 =strongly disagree to 5 = strongly agree). Table 2 presents the results.

Table 2: Influence of ICT policy standards on the performance of ICT Authority projects

S/No	Statement	N	Mean	Standard Deviation
1	The institutional ICT policy aligns with government policies, plans, and other legal provisions	96	4.0625	0.75131
2	The ICT policy includes a clear articulation of the institutional Objectives for ICT.	96	4.25	0.56195
3	The ICT policy covers and integrates all aspects of ICT	96	4.25	0.75394
4	The ICT policy provides a clear Mission, vision, guiding principles	96	4.3125	0.68537
5	The ICT policy formulation process includes consultation with stakeholders across various functions in the Authority	96	4.1875	0.73
	ICT Policy Aggregate Score	*96*	*4.2125*	*0.696514*

Table 2 showed that, all the 5 items have mean scores of above 4.0625, in the Likert scale used, this implies that the respondents either agreed or strongly agreed with all the 5 items in this section. Item 4 had the highest mean score of 4.3125 suggesting that the ICT policy provides a clear Mission, vision, guiding principles. All the 5 times had standard deviation values that are less than 1 indicating that there was little deviation of respondents rating of the items around the average position. The aggregate score on ICT Policy standards mean score was 4.2125 out of a possible maximum score of 5. This suggests that ICT Policy standards have a high influence on the performance of ICT Authority projects and that exemplifies the five components that were assessed in the scale.

Performance of ICT Authority projects

The dependent variable was performance of the ICT Authority's projects. Respondents were asked to rate whether ICTA projects were completed on budget, completed on time, realized return on Investment, met expectations of internal stakeholders, met the required features and functions and requirements, objectives and purpose are clearly defined on five-point scale (1 =strongly disagree to 5 = strongly agree). Table 3 presents the results.

Table 3: Measures of performance of ICT Authority projects

Statement	N	Mean	Standard Deviation
The ICT Authority projects were completed on budget	96	3.5625	0.640015
The ICT Authority projects completed on time.	96	3.25	0.75546
The ICT Authority projects realized return on Investment	96	3.5	1.110455
The ICT Authority projects expectations of internal stakeholders	96	3.5625	0.829578
The ICT Authority projects met the required features and functions	96	3.59375	0.871705
The ICT Authority projects' requirements, objectives and purpose are clearly defined	96	3.8125	0.833213
Performance of ICT Authority projects Aggregate Score	96	3.546875	0.840071

The findings on table 3 above indicate the ICT Authority projects were completed on budget with a mean of 3.5625. The ICT Authority projects were completed on time with a mean of 3.25. The ICT Authority projects realized return on Investment have realized return on Investment with a mean of 3.5. The ICT Authority projects have met expectations of internal stakeholders 3.5625. The

ICT Authority projects have met the required features and functions with a mean of 3.59375. The ICT Authority projects requirements, objectives and purpose are clearly defined with a mean of 3.8125. Item 3 had standard deviation that was above 1 suggesting that there were major variations in the respondents' views on whether the ICT Authority projects have realized return on Investment. 5 items out of the 6 items had standard deviation values that are less than 1 indicating that there was little dispersion of respondents rating of the items around the average position. The aggregate mean score was **3.546875** out of a possible maximum score of 5. This suggests that ICT standards has had a high influence on the performance of the ICT Authority projects and that exemplifies the six components that were assessed in the scale.

Regression Analysis

The aim was to examine nature of the relationship between the four determinants (ICT Policy standards, Information Security Standards, ICT Infrastructure standard & ICT Capacity Standard. Table 4 presented the model summary.

Table 4: Simple Regression results

R	.896[a]
R Square	.803
Adjusted R Square	.794
Std. Error of the Estimate	.22951

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.909	4	4.727	89.188	.000[b]
	Residual	4.793	91	.053		
	Total	23.702	95			

Model		Unstandardized Beta	Coefficients Std. Error	Standardized Beta	t	Sig.
1	(Constant)	0.467		1.761	0.082	0.082
	ICT Policy	0.087	0.779	5.172	0.000	0.000

Table 4 indicated that the model had a coefficient of determination (r2) of 0.803. This coefficient indicates that ICT policy standards explain 80.3% of the variances in the influence of ICT standards on performance of ICT Authority Projects. The ANOVA test gave a p-value that is less than 0.01. This implies that there is a statistically significant relationship between ICT policy standards and the performance of ICT Authority projects. Consequently, the model is a statistically significant predictor of performance of ICT Authority projects.

Results further showed that ICT Policy had a beta coefficient of 0.450, Since the coefficient is positive, it implies that there is a reinforcing relationship between ICT policy standards and the performance of ICT Authority projects. The coefficient denotes that if the ICT policy is improved by 1 unit, the performance of ICT Authority projects would improve by 0.450. The t-test gave a p-value of that is less than 0.05 (p=0.00). This implies that the influence of ICT policy is statistically significant. These findings lead to the conclusion that ICT policy Standards has a significant and positive impact on the performance of ICT Authority projects.

CONCLUSION AND RECOMMENDATIONS

The study sought to examine the influence of ICT policy standards on the performance of ICT Authority projects. The study found that the ICT policy is critical to the performance of ICT authority projects. The study concluded that the use of ICT policy standards relates positively to the performance of ICT Authority projects. ICT policy is a critical document for instituting and enforcing controls in the whole ICT ecosystem. Regulations ensure that there is objective project identification, conceptualization, implementation and appraisal.

This in effect plays a vital role in achieving great performance in ICT Authority projects.

The study recommended that the ICT Authority should formulate, adopt and enforce ICT policies that institutionalize appropriate ICT governance structures so as to ensure the intended enterprise requirements are met and also there is realization of the expected benefits and value for money.

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