

## FACTORS INFLUENCING ADOPTION AND USE OF INFORMATION AND COMMUNICATION TECHNOLOGY AT THE ETHICS AND ANTI-CORRUPTION COMMISSION OF KENYA

**Mue Jackson Kaunda**

Masters Student, Jomo Kenyatta University of Agriculture and Technology, Kenya

**CITATION:** Mue, J. K. (2013). Factors influencing adoption and use of information and communication technology at the ethics and anti-corruption commission of Kenya. *International Journal of Social Sciences and Entrepreneurship*, 1 (6), 127- 146.

### ABSTRACT

The study aimed to analyse the factors influencing adoption and use of ICT at the Ethics and Anti-Corruption Commission (EACC) in Kenya, in which four variables namely: technological factors, organization factors, Individual user factors and the external ICT environment were reviewed against adoption and use of ICT. The results of the study established that technological factors, organizational factors and the external ICT environment had a positive and significant effect in Adoption and use of ICT at the EACC, in Kenya with t-values of 9.756, 5.562 and 4.10 respectively at significance levels of less than 0.05 while Individual user factors had a negative effect on adoption and use of ICT at the EACC at a beta value of negative 0.017 and t-value of negative 0.230 resulting to p-value of 0.8329 which was greater than 0.05 significance level hence the effect of individual user factors was found to be statistically insignificant for ICT adoption and use at the EACC of Kenya.

**Key Words:** *ICT Adoption, technological factors, organization factors, Individual user factors, External ICT environment*

### Introduction

The contribution of ICT to governance and access to services has been recognized and many countries including Kenya have made great efforts in integrating ICT into the government development agenda. Kenya developed and enacted an ICT policy in 2006 and the new government elected on 4<sup>th</sup> March 2013 established a fully pledged Ministry of ICT to spearhead ICT strategy for development and attainment of the ICT goals under Kenya vision 2030, a Kenyan national economic blue print which bear key ICT flagship projects such as the Konza ICT Metropolis. Due to the recognition of ICT as a major enabler for innovation, the government has planned to introduce laptops for all children joining class one with effect from January 2014 according to the Kenya government budget outlook paper, 2013 with a view to enhance early ICT adoption and usage by the young population. Developing countries are far less advanced than developed countries in the areas of technological environment and infrastructure, probably

because the technology is produced in developed nations, while the developing nations import it (Ihua, 2009).

The paper aims at inquiring into the factors influencing adoption and use of ICT at the Ethics and Anti-Corruption Commission (EACC) in Kenya, in which four variables namely: technological factors, organization factors, Individual user factors and the external ICT environment are reviewed against adoption and use of ICT.

### **Statement of the Problem**

Many countries are still struggling in the 21<sup>st</sup> century with obsolete technology or systems which are grossly underutilized due to poor ICT usage and adoption by organizations and individuals (WB, 2012). According to the KACC Annual Report for 2011, there were 7,106 corruption reports received from the public for action by KACC (RoK, 2012). It is worth noting only 134 cases were completed out of 2,445 reports taken-up for investigation representing a mere 5.5%. The case clear-up rate require radical shift in strategy to ensure improved performance by the EACC (EACC, 2012).

Data available from Transparency International (TI) show that the low level of processing and resolving of corruption cases is due to poor adoption and use of ICT by the Ethics and Anti-Corruption Commission (TI, 2011). Further, statistics from the World Bank (WB) reveal that, ICT is a critical component for an organization (WB, 2012). A survey done by KACC, reports that there is low adoption and use of ICT by the organization (KACC, 2011). The EACC is an important state agency with a mandate to fight corruption and unethical conduct across all sectors of the Kenyan society and thus require modern approach to fulfill its responsibility to the public. The research gap which the study aims to fill is to establish the holistic factors which the institution should consider for successful adoption and use of ICT to improve service delivery.

### **Objective of the Study**

The general objective of this study was to analyze the factors influencing adoption and use of ICT at the Ethics and Anti-Corruption Commission of Kenya. Specifically, the study sought to:

1. Establish the influence of technological factors on adoption and use of ICT at the EACC.
2. Determine the influence of organizational factors on the adoption and use of ICT at the EACC.
3. Assess the influence of individual user factors on the adoption and use of ICT at the EACC.
4. Determine the influence of the external ICT environment on the adoption and use of ICT at the EACC.

### **Literature Review**

This section reviewed studies that have been done in the area of technological innovation, diffusion, adoption and use of ICT by organizations and individuals. The specific areas covered were theoretical orientation, conceptual framework, the empirical review of past studies and critique of the existing literature.

## Theoretical Review

Theories are formulated to explain, predict, and understand phenomena and, in many cases to challenge and extend existing knowledge within the limits of the critical bounding assumptions. The theoretical framework introduces and describes the theory which explains why the research problem under study exists. A theoretical framework consists of concepts, together with their definitions, and existing theory/theories that are used for the particular study (Torraco, 2004).

## Diffusion of Innovation (DOI) Theory

Diffusion of Innovation theory was developed by Roger's in 1995. Rogers (1995) defines diffusion as "the process by which an innovation is communicated through certain channels over time among members of a social system". An innovation, according to Rogers (1983), is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption". Lee et al, (1999) defines adoption as the process through which an organization decides to acquire systems or technology. The innovation-diffusion model states that an innovation (technology) is passed on from its source to end users through a medium of agents and its diffusion in potential users for the most part dependent on the personal attributes of the individual user. The model assumes that the technology in question is appropriate for use unless hindered by the lack of effective communication (Negatu and Parikh, 1999). Rogers further claims that there are five adopter categories that include: innovators, early adopters, early majority, late majority, and laggards. Interestingly, the five categories follow a standard deviation curve where very little innovators adopt at the beginning (2.5%), early adopters constituting 13.5%, the early majority constituting 34%, the late majority another 34%, finally the laggards at 16%. Moore and Benbasat (1991) adapted the characteristics of innovations presented in Rogers and refined a set of constructs that could be used to study individual technology acceptance. According to Moore and Benbasat (1991) the characteristics includes; the Relative advantage (the degree to which an innovation is perceived as being better than its precursor), Ease of use (the degree to which an innovation is perceived as being difficult to use), Image (the degree to which use of an innovation is perceived to enhance one's image or status in one's social system), Visibility (the degree to which one can see others using the system in the organization), Compatibility (the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters), Results demonstrability (the tangibility of the results of using the innovation, including their observability and communicability) and voluntariness of use (the degree to which use of the innovation is perceived as being voluntary, or free will).

## Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a theoretical model that explains how users come to accept/adopt and use a technology. Original TAM was proposed by Davis in 1989. The model suggests that when a user is presented with a new technology, a number of factors influence their decision regarding how and when they will use it. This includes its perceived usefulness and its perceived ease of use. However, the TAM does not account for the influence and personal control factors on behavior. Other factors such as economic factors, outside influences from suppliers, customers and competitors are also not considered by the TAM (van Akkeren and Harker, 2003). This model adopts well established causal chain of "beliefs, attitude, intention, actual behavior", which was developed from the theory of reasoned action by social psychologists. In Davis's study, two important constructs are identified; perceived usefulness and perceived ease of use (Davis, Foxall and Pallister, 2002). These perceptions predict attitudes toward the system adoption. Then the attitude develops the intentions to use and the intentions

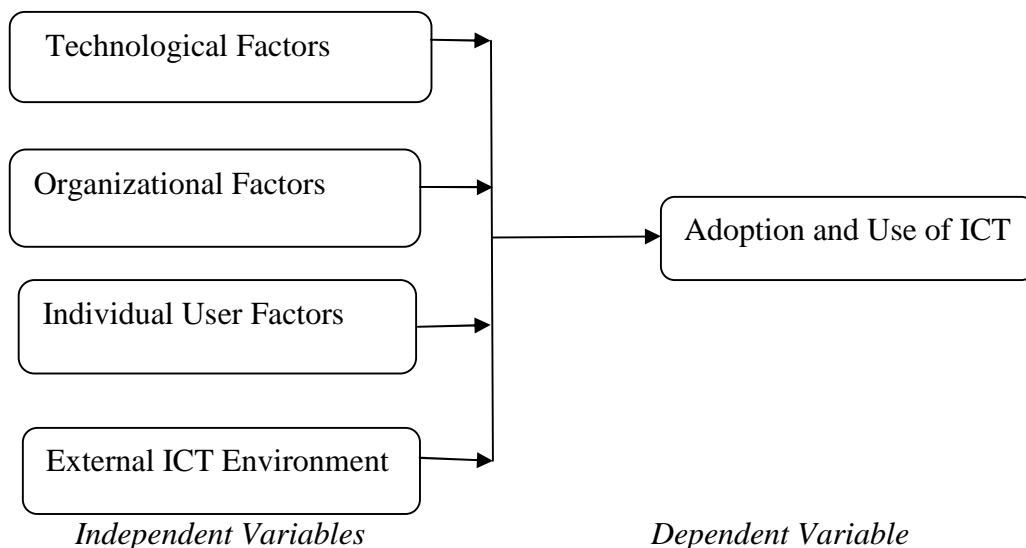
cause actual system usage. In many recent studies regarding technology, TAM is adopted extensively. TAM was adopted and showed that it contributes to the prediction of individual usage of technology, (Fishbein and Ajzen, 1989). TAM assumes that perceived usefulness (the degree to which a person believes that using a particular system would enhance his or her performance) and perceived ease of use (the degree to which a person believes that using a particular system would be free of effort) with the influence of pre-existing external variables being the primary determinants for adoption of a new technology. Perceived ease of use has a direct effect on perceived usefulness and both determine an individual's attitude toward use, which leads to behavioral intention to use a system and actual use of the system. Davis et al (2002). TAM is tailored to IS contexts, and was designed to predict information technology acceptance and usage on the job.

### Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh et al (2003) developed the unified model through reviewing eight models which explain ICT usage, namely Theory of Reasoned Action (TRA), Technology Acceptance Theory (TAM), the motivational model (MM), TPB, a model combining TAM and TPB, the model of PC utilization, Diffusion of Innovation (DOI), and the Social Cognitive theory. The purpose of UTAUT is to explain a user's intentions to use ICT and the subsequent user behavior. The model considers four constructs as direct determinants of user acceptance and usage behavior, namely performance expectancy, effort expectancy, social influence, and facilitating conditions. There are four key moderating variables: gender, age, experience, and voluntariness of use. The authors stated that UTAUT provides a tool for managers to assess the likelihood of success of technology introductions and to understand the drivers of acceptance in order to design interventions such as training or marketing. UTAUT focuses on users who may be less willing to adopt and use new systems.

### The Conceptual Framework for the study

Conceptual framework is a concise description of the phenomenon under study accompanied by a graphical or visual depiction of the major variables of the study (Mugenda, 2008). According to Young (2009), conceptual framework is a diagrammatical representation that shows the relationship between dependent variable and independent variables.



## Empirical Review

This section provides a review of studies which have been done in the past regarding the factors influencing adoption and use of ICT. The empirical review identifies the studies, authors, areas of investigation and the findings reported.

### Technological Factors

Sang-Gun Lee, et al (2013) undertook a study on Innovation and imitation effects in technology adoption in South Korea and found that, the innovation effect is more influential for innovators and opinion leaders than it is for all adopters. However, it diminishes as time passes. Conversely, the imitation effect becomes a more powerful factor for the early majority, late majority and laggards as expounded by Rogers (2003). The imitation effect in the ICT industry is greater than that in the non-ICT industry, revealing the high network effect in ICT diffusion.

Khong Sin Tan, et al (2009) studied Internet-based ICT adoption: evidence from Malaysian SMEs. The purpose of the study was to investigate the innovative characteristics, benefits, and barriers influencing internet-based ICT adoption among the small and medium enterprises (SMEs). The results suggested that internet-based ICT adoption provides a low cost yet effective communication tool for customers. However, security continues to be a major barrier. The inferential statistics revealed that relative advantage, compatibility, complexity, observability, and security are significant factors influencing internet-based ICT adoption.

Malisa Mazlan used Roger's theory to investigate the technological factors that may affect the ICT adoption process among Halal certified companies in Malaysia. They found that the companies have a high degree of adoption in the variables of relative advantage, compatibility, trialability, observability, image and complexity. According to Rogers (2003) relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes while compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters including both organizations and individuals. Roger further defines observability and trialability as the degree to which the results of an innovation are visible to others and the degree to which an innovation may be experimented with on a limited basis respectively.

### Organization factors

Victoria Bordonaba-Juste, et al, (2012) studied the influence of organizational factors on e-business use with focus on firm size. The purpose of the study was to analyze the effect of size and other organizational factors such as IT knowledge, IT external support and the level of employees' education on the use of e-business. The study found positive and significant effects of all the organizational factors on the intensity of e-business use. When analyzing the effect of size, it was found that medium-sized and large firms are more likely to use e-business more intensively. Only small firms use IT outsourcing as a key factor to use e-business.

Knowledge Chinyanyu Mpofu & Lorraine Watkins-Mathys, (2011) conducted research on Understanding ICT adoption in the small firm sector in Southern Africa covering South Africa, Botswana and Zimbabwe. The results highlighted the individual distinctive behavioral characteristics as well as the stage of ICT adoption reached by each case study. The study found that, in case studies that operated in a stable business environment; with organizational readiness; financial and owner managed seemed readily engaged in ICT adoption. Social networks played a crucial role, especially among small businesses with resource constraints.

Olukunle Iyanda & Sunday O. Ojo, (2008) studied the Motivation, influences, and perceived effect of ICT adoption in Botswana organizations and established that ICT application in Botswana was still at elementary stage, mainly communications and recordkeeping. In terms of motivation and influence, the competitive motive and internal sources of information and influence were dominant and that the overall effect of ICT adoption on several organizational activities was moderately positive. Marie Bia & Michel Kalika, (2007) on adopting an ICT code of conduct: An empirical study of organizational factors influencing the adoption and diffusion of a formal code of conduct. The results indicated that though still marginal, the adoption of ICT codes of conduct concerns an increasing number of companies. The practice is related to the degree of standardization and the strategic importance placed on ICT by the management and also the size of the organization. The study was conducted in France and a generalization of the results to other countries may be questionable.

Vast possibilities for adoption and usage of the capabilities of ICT are today limited much more by organizational factors than by technological boundaries. Studies by Davies (1989) in his technology acceptance model revealed two critical aspects for technology acceptance namely: perceived usefulness and perceived ease of use which are depended on the following factors for technology adoption and use by an organization; awareness, size of organization, organizational readiness, ICT governance and management support for ICT projects and innovations. Another study by Blalock (2005) found that organizational structure is one of the elements that stimulate organizations to adopt best ICT practices; these include the skills of dealing with resistance as employees tend to avoid technological innovations as they feel that their physical and intellectual knowledge will be less required and as a consequence lose their positions.

### Individual User Factors

Harry S.H. & G. Khangamwa, (2013) studied ICT readiness and acceptance among Technical, Entrepreneurial and Vocational Training (TEVT) students at the University of Malawi. The purpose of the study was to examine the effects of ICT readiness dimensions on ICT acceptance among TEVT students. The findings showed that technology readiness (TR) dimensions affect attitude towards ICT and that gender difference does not play a significant role on TR, attitude towards ICT and the relationship between TR and Technology Acceptance (TA). Further, the findings show that TR dimensions explain only 33 per cent of the variations in TA.

Individuals' decisions to use ICTs are shaped by many personal factors, such as competence at using the technology's features (Vaast, 2007), familiarity with professional and organizational communication genres (Rains & Young, 2006), impression of management goals (Leonardi, Treem, & Jackson, 2010) and need for productivity (Fulk et al., 2004). McGrath (2006) found that strong emotional reactions to a new technology often led to innovations in use. Beaudry and Pinsonneault (2010) found that users choose different coping strategies when adjusting to a newly implemented technology, based on whether they feel they have control over their situation or not. Gender may influence what an individual focuses on when they perceive or assess a new ICT. For example, men's technology decisions were more strongly influenced by their perceptions of its usefulness (Venkatesh & Morris, 2003), while women were more strongly influenced by perceptions of ease of use and subjective norms circulating in an organization. Social influence such as image from one's peers may also influence adoption and use of a new technology according to Jeyaraj and Sabherwal (2008).

### **External ICT Environment**

Michael Kyobe (2011), investigated the key factors influencing ICT adoption in South Africa with focus on capacity to adopt and use ICT, exposure to international environment and state policies. The study established that capacity to adopt and use ICT has the most significant influence on ICT adoption in South Africa, followed by exposure to international environment. The effect of state policies was surprisingly not significant, deviating from the general claims that policy implementation and adoption of such policies are key determinants of adoption. The findings of this study are based on data collected from secondary sources which may be susceptible to measurement errors, missing values and inconsistent calculations. While the study made some effort to minimize these limitations, precautions need to be taken in using and generalizing these findings. Ya-Ching Lee, et al (2011) investigated corporate performance of ICT-enabled business process re-engineering. The purpose of the study was to evaluate ICT adoption and its impact on business changes and performance. The results indicate that environment capacity fit and a dynamic environment positively affect technology adoption, which in turn directly triggers business processes changes, organizational learning and growth, while indirectly affecting improvement of customer satisfaction and financial performance. Competition could be one of the important external factors considered in ICT adoption, ICT adoption decision would be influenced by the relative advantage gained by adopters compared to their competitors. If there is no relative advantage gained, ICT might not be adopted.

### **Research Methodology**

#### **Research Design**

A descriptive research design was considered as the appropriate research design since it is a more appropriate strategy for answering research questions which ask 'how' and 'why' and which do not require control over the events (Kothari, 2000). This is because such questions deal with operational links that would need to be traced over time, rather than mere frequencies or incidence.

#### **Target Population**

The target population of this study was the staff of the Ethics and Anti-Corruption Commission (EACC) who comprises top management, middle and low level operational staff. According to Ngechu (2004) this makes it easier to get adequate and accurate information necessary for the research. According to Cooper and Schindler (2003), random sampling frequently minimizes the sampling error in the population. For the purpose of sample size, Kotler et al (2001) argues that if well chosen, samples of about 10% of the population often give a good reliability, thus for this research, a sample of 47 respondents will give good reliability.

#### **Data Collection**

The study used both primary and secondary data. Primary data was collected using self-administered interview guide while secondary data was collected by use of desk search techniques from published reports and other documents. Secondary data includes publications, journals, periodicals and information obtained from the internet. The questionnaire also had open-ended questions. According to Patton (2006), the open-ended questions enable the study to

collect qualitative data. The questionnaire was preferred over other methods of collecting data because of its ability to extract information from the respondents as well as giving a better understanding and a more insightful interpretation of the results from the study (Creswell, 2003). Questionnaires are also preferred because they enable the study obtain more up to date information as well as elicit information which might not be captured in the other data collection techniques (Marshall & Rossman, 2005).

### **Pilot Study**

The aim of the pilot study was to test the reliability of the questionnaires. According to Kothari (2000), a pilot test is necessary for testing the reliability of data collection instruments. Cooper and Schindler (2003) explain reliability of research as determining whether the research will truly measure that which it was intended to measure or how truthful the research results will be. Pilot study will thus be conducted to detect weakness in design and instrumentation and to provide proxy data for selection of a sample (Mugenda & Mugenda, 1999). The pilot data was not included in the actual study. The pilot study allowed for pre-testing of the research instrument. The clarity of the research instruments to the respondents was established so as to enhance the instrument's validity and reliability. The pilot study facilitated familiarity with research and its administration procedure as well as identifying items that required modification. The result helped to correct inconsistencies that arose from the instruments, to ensure it measured what was intended.

### **Data Analysis, Interpretation and Discussion**

This section presents the data analysis, interpretation and discussion of the research findings. The analysis aimed at simplification, organization, summarization, description and interpretation of the data in order to communicate the results in a meaningful manner. The responses were qualitatively and quantitatively analyzed by use of statistical tools like bar charts, tables, percentages, and pie charts for comparisons.

## **Research Results**

### **Characteristics of Respondents**

The study targeted employees who had worked at the EACC for over six (6) years, between three (3) and six (6) years and those who had worked for less than three (3) years. The findings showed that, 70.6% had worked for the organization for more than six (6) years, 11.8% had worked for between three and six years while 17.6% had been in the organization for less than three years.

### **Influence of technological factors on adoption and use of ICT at the EACC**

All the respondents in the study indicated that technological factors have influence in adoption and usage of ICT at the EACC. The respondents showed a varying range of the extent to which technological factors have influence on adoption and use of ICT in the organization. From the results, 41.2% of the respondents indicated that technological factors had very high influence on adoption and use of ICT, 35.3% indicated high extent of influence while the rest 23.5% indicated moderate influence. Using a bi-variate technique to analyze the relationship between the respondent's area of professional training against the extent to which technological factors influence the adoption and use of ICT at the EACC, a cross tabulation between the two variables. The findings indicate that, equal number of respondents with ICT professional background and those from non-ICT professional background rated the influence of technological factors on adoption and use of ICT as very high.



### **New Innovation should have Relative Advantage**

The study showed that new innovations should have relative advantage over the technology superseded with 39.4% of the respondents supporting to a very great extent, 45.5% were of the opinion that it was to a large extent and 12.1% to a moderate extent, however, 3% of the respondents opined that new innovations need not have relative advantage over the technology to be superseded.

### **New Technology should be Compatible**

The findings of the study indicated that new technology should be compatible with existing systems and past experiences of the organization. The respondents rated this factor at varying extents with 2.9% of the respondents rating the factor at a small extent; 8.8% indicated moderate extent; 44.1% to large extent and similarly 44.1% agreed to very large extent.

### **Anticipated results of new Technology should be Visible and Measurable**

The study established that anticipated results of new technology should be visible and measurable, 58.8% of the respondents supported the finding to a very great extent; 29.4% to a large extent; 8.8% to moderate extent and 2.9% to small extent.

### **New innovation should have a Test environment for Trial before adoption**

All the respondents pointed out that new innovation should have a test environment for trial before adoption. Those who agreed with the statement to a very large extent were 62.5%, to large extent 31.3% while moderate and small extent tied at 3.1% of the respondents.

### **Analysis of the influence of technological factors on adoption and use of ICT at EACC in terms mean, standard deviation and z-scores**

The responses given were weighted using the five (5) point Likert scale method where 5 was assigned to very large extent, 4 to large extent, 3 to moderate extent, 2 to small extent and 1 was assigned to Not at all on the four factors under study, which included the relative advantage of new technology, compatibility, measurability of new technology and test environment for new innovations before adoption. The results are shown in Table 1.

**Table 1: Mean, Standard Deviation, Variance and Z-Score**

<b>Statement</b>	<b>Mean</b>	<b>Variance</b>	<b>Standard deviation</b>	<b>Z-Score</b>
New Innovation should have relative advantage	4.181818	3.396694	1.843012	0.443937
New technology should be compatible	4.294118	3.529412	1.878673	0.375735
Anticipated results of new technology should be visible and measurable	4.441176	3.703209	1.924372	0.290393
New innovation should have a test environment for trial before adoption	4.53125	3.809659	1.951835	0.240159

The results provided in table 1 showed that technological factors influenced the adoption and use of ICT at the EACC to a large extent as demonstrated by an average mean of 4.36209 derived from the means of the technological factors under the study. The most influential factor was found to be the relative advantage of new technology over the technology superseded which gave

the highest positive z-score of 0.443937. Z-score is used to measure the number of standard deviations from the Mean, a negative z-score shows the standard deviations below the mean while a positive z-score indicates the standard deviations above the mean hence a high positive z-score indicates high significance for the variable under the study.

### **Influence of Organizational factors on adoption and use of ICT at EACC**

The study showed organizational factors influence the adoption and use of ICT, 51.6% rated the influence as very high; 41.9% as high while moderate and low extent of influence tied at 3.2%.

#### **Organizational readiness to avail resources**

The study showed that the organizational readiness to avail resources for acquisition of the required hardware, software and communication technologies was supported by all the respondents to varying extents with 61.8% of the respondents agreeing to a very great extent, 26.5% to a large extent and 5.9% tie for both moderate and small extent of influence on adoption and use of ICT in EACC.

#### **Organizational ICT governance and policies**

The respondents rated the influence of ICT adoption and use at the EACC on account of organizational ICT governance and policies, resulting to 55.9% rating the influence at very large extent, 26.5% at large extent, 14.7% at moderate extent and only 2.9% rating the influence at small extent. This shows that all the respondents were in agreement that organizational policies and ICT governance in EACC influence ICT adoption and usage.

#### **Organizational awareness of existing ICT innovations**

From the study findings it was shown that organizational awareness of existing ICT innovations for improvement of efficiency is necessary for ICT adoption and usage at the EACC, 52.9% of the respondents agreed with the factor to a very large extent, 32.4% to a large extent, 11.8% to moderate extent and only one respondent representing 2.9% indicated a small extent.

#### **ICT project must have top management support**

Majority of respondents (85.3%) indicated that an ICT project must have top management support to a very large extent in order to have chances for success, only 11.8% and 2.9% rated top management support at large extent and small extent. This shows EACC cannot succeed in ICT adoption and usage without support and commitment of the top management because ICT is resource intensive hence require support of the top management for its adoption and usage to have any chances of success.

### **Analysis of the influence of organizational factors on adoption and use of ICT at EACC in terms of Mean, Standard Deviation and Z-scores**

The mean, standard deviation, variance and z-score for the statements rated by the respondents on the influence of organizational factors on adoption and use of ICT at EACC were calculated. The responses given were weighted using the five (5) point Likert scale method where 5 was assigned to very large extent, 4 to large extent, 3 to moderate extent, 2 to small extent and 1 was assigned to Not at all for all the four factors in the study. The factors were; organizational readiness, organizational ICT governance and policies, organizational awareness of existing ICT innovations and top management support for ICT projects. The results are shown in Table 2.

**Table 2: Mean, Standard Deviation, Variance and Z-Score**

Statement	Mean	Variance	Standard deviation	Z-Score
Organizational readiness	4.441176	3.703209	1.924372	0.290393
Organizational ICT governance and policies	4.352941	3.59893	1.897085	0.341081
Organizational awareness of existing ICT innovations	4.371429	3.620779	1.902834	0.330334
Top management support for ICT projects	4.794118	4.120321	2.029857	0.101427

The results provided in Table 2 showed that organizational factors influenced the adoption and use of ICT at the EACC to a large extent as demonstrated by an average mean of 4.489916 derived from the means of the organizational factors considered in the study. The most influential factor was found to be the organizational ICT governance and policies which gave the highest positive z-score of 0.341081 indicating the standard deviations above the mean hence the factor was the most significant among the organizational factors investigated in the study.

### **Influence of individual user factors on usage and adoption of ICT at EACC**

The respondents showed a varying range of the extent to which individual user factors have influence on adoption and use of ICT in the EACC with 84.8% of the respondents indicating that individual user factors had influence in adoption and use of ICT by EACC while 15.2% negated. The extent to which individual user factors influence the adoption and use of ICT by EACC was rated from low to very high with 21.2% of the respondents rating the influence as very high, 39.4% as high, 30.3% as moderate and 9.1% as low.

#### **Individual's decision to use ICT is shaped by competence**

Majority of the respondents (59.4%) indicated that Individual's decision to use ICT is shaped to a very great extent by competence at using the technology while 34.4% indicated it was to large extent while moderate extent and no influence at all tied at 3.1%.

#### **Perceived usefulness of new technology in enhancing personal productivity**

The study established that Perceived usefulness of new technology in enhancing personal productivity influenced the adoption and use of ICT at the EACC at varying extents. Whereby, 68.8% of the respondents indicated that it accounted for a very large extent, 18.8% opined large extent, 9.4% to moderate extent and 3.1% to small extent.

#### **The ease of use influence adoption and use of ICT at EACC**

Nineteen of the respondents representing 61.3% were of the view that the ease of use of ICT influenced adoption and use of ICT at EACC to a very large extent, 22.6% to a large extent while 16.1% pointed out that the ease of usage of ICT had moderate influence on adoption and usage of ICT. Using a bi-variate technique to analyze the relationship between the respondent's area of professional training against the individual user factor's influence on adoption and use of ICT at the EACC, a cross tabulation between the two variables showed that a common trend emerged with proportionate number of respondents with ICT professional background and those from non-ICT professional background rating the influence of individual user factors on adoption and use of ICT as very high. The results shows that the easy of use of a technology in terms of user

friendliness is not determined by the area of professional training demonstrated similar pattern between the ICT trained and non-ICT trained respondents, meaning a user friendly technology is preferred for adoption and use at the EACC.

#### **Social influence on use of certain technologies**

The study showed that social influence on use of certain technologies like intranet, email, and social media among others influenced the adoption and use of ICT at the EACC. The respondents rated the influence at varying levels with 28.1% indicating a very large extent of influence, 31.3% pointed out that it was to large extent, 18.8% to moderate extent and 21.9% to small extent.

#### **Analysis of the influence of individual user factors on adoption and use of ICT at EACC in terms of Mean, Standard Deviation and Z-score**

The mean, standard deviation, variance and Z scores for the statements rated by the respondents on the influence of individual user factors on adoption and use of ICT at EACC were calculated. The responses given were weighted using the five (5) point Likert scale method where 5 assigned to very large extent, 4 to large extent, 3 to moderate extent, 2 to small extent and 1 to Not at all on the factors under study which included; competence at using technology, perceived usefulness of the new technology, ease of use/user friendliness of technology and social influence such as image. The results are shown in Table 3.

**Table 3: Mean, Standard Deviation, Variance and Z-Score**

<b>Statement</b>	<b>Mean</b>	<b>Variance</b>	<b>Standard deviation</b>	<b>Z-Score</b>
Competence at using technology	4.46875	3.735795	1.93282	0.274857
Perceived usefulness of the new technology	4.53125	3.809659	1.951835	0.240159
Ease of use/user friendliness	4.451613	3.715543	1.927574	0.284496
Social influence such as image	3.65625	2.775568	1.666004	0.806571

The results provided in table 4.4 showed that individual user factors influenced the adoption and use of ICT at the EACC to a large extent as demonstrated by an average mean of 4.276965 derived from the respective mean of the individual user factors considered in the study. The most influential individual factor was found to be social influence such as image which gave the highest positive z-score of 0.806571.

The finding reinforce the study by Vaast, (2007) who established that individuals' decision to adopt and use ICTs are shaped by many personal factors such as competence at using the technological features. The study further reaffirmed the proposition by Jeyaraj and Sabherwal (2008) that social influence such as image from one's peers may also influence adoption and use of a new technology. The results of the study are therefore consistent with existing theories on individual user factors that influence ICT adoption and usage.

### **Influence of External ICT environment on adoption and use of ICT by EACC**

Majority of respondents (97%) reported that external ICT environment had influence in adoption and use of ICT by EACC while 3% negated. The extent of influence was rated to be very high extent by 38.2% of the respondents, high extent by 41.2% of respondents, moderate by 17.6% and low by 2.9%.

### **Government incentive to link and share infrastructure**

Twelve of the respondents (35.3%) reported that government incentive to link and share infrastructure with other organizations accounted to a very large extent on the adoption and use of ICT at EACC. 32.4% of respondents indicated that government incentive accounted to a large extent, 23.5% to moderate extent and 8.8% to small extent.

### **Cost of ICT equipment and services**

The cost of ICT equipment and services was rated by all the respondents to have influenced the adoption and usage of ICT at EACC to varying extents. The rating on very large extent, large extent and moderate extent was 35.3%, 50% and 14.7% respectively.

### **Exposure to international environment and state ICT policies**

Exposure to international environment and state ICT policies was rated as not having any influence on ICT adoption and use at the EACC by 2.9% of respondents, however, 14.7% indicated that it had small extent of influence, 23.5% opined that it had moderate extent, 32.4% recorded the influence at large extent while 26.5% indicated that exposure to international environment and state ICT policies had influence on adoption and use of ICT to a very large extent.

### **Stakeholders requirements for e-services**

The study indicated that, stakeholder requirements such as e-service, websites and portals for information sharing had influence on ICT adoption and use at EACC, 50% of respondents supported to a very large extent, 32.4% pointed its effect to be large extent while moderate and small extent tied at 8.8%

### **Analysis of the influence of the external ICT environment on adoption and use of ICT at EACC in terms of Mean, Standard Deviation and Z-scores**

The mean, standard deviation, variance and Z score on the questions which were answered by the respondents on influence of the external ICT environment on adoption and use of ICT at EACC were calculated. The responses given were weighted using the five (5) point Likert scale method where 5 represented very large extent, 4 was large extent, 3 was moderate extent, 2 was small extent and 1 was Not at all for the four factors which included; government incentive to link and share infrastructure, cost of ICT equipment and services, exposure to international environment and state ICT policies and stakeholders requirements such as e-services. The results are shown in Table 4.

**Table 4: Mean, Standard Deviation, Variance and Z-Score**

Statement	Mean	Variance	Standard deviation	Z-Score
Government incentive to link and share infrastructure	3.941176	3.112299	1.764171	0.600182
Cost of ICT equipment and services	4.205882	3.425134	1.850712	0.429088
Exposure to international environment and state ICT policies	3.647059	2.764706	1.662741	0.813681
Stakeholders requirements such as e-services	4.235294	3.459893	1.860079	0.411115

The results provided in table 4.5 showed that external ICT environment influenced the adoption and use of ICT at the EACC to a large extent as demonstrated by an average mean of 4.007352 derived from the respective mean of the external ICT environment factors considered in the study. The most influential external ICT factor was found to be the exposure to international environment and state ICT policies which gave the highest positive z-score of 0.813681.

#### Extent of ICT Adoption and use at EACC

The respondents rated the extent of ICT adoption and use at varying levels with 23.5% rating the success as very high, 35.3% indicating high level, 29.4% as moderate, 8.8% as low and 2.9% rated the extent as very low.

#### Regression Analysis

Regression analysis was used to model, examine, and explore the relationships between ICT adoption and use at the EACC against the four Independent variables used for the study, this was important in measuring the extent to which changes in one or more variables jointly affected changes in another variable. Regression analysis was used to generate an equation applied to the independent variables in order to best predict the dependent variable in the model. Each independent variable is associated with a regression coefficient describing the strength and the sign of that variable's relationship to the dependent variable. Analysis was done using SPSS version 16 to generate the model summary, Analysis of variance (ANOVA) and coefficients of regression. A model summary was generated providing the values of R, R Squared, Adjusted R Square and Standard error of the estimates for dependent and independent variables. The results are shown in table below

**Table 5: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.910(a)	.828	.801	.309

The value of R in the model was 0.910 showing a very strong correlation between Adoption and use of ICT at the EACC and the independent variables which included technological factors, organizational factors, individual user factors and the external ICT environment. The study further showed, R-square (0.828) which measured the proportion of the variation in the Adoption

and use of ICT at the EACC that was explained by variations in the independent variables, meaning 82.8% of the variation was explained by the regression model.

The Adjusted R-square (0.801) measured the proportion of the variance in the Adoption and use of ICT at EACC that was explained by variations in the technological factors, organizational factors, individual user factors and the external ICT environment. In this case the Adjusted R-Square shows that 80.1% of the variance was explained. The unexplained variation of the dependent variable is absorbed by the error term.

### Analysis of Variance for the Independent variables on Adoption and Use of ICT

Analysis of Variance (ANOVA) was used to determine the linear relationship among the variables under investigation. Using this method, the sum of squares, degrees of freedom (df), mean square, value of F(calculated) and its significance level was obtained. The results are shown in Table 6.

**Table 6: Analysis of Variance (ANOVA)**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.486	3	3.829	48.648	.0013(a)
	Residual	2.381	30	.079		
	Total	13.867	33			

From the Table 6 above, the value of F (calculated) was found to be 48.648. This was above the F (critical) value of 2.92 which meant the model used in the study was statistically significant. The relationship ( $p < 0.05$ ) indicated a linear relationship among the variables under the study meaning there was 95% chance that the relationship among the variables was not due to chance.

### Multiple Regression Analysis

The study applied a regression model to assess the extent of influence of the independent variables on the dependent variable. The regression model was as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \text{ (significant level 0.05)}$$

Where:

Y = Adoption and Use of ICT at EACC

$\beta_0$  = Constant (coefficient of intercept)

$\beta_1$  = Beta coefficients

$X_1$  = Technological factors

$X_2$  = Organization factors

$X_3$  = Individual User factors

$X_4$  = External ICT environment

$\beta_1, \dots, \beta_4$  = regression coefficient of four variables

The overall coefficient estimates for the independent variables on adoption and use of ICT at the EACC is shown in table 7.

**Table 7: Overall coefficient estimates for the variables**

Model		Unstandardized Coefficients		Standardized Coefficients		
		Dependent variables	Std. Error	Beta	t	Sig.
1	(Constant)	0.440	0.428			0.314
	Technology factors	0.761	0.078	0.854	9.756	0.0023
	Organization factors	0.645	0.116	0.010	5.562	0.0115
	Individual user factors	-0.017	0.074	-0.021	-0.230	0.8329
	External ICT environment	0.385	0.094	0.164	4.10	0.0263

a. Dependent Variable: Extent of adoption and use of ICT at EACC

As shown on Table 7 above, technological factors, organizational factors and the external ICT environment had a positive and significant effect in Adoption and use of ICT at the EACC, in Kenya as indicated by beta values. The relationships ( $p < 0.05$ ) are all significant with technological factors ( $t = 9.756$ ,  $p < 0.05$ ), organizational factors ( $t = 5.562$ ,  $p < 0.05$ ) and the external ICT environment ( $t = 4.10$ ,  $p < 0.05$ ). On the other hand Individual user factors had a beta value ( $\beta = -0.017$ ), this relationship is statistically not significant at ( $t = -0.230$ ,  $p > 0.05$ ) hence the effect of individual user factors was found to have no significance in ICT adoption and use at the EACC of Kenya.

Table 7 further shows the constant in this model is represented by a value of 0.440, which is the expected value of ICT adoption and use at the EACC when the values of the independent variables are equal to zero. Based on the analysis, the regression equation for the independent variable on the dependent variable resulted to the following;

$$Y = 0.44 + 0.761 X_1 + 0.645 X_2 + (-0.017) X_3 + 0.385 X_4$$

Where:  $Y =$  Adoption and Use of ICT at EACC

$X_1 =$  Technological factors

$X_2 =$  Organization factors

$X_3 =$  Individual User factors

$X_4 =$  External ICT environment

### Conclusions and Recommendations

The study established that 82.8% of the factors which influence ICT adoption and use in EACC include technological factors, organizational factors and the external ICT environment. This findings can generally be applied to other organizations hence the factors investigated in the



study can be reduced to a checklist to assist the EACC and other organizations in ICT adoption and usage. The factors will help EACC and other organizations in drawing successful ICT adoption and usage strategies and avoid costly in-take of technology which may have no relative advantage to the organization.

The management of EACC should be willing to provide necessary resources for successful adoption and usage of ICT which require regular upgrades to avoid obsolesce and maximize on the catalytic power of ICT in business processes. The research work distilled the critical factors which influence adoption and use of ICT at the EACC, in Kenya and provided theoretically and empirically backed factors which influence ICT adoption and usage. Understanding the relative influence of these factors is important in directing policy and proper allocation of limited resources. The study bridged the gap by identifying the factors with the most significant influence on ICT adoption and usage in EACC and formed a basis to enrich the Kenya National ICT policy (2006), regarding factors and intervention strategies that support ICT adoption and usage.

### References

- Ajzen, I (2011). Job Satisfaction, effort, and Performance: *A reasoned action perspective. Contemporary Economics*, 5 (4) 32-43.
- Beaudry, A., & Pinsonneault, A. (2010). The other side of acceptance: Studying the direct and indirect effects of emotions on information technology use. *MIS Quarterly*, 34(4), 689-710.
- Blalock, B. (2005). Information management: *The key to success in 2006*. Retrieved 17/11/2007 from: <http://www.techlinks.net/Editorial/EditorialColumns/tabid/221/ctl/Detail/mid/740/xmid/29635/xmfid/9/Default.aspx>. (accessed on 25<sup>th</sup> January 2013).
- Communication Commission of Kenya, (2012) "Quarterly statistical report for July to September 2012" (www.cck.or.ke accessed on 25th January 2012).
- Cooper, D.R and Schindler, P.S. (2003) *Business Research Methods* (8<sup>th</sup> edn) McGraw-Hill: New York
- Creswell, J.W. (2003), *Qualitative Inquiry and Research Design: Choosing among Five Traditions*, Sage, London.
- Ethics and Anti-Corruption Commission (2012), 'Quarterly Report of Activities for July to September 2012' (www.eacc.go.ke)
- Fishbein, M & Ajzen, I. (2010). Predicting and changing behavior. *An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Harry S.H. Gombachika, Gift Khangamwa, (2013) "ICT readiness and acceptance among TEVT students in University of Malawi", *Campus-Wide Information Systems*, Vol. 30 Iss: 1, pp.35 - 43
- Ihua, U.B. (2009) SMEs Key Failure-Factors: a comparison between the United Kingdom and Nigeria. *Journal of Social Sciences*, 18 (3), 199-207.
- International Telecommunication Union (2012), '*Measuring the Information Society 2012: Global technology figures*', ITU, Geneva .
- Jeyaraj, A., & Sabherwal, R. (2008). Adoption of information systems innovations by individuals: A study of processes involving contextual, adopter, and influencer actions. *Information and Organization*, 18(3), 205-234.
- Kenya Anti-Corruption Commission, (2012), 'Annual Report of Activities for 2011'

([www.eacc.go.ke](http://www.eacc.go.ke))

- Khong Sin Tan, Siong Choy Chong, Binshan Lin, Uchenna Cyril Eze, (2009) "Internet-based ICT adoption: evidence from Malaysian SMEs", *Industrial Management & Data Systems*, Vol. 109 Iss: 2, pp.224 - 244
- Mpofu, Lorraine Watkins-Mathys, (2011) "Understanding ICT adoption in the small firm sector in Southern Africa", *Journal of Systems and Information Technology*, Vol. 13 Iss: 2, pp.179 - 199
- Kombo, D. K. & Tromp, D. L. A (2006). *Proposal and Thesis Writing*. Nairobi. Paulines Publications.
- Kothari, C. R. (2000), *Research Methodology: Methods and Techniques*. New Delhi: Wiley,.
- Kothari, C. R. (2004). *Research methodology. Methods and techniques*. New Delhi. New Age International (P) Limited Publishers.
- Lee, M., Davidson, R., & Wei, K. K. (1999). *The adoption and diffusion of collaborative systems and technology*. Paper presented at The 32nd Hawaii International Conference on System Sciences (HICSS), Hawaii.
- Leonardi, P. M., Treem, J. W., & Jackson, M. H. (2010). The connectivity paradox: Using technology to both decrease and increase perceptions of distance in distributed work arrangements. *Journal of Applied Communication Research*, 38(1), 85-105.
- Marie Bia, Michel Kalika, (2007) "Adopting an ICT code of conduct: An empirical study of organizational factors", *Journal of Enterprise Information Management*, Vol. 20 Iss: 4, pp.432 - 446
- Marshall, C., Rossman, G. (2005), *Designing Qualitative Research*, 2nd ed., Sage, London.
- McGrath, K. (2006). Affection not affliction: The role of emotions in information systems and organizational change. *Information and Organization*, 16(4), 277-303.
- Michael Kyobe, (2011) "Investigating the key factors influencing ICT adoption in South Africa", *Journal of Systems and Information Technology*, Vol. 13 Iss: 3, pp.255 - 267
- Mugenda, O.M and Mugenda, A.G (1999) *Research Methods, Quantitative & Qualitative Approaches*, Acts Press, Nairobi
- Mugenda, O.M and Mugenda, A.G (2003) *Research Methods, Quantitative & Qualitative Approaches*, Acts Press, Nairobi
- Ngechu. M. (2004), Understanding the research process and methods. *An introduction to research methods*. Acts Press, Nairobi.
- Olukunle Iyanda, Sunday O. Ojo, (2008) "Motivation, influences, and perceived effect of ICT adoption in Botswana organizations", *International Journal of Emerging Markets*, Vol. 3 Iss: 3, pp.311 - 322
- Patton, M.Q. (2006), *Qualitative Evaluation and Research Methods*, 2nd ed., Sage, Newbury Park, CA.
- Republic of Kenya, (2003). *The Anti-corruption and economic crimes Act*. Nairobi. Government Printers.
- Republic of Kenya, (2010). *The Constitution of Kenya*. Nairobi, Government Printers.
- Republic of Kenya, (2010). *Kenya Education Sector Support Programme 2005 – 2010. Delivering quality education and training to all Kenyans*. Ministry of Education Science and Technology.
- Republic of Kenya, (2010a). *Technology Strategy for Economic Growth*. Ministry of Information and Communication.
- Republic of Kenya, (2011). *Economic Survey*. Nairobi Kenya: Government Printers.

- Rogers, E. M. (1995). *The Diffusion of innovation* (4th. ed.). New York, NY: Free Press
- Rogers, E. M. (2003). *Diffusion of innovations*. (5th ed.). New York, NY: Free Press.
- Sang-Gun Lee, Silvana Trimi, Changsoo Kim, (2013) "Innovation and imitation effects' dynamics in technology adoption", *Industrial Management & Data Systems*, Vol. 113 Iss: 6, pp.772 - 799
- Torraco, R. J. (2004). Challenges and choices for theoretical research in human resource development. *Human Resource Development Quarterly*, 15 (2), 171-188.
- Transparency International (2011), 'The Kenya Bribery Index 2011', Transparency International, Kenya
- Transparency International (2012), 'The Eastern Africa Bribery Index 2012', Transparency International, Kenya
- Vaast, E. (2007). What goes online comes offline: Knowledge management system use in a soft bureaucracy. *Organization Studies*, 28(3), 282-306.
- Van Akkeren J. and Harker, D., (2003). The mobile Internet and small business: An exploratory study of needs, use and adoption with full-adopters of technology. *Journal of Research and Practice in Information Technology*, 35(3), 205-220.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.
- Victoria Bordonaba-Juste, Laura Lucia-Palacios, Yolanda Polo-Redondo, (2012) "The influence of organizational factors on e-business use: analysis of firm size", *Marketing Intelligence & Planning*, Vol. 30 Iss: 2, pp.212 - 229
- World Bank (2010). The role of ICT in doing business. In *Information and Communications for Development: Global Trends and Policies*. Washington, DC: World Bank.
- World Bank (2012). E-government preparedness in sub-Saharan Africa. *The critical role of ICT in organizational success*. Washington, DC: World Bank
- World Economic Forum (2011). *The Global Competitiveness Report 2011-2012*. World Economic Forum, Geneva
- Ya-Ching Lee, Pin-Yu Chu, Hsien-Lee Tseng, (2011) "Corporate performance of ICT-enabled business process re-engineering", *Industrial Management & Data Systems*, Vol. 111 Iss: 5, pp.735 - 754