

IMPACT OF INTEGRATED MANDATORY E – GOVERNMENT ON PUBLIC SERVICE KENYA; A CASE OF SIAYA COUNTY GOVERNMENT

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ABSTRACT

The purpose of this paper is to analyze and report the Impact of Integrated Mandatory E – Government on Public Service Kenya; Case of Siaya County Government. This study mirrors on three software systems (GHRIS, IFMIS, AND IPPD), and it assessed the extent to which the three (3) software systems were implemented and utilized to increase efficiency in the public service. This study was anchored on UTAUT theory which is highly acceptable for explaining acceptability of technology due to its comprehensiveness since it incorporates eight theories, including the Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), Innovation Diffusion Theory (IDT), Theory of Planned Behaviour (TPB), Motivational Model (MM), Model of PC Utilization (MPCU), Social Contingency Theory (SCT) and Combined TAMTPB (C-TAM-TPB). Venkatesh (2003) piloted a theory of study on the eight Information Technology (IT) simulations to test their value; hence developed the Unified Theory of Acceptance and Use of Technology. The model consists of four factors influencing the adoption of e-governance and ICT technologies: performance expectancy, effort expectancy, social influence, and facilitating factors. UTAUT theory consists of further superseding features (age, sex, skill, and voluntaries of usage), which also determine the acceptance and implementation of e-government. The performance expectancy describes perceived efficiency, effectiveness, and quality of electronic-based governance executed by government agencies. Based on

this factor, the continued use of the three software systems (GHRIS, IFMIS, and IPPD) depends on the continued utility that the public and the government derive from implementing e-government. When the stakeholders (government and public) no longer experience the system's value in service delivery efficiency, quality, and effectiveness, they automatically abandon them and adopt alternatives. The study also adopted a descriptive survey design to collect data and analyze findings. A descriptive research study was convenient because it enabled collection of both qualitative and quantitative data in an unchanged research setting. A mixed questionnaire was applied to gather information amongst randomly selected respondents. The study also had one independent variable (adoption of e-governance) and four dependent variables (performance expectancy, effort expectancy, social influence, and facilitating conditions). The control variables in this study include age, work experience, and literacy. There existed no significant disparity on sex of respondents, with masculine and feminine being equally represented in the sample. However, on age, the majority (68 percent) of the respondents interviewed stood at ages between 25 to 45. The study further established that nearly 70 percent of the respondent had a minimum of a university degree, indicative of a highly trained work force. Three departments were represented in the study, with nearly 46 percent being from the IFMIS department, and the rest from GHRIS and IPPD. The verdict of this research clearly indicates that the four (4)

dependent Variables in this paper had substantial optimistic influence going on with acceptance of e-government amenities within the Countries' devolved units of Administration. The study indicated and showed the fact that persons and firms (especially businesses) should be motivated to embrace e-government to advance performance in delivery of facilities, easiness of utilization of the local authorities structures plus amenities, whereas in the same moment, trust that the age mates and age sets plus coworkers expect all to utilize e-government. In equal measure, facilitating

conditions like faster online infrastructure, software platforms and computer systems, training, re-training and development for capability enhancement must be put within position, in addition to improvement recurrently because facilitating conditions had robust affirmative influence with implementation of e-government facilities.

Keywords: Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions And Adoption And Use Of E-Governance

INTRODUCTION

Utilization of digital platforms revolutionized how government systems operate, in addition, the private organizations establish and perform their responsibilities in the middle of increasing complexity plus uncertainties while using e - government. For example, the latest eruption of global covid-19 plague that accelerated acceptance of digital systems in government institutions and private sector (Gatero, 2011). While using software systems in public service in Kenya is not a new technology, the role of these systems in improving administrative efficiency and policy integration is relatively underexplored (Accenture, 2015). This has the potential effect of limiting recommendations that could increase the benefits of the digital systems in both county and national governments as progressive upgrades to the current adopted software are slowed down.

Information and Communication Technology (ICT) has an integral role in implementing electronic administration, which seeks to ensure effective management of government entities, increase efficiency in operations and guarantee good services to the citizens (Sharifi, 2004). It has enabled organizations to focus on strategic management and improve their performance. Electronic-based administration integrates info and communication technology so as to advance government departments' administrative developments and internal working. ICT enhances efficiency in 'front office' and 'back office' relations and operations in public entities, where the latter focuses on maximizing the benefits of the respective department to the public members (Abrahams, 2015). While the former encompasses streamlining of internal management processes such as human resource, accounting, and finance functions.

Problem Statement

Historically operations and administration duties of the government and its agencies were mainly carried out manually. The public service could not withstand provision distribution standards to the gratification of the residents hence public service reforms became unavoidable, this led to the Public Sector Reform Programmes (PSRPs). The essence of PSRPS was to enable improvement in delivery of public service. This led to digitization of operations' in public sector including E-government Strategy and implementation of the three (3) software systems (GHRIS, IFMIS and IPPD). Integrated Financial Management Information Systems (IFMIS) was established to be cost efficient (Huang et al.,2009; Kang et al., 2008; Loh et al., 2006), assisting and facilitating budgeting methods (Gattiker & Goodhue, 2005), in addition to providing improved data and information management (Federici, 2009) and expansion of the Integrated Payroll and Personnel Database (IPPD) system ; envisioned to upsurge competence in the organisation of Government human resource (e –government Strategy,2004) while GHRIS aim is to address most government human resource needs. The system was designed in-house by government ICT officers in collaboration with human resource personnel.

The mandatory e-government is approximately a decade old since it was introduced into Kenya's public service system for administration of the central and the local government. The framers of the system intended to use it for escalation of competence, usefulness, and convenience in administration facility distribution and to reduce mismanagement of public funds. However, ten years down the line, these same problems of inefficiency, ineffective service delivery to Kenyans, maladministration including corruption still exist. (Simsonet al. 2011) illustrated that in unindustrialized nations, under-spending is regular just as the issue of overspending. This has hence necessitated tracking of the impact that the new system of government has in counties and identify areas that require adjustments. Therefore, this study uses Siaya County as reference to investigate the impact of mandatory e-government in county governments.

Research Questions

The following research questions guided the study;

- i. What is the impact of performance expectancy on the adoption, use, and success of e-governance?
- ii. To what extent does effort expectancy influence the adoption and success of e-governance?
- iii. How does social influence affect the rate of adoption and success of e-governance?
- iv. To what extent do facilitating conditions effect the adoption and use of e-governance?

The Assumption is that digitization of any organization's operations makes work more accessible, efficient, and effective, including government sector operations. Still, the question is, what is the

impact of utilization of the 3 software systems in Kenya, and are their challenges still being experienced?

Objectives

They included:

- 1) To determine how performance expectancy effects the adoption and use of e-government.
- 2) To establish impact of effort expectancy on adopting and using e-government.
- 3) To establish the extent to which social influence affects the adoption and effectiveness of e-government.
- 4) To investigate the impact of facilitating factors on the adoption and success of e-government

LITERATURE REVIEW

This section appraised theoretical in addition to empirical readings that were carried out by other researchers relating to implementation of e-government.

Unified theory of Acceptance and Use of Technology (UTAUT)

UTAUT is highly acceptable for explaining acceptability of technology due to its comprehensiveness since it incorporates eight theories, including the Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), Innovation Diffusion Theory (IDT), Theory of Planned Behaviour (TPB), Motivational Model (MM), Model of PC Utilization (MPCU), Social Contingency Theory (SCT) and Combined TAMTPB (C-TAM-TPB). Venkatesh (2003) piloted a theory of study on the eight Information Technology (IT) simulations to test their value; hence developed the Unified Theory of Acceptance and Use of Technology. The study was hence based on UTAUT as a theoretical framework.

Empirical Review

E-Governance

World Bank (2014) explains e-governance to be, implementation of government operations in government agencies through the utilization of information technologies (mobile computing, cloud computing, Wide Area Networks, and the Internet) to transform relationships with citizens, public service delivery and business transactions alongside additional systems of governance to the communities. Therefore, e-governance is a vehicle government uses to deliver its amenities and data to the citizens using electronic or internet platforms (Nkwe, 2011). Monga (2008) defines e-governance to be a technique by which ICT is employed to render government amenities efficiently and effectively the general population.

Adoption and Scope of E-Governance

E-governance has four scopes; Government to Citizen (G2C), Government-to-Government (G2G), Citizens to Government (C2G), and Government to Business (G2B). Government to Citizens entails various techniques Administration utilizes in distributing facilities the populace (Sharifi, 2004) and private individual customers (Sarker et al., 2011; Sarpoulaki. M., 2008) ensuring that government facilities that are crucial data are freely accessible by voters. This ensures that the general public and private business communities find utility information online and access services through websites and service portals. G2C services also facilitate disseminating democratic services such as Certification, Identification Cards, Taxation, Licensing, and Registration. The State Department of Public service developed GHRIS, IFMIS, and IPPD software systems to enhance the efficiency, transparency, and accountability of G2C public services.

Performance Expectancy and Adoption of E-Governance

Performance expectancy is among the core elements for consideration in adopting e-governance within Unified Theory of Acceptance and Use (UTAUT). Presentation efficiency is determined through its three components, quality, effectiveness, and efficiency (Venketesh et al., 2003). Monga (2008) asserts that advent of Information technology has enhanced public facility distribution by various administrative agencies. Equally, the progressive invention of e-governance, system modification, and regular update is significantly driven by the desire for efficient, timely, and cost-effective operations of government services. With a relatively diversified and distinguished economy from many peers in Africa, the economy of Kenya registered an average of 5.9% economic growth rate between 2010 and 2018; till the side effects of covid-19 plague interrupted it. This reflects the trend in expanding the size of the public sector and the need for integrated e-governance for stewardship of public resources and improved efficiency (Sabiri, 2020). An efficient government can be achieved through various ways; one of which is of interest to this study is an investment in IT platforms to enhance financial services, human resource management, registration services, licensing, and payroll management, among other essential services.

Efforts Expectancy and Adoption of E-Governance

E-governance should be vibrant in relations to easy application, abilities essential to position and manoeuvre e-governance, plus risks operators are unhindered from while using the platform should be minimal; for e-governance to work successfully and convey efficiency and effectiveness, they sort. Therefore, to appreciate the paybacks of an e-governance system, the composition of ICT infrastructure and technology deployed should be easy, especially among those seeking services from the platforms (Tomasz et al., 2007). Papadomichelaki and Mentzas (2012) define easiness of utilization of E-Systems as the comprehension of online contents and indices plus data supporting

impeccable communication among the system operators and organisations in ways showing the connotation, comprehension, and coherency. The adoption of the three software systems (GHRIS, IPPD, and IFMIS) relies on the ease of use among the public to meet the effort expectancy condition.

Expectancy efforts by users depend on the level of perceived risks; hence, it is incumbent upon government agencies that rely on electronic-based governance to implement good risk mitigation strategies to protect users while making it stress-free for the users to utilize the services

Social Influence and Adoption of E-Governance

Social influence refers to attitudes, beliefs, norms, and cultures drawn from the society people perceive things. Adoption of e-governance is not immune to the influence of social constraints because it directly affects the lives of the citizens. This research reviews community, peer stimulus, plus the government's function in adopting e-governance (GHRIS, IFMIS, and IPPD). The community adopts prevailing cultures and norms as they arise. These affect in what way they answer to variations in their everyday livelihoods. For instance, the leadership structures and bureaucratic hierarchies influence the respective organizations or government agencies and the community (World Bank, 2014).

The community culture influences the mechanisms adopted by the government to render services. There are two overriding factors forming the culture of people; principles and standards. Beliefs are expectations individuals of a given community buy in about truths originating from or through their familiarity (Azhar, 2003), while values are ideals that followers of the society contemplate to be desirable and worth adhering to achieve. The adoption of software systems, for example, GHRIS, IFMIS, and IPPD, hinged on the psychological state in addition to preparedness by the community to accept that trend. This largely relies on their experience with the existing system and their expectations for higher utility from the new system.

The government is also responsible for revamping and preparing citizens for a paperless public administration through restructuring the education system, like distributing computers to primary school learners to accustom them to the basics of computer operation. The opinion shapers would also influence perception. Peer group perception influences how individuals think. Therefore, if the majority in a society recommends adopting a particular software system, the minority will be compelled to follow suit (Shareef et al., 2011).

Facilitating Conditions and Adoption of E-Governance

Facilitation conditions indicate preparedness of government institutions to install the software systems and apply them in performing their functions. Concisely, facilitation conditions involve

the extent of implementation structures existing, such as practical infrastructure, transparency, government backing, moral support, and monetary support, amongst other vital factors, usage of the e-governance platforms (Venkatesh et al., 2003). This research facilitation circumstances include ICT infrastructure, government support, and accountability.

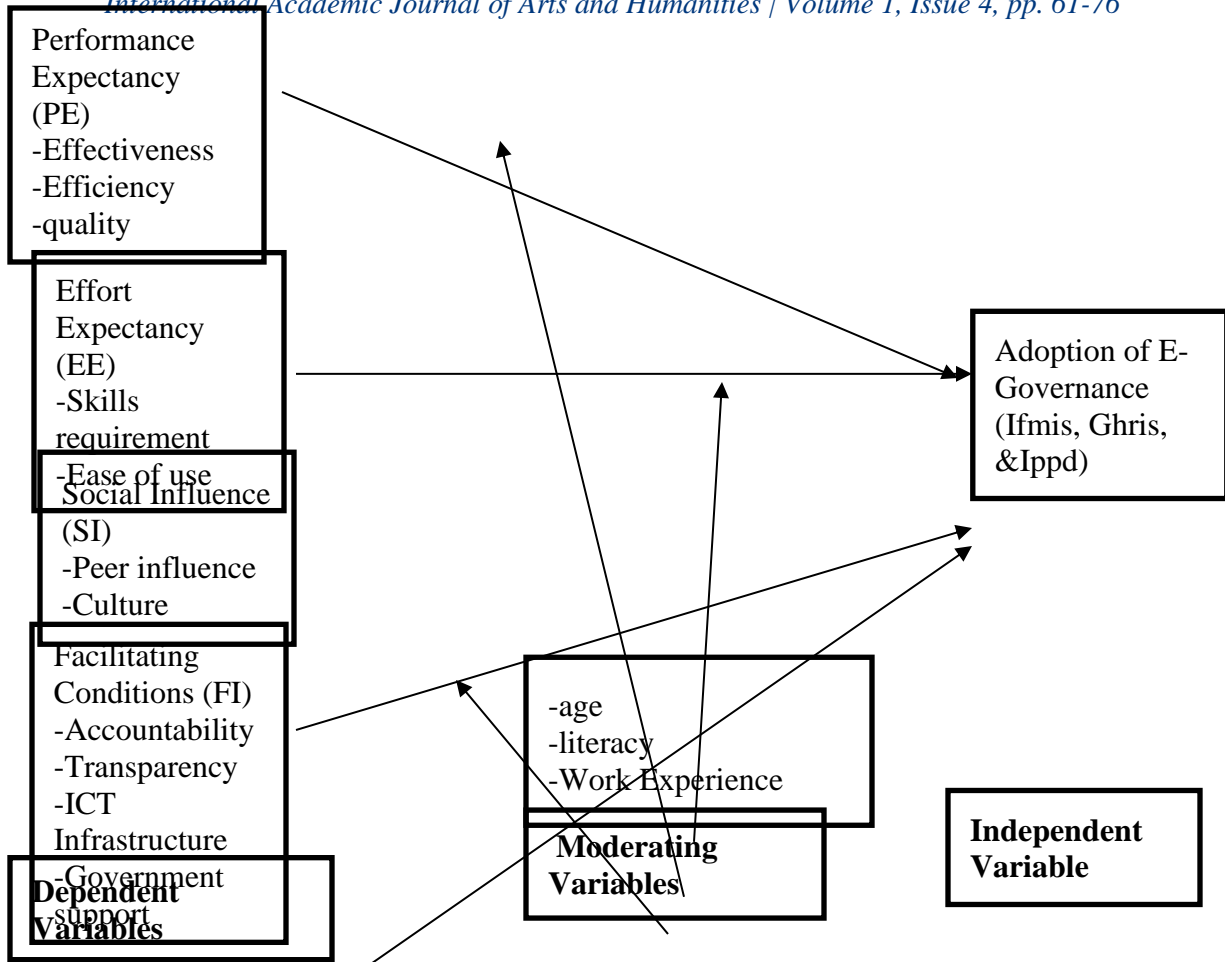
Implementing the 3 software systems in Kenya could only be viable through expanding and strengthening the ICT infrastructure to enable internet connectivity in the metropolitan and country side. The step that had to be undertaken since they were essential for government services equally, both in cities and rural settings (Carter, 2012). The requisite ICT infrastructures for fully functioning e-governance in all parts of the country include network cables, fibre cables, and satellite transmitters.

Njuru (2011) explores the need for an effective ICT network in a country that desires to digitize public sector administration. Since e-governance is aimed at expanding citizens' access to government services, robust ICT guarantees the website's stability and the system's ability to accommodate multiple people accessing government services simultaneously.

Conceptual Framework

The structure underneath provides the conceptual framework for this research.

The conceptual framework consists of four dependent variables: the determinants of adoption and implementation of software systems in governance (GHRIS, IFMIS, and IPPD). The determinants include the dependent Variables. The performance expectancy defines capability of information technology structure in performing various functions from end-user perspective. For instance, the efficiency of using the human resource information software system to update employees' information and store the changes without visiting the human resource department may motivate the adoption of the system (Venkatesh, 2003). Performance Expectancy is evaluated by efficiency level, effectiveness, and quality of output. Effort Expectancy (EE) is the easiness of utilization connected with the e-governance platforms. GHRIS, IFMIS, and IPPD would be utilized fully if the public could access the government services more easily than the manual systems. Social Influence includes the social context that influences the degree of importance of the three software systems in various government agencies and the public. They include the organizational and community culture, peer influence, and literacy levels. The Facilitating Conditions comprise government support, political influence, ICT network, rural and urban electrification, infrastructure, and accountability and transparency of the system.



*Figure 1: The Conceptual Framework for the Study
Adapted from: (Venkatesh, 2003)*

RESEARCH METHODOLOGY

Research Design

The study adopted a descriptive survey design to collect data and analyse findings. Sileyew (2019) defines descriptive survey design as collecting data to explain a situation or phenomenon without manipulating the environment and variables. A descriptive research study was convenient because it enabled collection of both qualitative and quantitative data in an unchanged research setting. It was also effective in analysing the study's non-quantified variables, such as the impact of integrating the three software systems in public service governance (Sileyew, 2019). A mixed questionnaire was applied to gather information amongst randomly selected respondents.

Target Population

The study targeted employees of Siaya County Assembly and the County Government Department staff in the departments of public service, human resources, treasury and finance, and ICT. These

departments were convenient for sampling because they directly used the three software systems under the study.

Sampling Technique and Sample Size

The sample size of the research was 108 respondents. Krejcie & Morgan (1970) was adopted to determine the sample size.

$$S = \left[\frac{X^2 NP(1-P)}{d^2(N-1)} + X^2 P(1-P) \right]$$

Where;

S= Sample size

X²= Chi-square value from the table for a degree of confidence at 1-degree anticipated confidence level; (3.841)

N= the populace size from which sample is drawn

P= the population proportion assumed to be 50%

d= degree of accuracy or standard deviation assumed at 5%

$$S = 3.841 * 150 * 0.5(1 - 0.5) / [(0.05)^2(150 - 1) + 3.841 * 0.50(1 - 0.50)] = 108$$

Sector	Total	Percentage [%]	Sample size
County Treasury and Finance	90	30%	27
ICT	101	40%	40
County Human Resource Department	70	30%	21
County Public Service Board	10	50%	5
Ward Managers & Ward Administrators'	31	50%	15
Total			108

Table 1: Sample Size Distribution

Source: (Siaya County Government, 2022)

Research Instruments

The study relied on various research instruments to collect data, analyse and present the findings. These included questionnaires, observations, SPSS software, and discussions. SPSS software aided in qualitative analysis of the research findings including mean, variances, standard deviation correlations and frequencies of the data. This enhanced interpretation of the results and determination of association amongst dependent, independent and intervening variables.

Validity and Reliability

A pilot Google questionnaire survey was conducted using ten selected staff of the Siaya County Government to test the reliability and validity of using an online survey to collect data. Their responses were used to compute Cronbach's alpha to determine the reliability of the chosen data collection method.

The universal canon in the use of a Cronbach’s alpha is that, indicators of 0.7 and above is good, 0.8 and above is better and above 0.9 and above is best.

Data Analysis and Presentation

Raw info was analysed by use of Statistical Package for Social Sciences (SPSS). Correlation plus factor analysis were utilized to construct validity of the research questions about adopting the three software systems. Furthermore, data was analysed for percentages, means, frequencies, and regressions. Descriptive figures were indicated and offered through tables and statistics, and inferential statistics was tabulated. Besides, inferential statistics was used to explain any connection amongst the dependent, independent, and moderating variables. ANOVA and multi-regression was applied to determine significance level of the research variable.

Response Rate

Table 1 below presents the response rate

Table 2: Response Rate

Target Sample Size	108
Achieved Sample Size	71
Response Rate	65.7%

Source: Survey Data

The survey targeted 108 respondents. Of the targeted respondents, 72 responded to the survey and this translated into a reply degree of 66.7 percent. This response rate is considered adequate and desirable based on Schmid et al. (2012) who asserted and noted that however a 50 percent reply degree will always be satisfactory, a 60 percent reaction degree will always be required plus is attainable. Further, Gendall (2000) settled on a 50 percent reaction degree might be considered as “...a rough rule of thumb for a minimum acceptable response rate in survey research” (2000: 5); and as such, the response rate for this survey is classified as acceptable. With the response rate classified as sufficient, then the sample was adequate for the study and hence the results are valid.

Reliability Analysis

Reliability analysis is a measure of consistency and stability of the objects that are used to define a scale. It is the degree to which an instrument would give similar results for the same individuals at different time points. To measure reliability analysis for Likert-scale data, the Cronbach’s Alpha is used. This is a statistic, which is used to measure reliability or the internal consistency.

The value of alpha may lie between 0 and 1 with a value of 0.7 being considered the threshold. The following are the proposed thresholds: 0.9 – 1.0 –Excellent, 0.8 - <0.9 – Good, 0.7 - <0.8 – Acceptable, 0.6 - < 0.7 – Questionable, 0.5 - < 0.6 – Poor, >0.5 – Unacceptable

Table 3: Reliability Analysis

Section	Reliability Analysis	Number of Items	Classification
E-Governance	0.893	8	Good
Performance Expectancy	0.877	9	Good
Effort Expectancy	0.906	5	Excellent
Social Influence	0.894	8	Good
Facilitating Conditions	0.809	6	Good

Source: Survey Data

Based on the results of the reliability analysis as presented in Table 9 above, it was then concluded that tool had high internal consistency and hence reliable for the survey, implying that the tool was able to measure the constructs as intended to measure.

Regression Analysis

Multiple Regression Model, a statistical method, that permits the forecasting of response variable founded through set of independent variables. This is a technique for learning the association amid the dependent variable and two or more independent variables. In this research, regression analysis was done between the adoption of e-Government and four dependent variables. The model used is found below:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \mathcal{E}$$

Where:

Y is the dependent variable (Adoption of e-Government)

X is the set of four independent variables described in the previous paragraph i.e.

X₁ - Performance Expectancy

X₂ - Effort Expectancy

X₃ – Social Influence

X₄ - Facilitating Conditions

β_i ($i=1,2,3,4$) are the parameters associated with the corresponding independent variable which are to be estimated (partial regression coefficients)

β_0 is the intercept

\mathcal{E} is the error variability (error term)

The table below presents the results of the regression model based on the univariate analysis.

Univariate Regression Model

Univariate analysis means developing a stand-alone model for each of the independent variable against the dependent variables. The table below presents the results of results of the univariate regression mode and includes the standard error, the t-statistic and the p-values. The p-values were used to make the conclusion whether the independent variables were significantly related with the team performance. The significance was tested at the 5 percent level of significance

The results of univariate regression model imply that when considered independently, each of the four independent variable was significantly associated with the dependent variable. That is, performance expectancy was significantly associated with the adoption of the e-Government (t=13.934, p=0.000), and based on the coefficient, a unit increase in performance expectancy increases the adoption of e-Government by 1.194 units (t=1.194, p=0.000). Further, a unit increase in effort expectancy, increases the adoption of e-Government by 1.114 units (t=6.564, p=0.000), while a unit increase in social influence increases the adoption of e-Government by 2.164 units

($t=4.574$, $p=0.000$). Finally, a unit increase in facilitating condition increases adoption of e-Government by 1.272 units ($t=5.148$, $p=0.000$)

Table 4: Regression Analysis – Univariate Model

Variables	β	SE	t-statistic	p-value
Performance Expectancy	1.194	0.06	13.934	0.000**
Effort Expectancy	1.114	0.137	6.564	0.000**
Social Influence	2.164	0.101	4.574	0.000**
Facilitating Conditions	1.272	0.153	5.148	0.000**

** Significant at 5 percent level of significance

Multivariate Regression Model

Multivariate regression is a technique that estimates a single regression model with more than one outcome variable. In this case, the four independent variables are considered jointly in the model to estimate their influence on the adoption of the e-Government when controlling for each of the independent variable. Further, other confounding variables like age, sex and education have been entered in the multivariate model to estimate their influence on the adoption of the e-Government. The table below presents the results of results of the multivariate regression mode and includes the estimated coefficient for the model, the standard error, the t-statistic and the p-values.

Table 5: Regression Analysis – Multivariate Model

Variables	β	SE	t-statistic	p-value
Performance Expectancy	1.153	0.126	9.060	0.012**
Effort Expectancy	2.941	0.093	4.276	0.000**
Social Influence	1.219	0.111	3.117	0.010**
Facilitating Conditions	1.008	1.179	1.612	0.128
Age	1.389	1.519	1.079	0.907
Sex	1.351	1.428	0.654	0.285
Education Level	1.176	1.821	0.769	0.516
Constant	2.277	1.590	4.439	0.040**

** Significant at 5 percent level of significance

In the study all variables of facilitating conditions ($p=0.128$), age($p=0.907$), sex ($p=0.285$), education level ($p=0.516$) had p-values of more than 0.05. This enables conclusion that the variables were significantly related to the e-governance adoption.

The overall model significant was tested using the Fishers Statistic, and the results indicate that the model was significant at 5 percent level of significance ($F=27.437$, $p=0.000$). Further, R-Square was used to test the strength of the model and the results indicate an R-Squared of 0.753 implying that 75.3 percent of the variation of the adoption of the e-Government can be explained by the dependent variables, which were included in the model.

Correlation Analysis

Correlation analysis is a statistical procedure that is used to quantify the association between two variables i.e. dependent and independent variables. In this study correlation, analysis was used to determine the level of association between adoption of e-Government, which was the independent variable and the dependent variables. The following were the results of the correlation analysis:

Table 6: Correlation Analysis

Adoption of e-Government	Pearson Correlation (α)	p-value
Performance Expectancy	0.859	0.000
Effort Expectancy	0.620	0.000
Social Influence	0.482	0.000
Facilitating Conditions	0.527	0.000

** Significant at 5 percent level of significance

Conclusions and Discussions

The response rate of 66 percent for this study was estimated and considered sufficient to allow for statistical analysis of the collected data and make meaningful conclusion (Gendall (2000), Schmid et al. (2012).

There existed no significant disparity on sex of respondents, with masculine and feminine being equally represented in the sample. However, on age, the majority (68 percent) of the respondents interviewed stood at ages between 25 to 45. The study further established that nearly 70 percent of the respondent had a minimum of a university degree, indicative of a highly trained work force.

Univariate regression analysis showed that all four dependent variables were all significantly associated with adoption of e-Government. The relationship established by the univariate model was positive, indicating that adoption of e-Government was directly proportional to each of the four independent variables.

However, to control for confounding factors, a multiple regression model was fitted on the data. Based on this model, the outcomes showed that of the four dependent variables, were all significantly associated with adoption of e-Government when considered together, and confounding factors have been considered. Similar to the univariate model, the direction of relationship was positive indicating that adoption of e-Government was positively associated with the three independent variables. These results were further confirmed by the correlation analysis results which mirrored the results of the regression model.

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