

# **E-GOVERNMENT STRATEGY IMPLEMENTATION AND PERFORMANCE OF THE PUBLIC SECTOR IN KENYA**

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## **ABSTRACT**

The Kenya public sector has the vision to realize e-government strategy to reach the public and to promote performance by enhancing e-participation and e-consultation in the policy/ decision- making process. Notably a number of projects have commenced but have met serious challenges in the implementation stages. Yet few studies have attempted to carefully analyse e-government strategy implementation and performance of the public sector in Kenya. The general objective of the study was to investigate e-government strategy implementation and performance of the public sector in Kenya. Specifically the study was narrowed: to establish the relationship between ICT infrastructure (service oriented architecture) and public sector performance in Kenya, to determine the relationship between e-level applications and public sector performance in Kenya, to examine the relationship between e-government institutional framework and public sector performance in Kenya and to establish the relationship between e-government legal framework and public sector performance in Kenya. This study was anchored on Management Information Systems Theory while Resource Based View, Unified Theory of Acceptance of Technology and Stakeholders Theory acted as supporting theories as they relate well with study hypotheses. A positivism orientation was adopted in this study. The study employed descriptive and explanatory research design. The study population was 13,228 which comprised of Directors of administration, ICT departmental heads, and customer care supervisors as the key

informants in the government ministries and also the users (members of the public) who visited the current 18 Ministries with e-government related issues. Multistage sampling was applied where larger clusters were subdivided into smaller samples for the purposes of surveying. The study used disproportionate stratified sampling whereby the proportionate sample was adjusted to embrace a better sample size which was 384. The study collected primary data using both an interview guide and a semi structured questionnaire. The SPSS (version 17) computer software aided the analysis. Descriptive statistics and inferential statistics, specifically regression analysis were used to analyze quantitative data. Qualitative data was analyzed using content analysis. The study established a significant relationship between e-government performance and ICT infrastructure. It was also confirmed that ICT infrastructure has a significant relationship with public sector performance in Kenya. The study further established a significant relationship between e-government performance and e-level applications and that there was a significant relationship between e-government performance and e-government institutional framework. The study concludes that e-government institutional framework has an influence on public sector performance in Kenya while there is a significant relationship between e-government performance and e-government legal framework. The study concludes that e-government implementation by the government should be well regulated so as to ensure the process is effective in all the ministries. The study also recommends that

management teams responsible for implementation of e-government strategy at the ministries should ensure the process leads to promoting access to facilities by the users at the points of service delivery.

**Key Words:** *e-government, strategy implementation, performance, public sector, Kenya*

## **INTRODUCTION**

The present decade is characterized by huge and quick improvements in the field of innovation in e-government, which is created by the progression of innovation especially in the field of the web and in this manner influencing a lot of aspects of life in the world (Mansar, 2006). The term electronic government (e-government) is of recent origin. E-government is discussed distinctively by diverse researchers. On the other hand, as perceived by Lee (2010), it is vital to offer definitions that provide a significant comprehension of E-government. E-government in general includes a process of utilizing Information and Communication Technology (ICT) to change both back-end and front-end government functions and to give out services, data and information to all government clients, who include; members of the public, business organizations, government personnel and other government organizations. E-government uses a scope of IT innovation tools, for example, the Wide Area Networks, Internet, and Mobile Computing, to upgrade government procedures to enhance competence and proficiency in the provision of government services. E-government can in this way be divided into what are known as essential conveyance models; the connection amongst the government and citizens (G2C), electronic collaborations between government organizations and private organizations (G2B), relationship between public institutions (G2G), and the relationship amongst government and its personnel/employees (G2E) (Benbasat & Zmud, 2003).

E-government strategy is an emerging application area in the IT domain. One essential advantage of utilizing E-government services is to get data about new business opportunities online. In the event that business organizations and governments are mindful of the present status of e-government adoption, organization performance and appropriate strategies can be utilized to decrease a percentage of the inherent barriers. Further, an understanding of the kind of technology that supports the use of e-government technique can provide input to enable more business firms access government services online (Zhao, 2003).

As of now, most governments exchange information and services with citizens, business organizations, and across different arms of government to form a favorable environment inside their nations. The move from traditional government services to E-government services gives better public services and quality of life. It permits the users of government services to perform their business transactions with government agencies electronically, at any time and location of their choice. This has numerous favorable circumstances for the citizens of any nation, for example, giving simple access to data, convenient services, quick response to requests, and quick conveyance of services, enhanced information security and data privacy. Consequently, this

prompts a considerable convenience in E-government. E-government as a procedure is used to help individuals take advantage from data innovation (Titah & Barki, 2006). E-government has enhanced the way services are introduced to the citizens.

Change has been observed in governments and other autonomous public policy organs who have understood the significance of e-government strategy as a vital tool for responsive administration. Generally, many governments have been utilizing study-and-file approaches in dealing with their business organizations which has proved to be disadvantageous in the extent to which accountability is considered (Mansar, 2006). Due to the changing landscape where the larger part of governments' interface with the public users, organizations and private bodies occur at the local level, it is critical that necessary attention be given towards putting up procedures that permit consultative and participatory administration. The ideal model transformation in the transformation of government has been achieved partly by the fast execution of e-government procedures that can possibly change the way services are delivered to the public by public institutions (Zhang, 2005).

### **E-government Strategy in Kenya**

The institutional structure in the Kenya public sector has gained enormous growth in e-government strategy which is vital in facilitating economic development and henceforth, the administration continues to give utmost consideration thereto (Kane, 2010). Part of the e-government key activities include: starting enactment and strategies to build up proper e-government institutional structure; enactment of the Communications Commission of Kenya (CCK) Act in 1998; enactment of the Kenya e-government Strategy in 2004; and the formation of the Ministry of ICT and the ICT Board to give the institutional framework aimed at changing government operations by the use of e-government to enhance performance by guaranteeing efficient and timely conveyance of government services (Republic of Kenya, 2009). The Directorate of e-government has established the Government Data Center (GDC) for storing and processing of government applications and data. The center is connected to the Government Common Core Network (GCCN) that networks all government ministries through enterprise architecture that combines data warehousing, re-engineering processes and virtualized technologies.

The government has recognized e-government as key driver to the provision of effective and accessible services to citizens, business organizations and public agencies. The Kenya Vision 2030 recognizes ICT as a key pillar to development and success. E-government spares citizens travel time to government institutions and permits round-the-clock access to various services. Commendable efforts have been made on e-applications, capacity building and infrastructural growth (Waema, 2012).

The foundation for e-government legal framework today is premised in the constitution of Kenya (2010), which has rebuilt the nation's political and managerial structure by devolving a great deal

of power to the new county government entities, and which sets out some core principles of administration. These incorporate constitutional commitments in favor of the privacy of communications, freedom of expression and free media, which are obtained from the Universal Declaration of Human Rights. The administration's general strategy for national improvement is set out in its Vision 2030 framework, which was conceptualized in 2007 with the objective for Kenya to become a 'globally competitive and prosperous country with a high quality of life by 2030' (Kane, 2010, p19). The initiative rests on three pillars of economic, social and political development with ambitious targets for developmental progress, including an anticipated 10% rate of growth in GDP per annum from 2012. The ICT sector features in this vision for national advancement, with a particular emphasis on business process outsourcing (BPO), subsequently redefined in development planning documents in the more extensive term 'IT-enabled services' (ITES).

Vision 2030 has been structured in the first of what is envisioned to be a series of five-year development plans, the Medium Term Framework (2008-2012). This identified a number of e-government developments underway at the time it was agreed as having significant potential for Kenya in the forthcoming landing of submarine cables and the proposed national fiber optic backbone project as well as the plans of the ICT Board for a BPO park and digital villages. These are seen as important steps in enhancing national competitiveness, developing a 'knowledge-based society' and creating employment opportunities. It also promised a review of the 2006 Telecommunications/ICT Sector Policy. A significant part of the effort to deliver the e-government enabled development objectives is the responsibility of the ICT Board, which was established in 2007 to promote Kenya as a destination for business process outsourcing, build e-government capacity within the country, and manage other ICT-enabled development interventions. E-government is also a prominent feature of government policy as was first outlined in the e-government strategy of 2004.

ICT infrastructure is a pre-requisite to e-government. The Kenya public sector has begun a connectivity and e-service provision scheme through a Secure Government Network (SGN) that gives connection, web and email services to government departments. The scheme is supported by the World Bank under the Transparency Communication Infrastructure Project (TCIP). Its objective is to improve ICT network, enhance conveyance of services, expand the nature of information from government to citizens and increase the government's ability to ensure transparency in its anticorruption efforts (Republic of Kenya, 2008b). The project is a major source of economic growth by improving partnerships among public-private corporations. It offers technical help to the Ministry of Information and Communications secretariat, CCK e-government Directorate, KENET and the Public Procurement Over-sight Authority. The recently launched e-government Information Portal provides a "one stop shop" for user interaction with government agencies which will provide a portfolio of cross-governmental services. The most eye-catching current project of the Ministry of Information and Communication and the ICT Board is the development of a technology city at Konza in Machakos County. This is a

US\$14.5bn project which is presented as a driver for the growth targets established in Vision 2030 (Kane, 2010).

The Ministry of Information and Communications developed a National ICT Sector roadmap for the duration between 2008 to 2012, as was agreed in 2006, which has now come to the end of its term. The goals of this plan were to: upgrade national competitiveness through the advancement of the BPO sector; develop a 'knowledge based society'; guarantee computerized access through a project of 'digitalized villages'; and reinforce the nation's ability to meet future innovative difficulties (Cuts International, 2008).

The rollout of the e-government strategy has enhanced service provision through business level incorporated applications. Good examples are the Oracle based Enterprise Resource Planning Software (ERPS, for example, the Integrated Financial Management Information System (IFMIS) and the Integrated Personnel and Payroll System (IPPS), e-tax, Land Information Analysis (LIS), Education Management Information System (EMIS), Health Information System (HIS), and Community Information System (CIS). The Ministry of Health has tested various online initiatives, for example, telemedicine and is currently in process of coordinating and integrating all its medical activities with the plan of the national healthcare policy. The e-Health policy will guarantee consistency with the National IT/ICT and National e-government policy infrastructure (Republic of Kenya, 2008b).

The IFMIS has enhanced responsibility and openness in utilization of government resources. The ministry of ICT through NITA has ensured that all IFMS/IPPS use the national backbone infrastructure as their primary vehicle/source for connectivity which has ensured efficient service delivery. IFMIS sites have so far been connected to the GCCN. The Kenya Revenue Authority's (KRA) e-tax payment system is among the key ICT applications that are at the top notch. Reports attribute expanded tax regime to the e-tax payment system. The Directorate of e-government, a unit in the Office of the President, was set up to coordinate provision of online services to the public (Cuts International, 2008).

## **STATEMENT OF THE PROBLEM**

The adoption of e-government has brought about changes in many aspects of individuals' day to day lives around the world. This transformation has to a great extent altered the way governments around the world communicate with their citizens, organizations, agencies, workers and other various stakeholders (Lee, 2010). Changes from manual handling of information to electronic storage and access advancement have stimulated the adoption of electronic government or e-government. The insurgency in e-government has raised the attention among nations with emphasis on comprehension of the key advantages to the clients (Sharma, 2007). Nevertheless, there have been unsuccessful efforts to execute e-government programs. This is generally in view of the fact that they need sufficient institutional mechanisms for the programs'



inventive designs, efficient execution, objective assessment, and repeated adaptation (Badran, 2004).

Just like other different nations in Africa, the Kenya public sector has the longing to implement e-government methodology as an approach to broaden its reach to its people with a perspective to advance e-involvement and e-consultation in the procedures/decision making processes. Notably various e-government activities have been started though they have met serious difficulties in the implementation stages (Benington, 2009). The UN e-government report (2008) characterizes nations in four distinct components: High e-government limit (index = 2.00 – 3.25), Medium e-government limit (1.60-1.99), Minimal e-government limit (1.00 – 1.59) and Deficient e-government limit (below 1.00). Kenya is classified as having inadequate e-government investment with an index of 0.76 below Rwanda, South Africa and Burkina Faso in the Africa classification (UN Report, 2008). The 2008's e-government procedure execution Index shows Kenya in 128th position out of 182 nations studied with an e-readiness index of 0.22 out of 1 (UN Report, 2008).

Despite the fact that this may build a case for e-government execution, there is a probability of a user reaction because of the negative aspects of the digitalized government system. As the utilization and integration of these technologies increase, the potential negative results for citizens also increase. Intrusive information collection, abuse of individual data and constant monitoring are common apprehensions. Given that the state is the biggest single authority over citizen data, the potential for these fears to become reality is not entirely misinformed and might eventually influence citizen assessment and the general fulfillment with service delivery in the public sector.

Though studies by scholars persist to show the most outstanding adoption constructs as well as different systems and models for comprehension of e-government strategy implementation, research by sovereign consultancy/research institutions has created a large group of statistics and league tables of good and poor practices of service conveyance (like Badran, 2004; Rogers, 1995; Coleman, 2006). Yet, no studies have endeavored to extensively comprehend the impact of e-government strategy execution on public sector performance. Over and again despite the fact that it is appreciated that the understanding and desires of the users contrast those of the service providers in connection to key dimensions, for example, productivity, ease of use, mindfulness, security, trust, regulation, accessibility and availability, the assessment techniques and benchmarks utilized for measuring the service users' (citizens) perception with respect to the above measurements have leaned towards the service providers' (government agency) impression of what constitutes best practice to the detriment of the users.

One of the most essential quality factors of an e-government project is end user fulfillment (Yidiz, 2007) as the e-government strategy is embraced with the expectation to improve public service delivery. Despite the fact that Kenya has made important strides towards usage of e-government, such endeavors are likely to face difficulties later on since reports demonstrate that

most public institutions with e-government system compatibility are not utilizing e-government for an expansive extent of their transactions. Such ability derives from the e-government platform that renders the ability to connect the e-government strategy with service delivery. Therefore, from a service delivery perspective, the relationships among the components of the e-government strategy implementation, the e-government platform and performance need to be established. Moreover, the information of the condition of e-government implementation pattern and the influence of e-government on performance among Kenyan public sector has also been inadequate due to the few studies done on the status of e-government implementation in Kenya (Kane, 2010; Simenda, 2009). It is therefore not clear on the extent e-government strategy has been implemented and how that extent may have enhanced performance of the public sector. This study therefore assessed the e-government strategy implementation and performance of the public sector in Kenya.

### **GENERAL OBJECTIVE**

The general objective of the study was to establish the relationship between e-government strategy implementation and performance of the public sector in Kenya.

### **RESEARCH HYPOTHESES**

Ho<sub>1</sub>: ICT infrastructure has no relationship with public sector performance in Kenya.

Ho<sub>2</sub>: E-level applications have no relationship with public sector performance in Kenya.

Ho<sub>3</sub>: E-government institutional framework has no influence on public sector performance in Kenya.

Ho<sub>4</sub>: E-government legal framework does not relate to public sector performance in Kenya.

### **THEORETICAL REVIEW**

This study was anchored on Management Information Systems Theory while Resource Based View, Unified Theory of Acceptance and Use of Technology (UTAUT) and the Stakeholder Theory acted as supporting theories as they related well with the study hypotheses. These theories were relevant in organizational contexts used to implement e-government.

#### **Management Information Systems Theory**

According to this theory as proposed by Weber (1986), underlying ideas relevant to e-government in general are presented to enable the subsequent discussion of theory in Information Systems. According to Affisco and Soliman (2011), information system comprises of nodes capable of storing data, channels able to dispense information and actors acting and re-acting upon the information. Thus the actors or the persons within the group are part of the system rather than operators of the system. Since the operators are parts of the system, and since "the



system" is a random combination of the activities and constituents of the study, the information system can be considered as a human activity system in the sense of Ismail and King (2005).

The system is an aggregate role of the organization, its people and its technological artifacts (Muir & Oppenheim, 2012). The higher-order object of the human action system in the information system does not occur as a discrete tangible object. It is rather an abstraction, to which it is suitable to attach properties and behaviors. The theory indicates that the short-term drive of the information system is to disseminate the correct piece of facts to the right actors in the right time. The long-term function of the information system is to assist in the viability of the organization by providing a sound base for decision, information merging and organizational development.

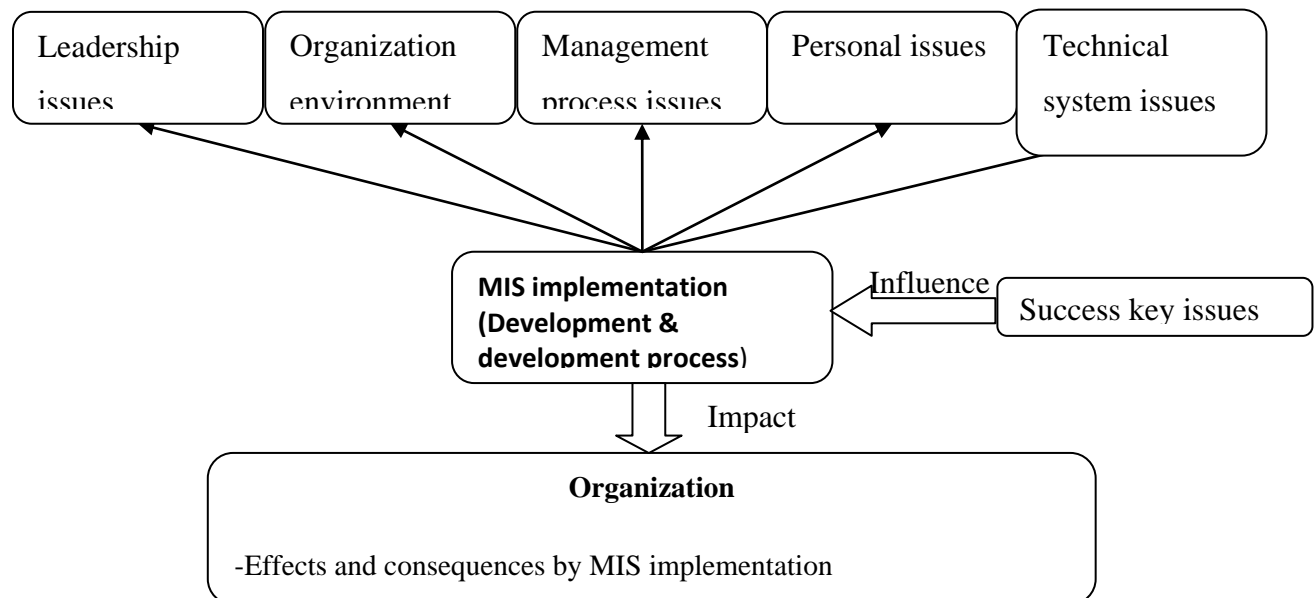
Information systems (IS) and information technologies (IT) are important components of prosperous businesses and organizations. The definition of both IS and IT are related to each other; however, they differ in their purposes. IT relates to the products, approaches, innovations, and values that are utilized for the purpose of creating information. In addition it can be referred to as "the planning, collection, transportation, recovery, storage, access, presentation, and conversion of information in all its forms (voice, graphic, text, video, and image). Data movement can occur between people, people and machines, or among machines. Information control guarantees proper selection, deployment, management, operation, conservation, and growth of the IT assets consistent with organizational aims and purposes (North & Thomas, 2011). IT refers to the products, approaches, innovations, and values that are used for producing data. IS "comprises of the data innovation infrastructure, application frameworks, and work force who utilize information innovation to convey data and communication services for exchange processing/operations and government/administration of an organization. In this manner IS comprises of elements which network to create data, which incorporate software, hardware, information, techniques, and individuals, though these segments can be inbuilt in each data framework.

The important part of the five segments is that IS is not just computers, programs, and equipment for communicating, but its focus is on hardware, software, information, strategies, and individuals; simply, data system implies an arrangement of correspondence between individuals. Additionally, Miranda and Kim (2015) assert that there are numerous roles of information system or data frameworks in an institution, for instance to build an operation's proficiency, to process business exchanges, to give choice backing, to monitor and assess performance of employees, and to enhance documentation and correspondence channels. Information Technology (IT; i.e. hardware and software) is one vital part in an information system (IS). These days, IT is a vital element to consider in strategic planning of an institution. Furthermore, IT is the asset or capability base on which an enterprise builds its business information system. Additionally, the primary roles of IT have been analyzed and explained by Kostiwa (2013). He asserted that the key role of IT comprises fan initiator, a facilitator, and an enabler. The significance of an initiator in IT is to start another operation, or start the change of IT. More so, a

facilitator of IT is an instrument which serves to oversee work which is less demanding. Finally, an enabler of IT offers the capacity or the important backing to accomplish an objective or a goal.

Based on the IMIS theory and the literature above, Figure 1 shows a frame of study used to anchor this study, which are the MIS execution procedure and its complicated key issues. Furthermore, achievement elements will be inspected in MIS execution. At last, the impact on organization and its methods which concentrate on effects and results are explored. As indicated by the model, it signifies MIS implementation process, in this study named, improvement and deployment procedure, and it's encompassing challenging issues as clarified by Kritsonis and Student (2014).

The implementation difficulties can be classified by issue category which can be summarized into five areas including: management issues, organization setting issues, management process issues, personal issues, and technical data issues. In this context, the model moreover introduces the key issues for MIS implementation achievement that affect the MIS implementation procedure. These achievement variables can be seen as tools which increase degree of execution procedure improvement and support in every phase of the execution process. Moreover, a noteworthy part of this success is the commitment to the accomplishment of MIS execution. The last component in the model is organization effects concentrating on impacts and results, which are controlled by actualizing MIS within the organization (Wei, 2013).



**Figure 1: MIS Implementation Process**

Source: Yildiz (2003) pg. No. 117

The centrality of information systems to informatics has been documented for quite a while by the British Computer Society (BCS), which until its last reestablishment in 2004 described itself basically as the expert for information management system, and still is concerned, with expert accreditation for degree programs in all of the disciplines comprising informatics (Jaeger & Thompson, 2014). For a while now, this accreditation procedure has put a specific emphasis on the engineering aspects of projects, but its scope has increased, so that it does not put such prominence on the designing aspects of the projects. It is this broadening in the application of information systems concepts that has partly motivated the application of these concepts in extending this model of a three-dimensional knowledge space from e-government to informatics as a whole.

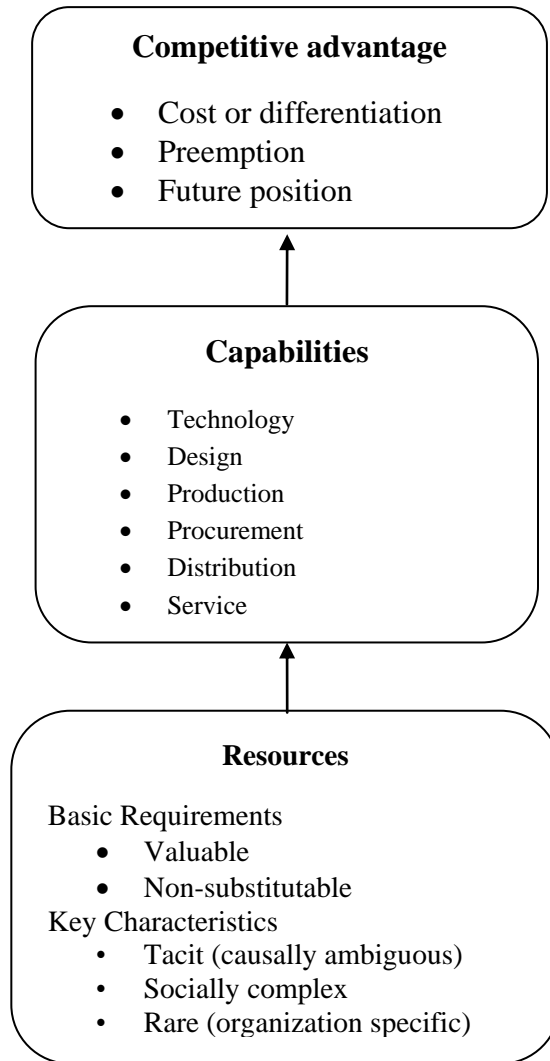
### **Resource Based View Theory**

According to Conner (1991), the RBV theory suggests that the resources possessed by a firm are the primary determinants of its performance, and these may contribute to a sustainable competitive advantage of the firm. Researchers in the field of strategic management have for a long time underscored that competitive advantage relies on the match between unique internals (organizational) capacities and dynamic external (ecological e.g. e-government idea) circumstances (Sheng & Tam, 2014). Nevertheless, it has just been in the last ten years that the resource based perspective of an organization, has come into existence, articulating the relations among organization assets, capacities, and e-government implementation in guaranteeing competitive advantage. Figure 2 gives a graphical outline of those relationships.

The idea of competitive advantage has been widely utilized in the strategic management writings. Relyea (2014) carefully established the ideas of cost leadership and distinction relative to competitors as two significant bases of competitive advantage: a low-cost environment allows an organization to utilize aggressive pricing and high sales capacity, while a differentiated product in this case e-government strategy creates positive reputation, facilitating fast and efficient delivery of services. Decisions concerning timing and commitment levels (which include maintaining user friendly interaction) are important in securing competitive advantage (Irani *et al.*, 2013). If an organization makes an early move in e-government implementation, it is likely to prevent competition by employing superior strategies or acquiring ideal access to vital raw materials, sites, construction capacity, or consumers.

Preemptive strategies thus allow organizations to achieve a strong attention and control of a specific niche either by achieving lower costs for services, providing customized services or both of them. Jaeger (2011) emphasized the importance of e-government implementation strategy "competing for the future" as an abandoned aspect of competitive advantage. In regard to this opinion, the firm should be apprehensive not only with productivity in the current state and in the intermediate term but also with its future situation as a source of competitive advantage. This interpretation necessitates explicit strategizing on how the organization will outmaneuver others when its present strategy formation is either copied or made obsolete. The connection between

organization capabilities in adopting e-government strategy and competitive advantage has also been well presented in the literature.



**Figure 2: The Resource-Based View**

Source: McMurray & Cozens (2013) pg. No. 55

Kaliontzoglou *et al.*, (2015) assessed the centrality of the independent variables, which are the e-government strategy pillars to competitive success and reemphasized the key significance of recognizing, managing and leveraging core competencies which incorporate the e-government idea as opposed to concentrating just on operational productivity in e-government planning. The resource based perspective pushes this reasoning one stride further; it sets out that competitive advantage can be managed if the capacities in the organization are anchored on the necessary infrastructure and applications that are not easily copied by competitors. As it were firms' assets must raise "hindrances to impersonation" (Kurunananda & Weerakkody, 2014). Thus IT infrastructure and applications are the essential units for analysis and incorporate physical,

monetary resources and workers' ideas and organization (social) processes in guaranteeing effective execution of e-government strategy in public sector. Institution's capabilities result from bundles of resources being applied to impact on particular value-added tasks. In this regard, RBV theory has been used to analyse the connection between e-government strategy implementation and performance of the public sector.

In reference to RBV of a firm, Lee (2012) proposes that the progress of e-government and e-business development is enhanced through three resources: ICT infrastructure; Human capital; and Institutions. Each of these three resources represents technological, organizational, and environmental contexts respectively. The quality of ICT infrastructure signifies the level of computer and communications hardware and software available in a country. While the quality of human capital shows how well educated and trained are the citizens in a country, the quality of institutions is dictated by the legitimate and managerial system within which people, firms, and governments collaborate to produce growth and development in an economy. This theory was used to inform the independent variables of the study.

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

UTAUT by Davis (1989) has clarified the critical factors and contingencies related to the prediction of behavioral intention to use a technology and primarily in organizational contexts. Venkatesh, Morris and Davies (2003) studied and concluded the distinctive models of IT adoption and combined the elements of eight well known models (theory of reasoned action; (TRA); Technology Acceptance Model (TAM); Motivational Model (MM); Theory of planned behavior; (TPB); the combined TAM-TPB; model of PC usage; Innovation diffusion theory (IDT); and Social cognitive theory (SCT) into a Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT gives immense change to our cognizance of customer affirmation. Conversely, the early UTAUT theory concentrated on huge organizations.

TAM has gotten wide backing through acknowledgment, application and replication for its ability to expound on government usage of Information System(IS) and is thought to be the most dynamic and convincing model in the explanation of IS application and conduct (Morris & Venkatesh, 2011). Moreover, it has been found that TAM ignores some crucial sources of variation and does not consider challenges, for instance, time or cash limitations as issues that would hinder users from using an IS. Moreover, TAM has neglected to give important data about the customer usage of a particular innovation owing to its simplification. Subsequently, different TAM models were proposed, which are appropriate to contemporary innovation. Consequently, researchers were confronted with a choice to pick among a variety of models. It was as a result that another model was made to address these limitations; (UTAUT). The objective of this model is to understand perception/user satisfaction as a dependent variable (Navarra & Cornford, 2011). The examination model used as part of this study to analyse customer's perception of e-government is UTAUT.

The UTAUT model contains eight hypothetical models: the Theory of contemplated activity, the Technology acknowledgment model, the Motivational model, the Theory of planned conduct, a model combining the Technology acknowledgment model and the Theory of planned conduct, the model of PC usage, the Innovation diffusion hypothesis, and Social intellectual hypothesis. The UTAUT model coordinates these hypothetical models and is comprised of four principle determinants of utilization intents. In addition, the UTAUT model has been observed to be more applicable than the aforementioned hypothetical models, as it has the capacity to represent a higher rate of variance ( $R^2$ ) in utilization intents. Yazici *et al.*,(2013) examined the unified hypothetical model in four distinctive organizational backgrounds for a duration of six months and the study demonstrated important aspects of intent (execution anticipation, required effort, social impact and encouraging conditions), while attitude toward utilizing innovation, self-adequacy and uneasiness were hypothesized not to be immediate determinants of intent.

### **Stakeholder Theory**

Stakeholder theory by Freeman (1984) provides an appropriate lens for considering a more complex perspective of the value those stakeholders seek as well as new ways to measure it. The stakeholder perspective on value offered in this paper draws attention to those factors that are most closely associated with building more value for stakeholders, and in so doing, allows academics to better measure it and enhances managerial ability to create it. Freeman, (1984) referred to stakeholders in an organization as any group or persons who can influence or are influenced by the accomplishment of the organization's goals. Stakeholders, in business terms, mostly allude to stockholders and those people or groups whose interests are fixed to the successful economic performance of any specific organization. The general perspective of the Stakeholder approach is a redefinition of the organization. The stakeholder concept explains what the organization ought to be and how it ought to be conceptualized.

Zweers and Planque (2011) state that the organization itself ought to be considered as grouping of shareholders and the reason for the organization should be to safeguard their interests, needs and perspectives. This management perspective is thought to be achieved by the supervisors of a firm. The management ought to from one perspective steer the organization in the right direction keeping in mind the end goal to guarantee the rights and interests of shareholders in management decisions. In order to achieve the desired goals and objectives the management must act as agents for the stockholders to guarantee the survival of the firm through protecting the stakes of every set of individuals.

Regarding e-government, shareholders represent a group of people and organizations that have a stake in the achievement or failure of specific policies in the execution of e-government programs in general. Davis (1989) considers the various players that have different contending interests, measures the variation of that interest and its impact to the shareholders, and attempts to consider different results taking into account the various expectations among shareholders. The target of ST is to hypothesize government as an organization whose essential objective is to



adjust myriad interests and present a result that is a consequence of that balance. A responsive government will measure and react to the shareholder interests, whether it is political, monetary, ethnic, or religious in nature. Gay and Airasian (2014) proposes another perspective, which shows another pattern in shareholder hypothesis. In this perspective the point of view of the shareholders themselves and their activities is additionally considered to be essential in the execution of e-government system. He attests "The rule of shareholder option of taking action permits shareholders to make a move against the executives for inability to perform the required obligation of care". All the aforementioned concepts and ideas of the shareholder thought are known as normative shareholder hypothesis in literature.

As indicated by Iwaarden *et al.*, (2013) non-governmental organizations (NGOs), the general public clients, media, business and policymakers are considering the idea and are attempting to actualize it in various ways. Most commitments on e-government are based on the normative principles. They advance the vision of the e-government technique and the function of directors whose goal is essentially to maximize value addition in order to ensure sustainable growth. Additionally, this point of view is by all accounts offering explanation to the way businesses have extensive obligations that are best characterized within the shareholder approach.

Applying a shareholder concept of activities instead of the more customary input output execution viewpoint infers holding a conviction that all players are included within e-government strategy with a view to acquire service delivery advantages. Shareholders guarantee certain functions as well as procedures of e-government ensure progressive results that provide efficiency and service proficiency advantages to its clients (Liu & Arnet, 2013). The stakeholder hypothesis is basically an administration instrument. The legitimacy, urgency and authenticity of services characterize e-government system shareholders. Power and legitimacy must be attended to if directors are to serve the dynamic expectations of all shareholders. The stakeholder theory in this manner provides a platform for articulating the expectations of different actors in the e-government implementation agenda. Likewise, many studies have been done on analyzing the relative impact of diverse shareholders (Parasuraman *et al.*, 2015).

The theoretical background was intended to give managers the capacity to develop relevant strategies that can propel the achievement of e-government programs. At the end of the day, the point of view of stakeholder hypothesis was mostly viewed as inside-in (workers, directors), and inside out (clients), just like corporate administrators view their organizations and their general surroundings. Stakeholders hypothesis gives the advantage of figuring out who is key in setting legitimate or institutional structures, and if and how they can be overseen. Rowley (2013) made an observation that the stakeholder examination includes the utilization of categorization that is truly subjective as it matters who conducts the investigation and makes the difference between essential and/or persuasive or essential or secondary stakeholders. Parasuraman and Malhotra (2012) made an observation that there is no genuine theoretical match between stakeholder's hypothesis and an administration's performance goal of delivering services to individuals and organizations. March and Olsen (2012) however established that stakeholder theory was

beneficial to understand e-services yet expressed that it needs adjustment to suit shareholder inclinations, needs, capacities, and in projecting required resources including information administration ability, data management capabilities and information security hence relating the study with the dependent variable.

## **CONCEPTUAL FRAMEWORK**

This study attempted to discuss the relations between the various independent variables with regard to performance of the public sector as the dependent variable. The study identified performance of the public sector as the dependent variable. In this study, e-government performance as dependent variable included; services level, operational efficiency and user satisfaction in the public sector. Four items were used to represent service level to the public sector: improved quality of output in service delivery; increased client satisfaction; provide other means to access the information collected, generated and disseminated by the government; improved communication with citizens about public issues. The study operated the construct, operational efficiency, under the following three items: reduced overall cost for the agency cheaper cost of doing business than the traditional way, increased job satisfaction. Performance was taken to be dependent on various factors related to the nature and type of e-government strategy implementation effect on ICT infrastructure, E-level applications, E-government institutional framework, E-government legal framework, data management capability, information security and program compatibility. This study attempted to explore how these independent variables influenced performance in the Kenyan public sector and specifically in Nairobi County.

This study categorized four variables of e-government strategy implementation on performance as the independent variables. Determining the performance of e-government is a complicated element of e-government uses. E-government performance evaluation has developed into a favorable subject for many studies and applications (Traunmuller, 2015). According to Kijisanayotin *et al.*, (2013), government policy and regulations are known major facilitators of e-government adoption through a gateway of e-government legal frameworks. These frameworks include; effective interagency organization, accountable e-government authorities and regular access of e-government authorities to political leaders. Irani *et al.*,(2013), asserts that e-government institutional framework is one of the most vital variables to be examined as it replicates the cultural approval of e-government in the e-society. E-government institutional framework also comprises the degree to which a technology agrees with the firm's requirements, including the configuration of a firm's e-government policy with its business approach (Janssen & Cresswell, 2015). For technology innovations, it is especially significant that they fit with the most normally installed hardware platform and operating systems (ADF IV, 2004).

Kouzmin (2013) suggests that the genuine locus of competitive advantage and superior firm performance lies on dynamic e-level applications that again mirror the capacity to attain higher-order IT applications, especially in light of changing business situations and strategic

opportunities. In line with these thoughts, information frameworks administration specialists have conceptualized utilization of information administration in e-government execution as related capacity building procedures and characterized them as administrative competencies for obtaining, administration, and utilization of e-government in key business processes and strategies that include e-government infrastructure capability, IS-business partnering, solutions delivery, vendor partnering, and strategic planning as key e-level applications of e-government (Yazici *et al.*,2013). Janssen and Shu (2013) proposed that e-level applications in e-government are antecedents of higher-level business abilities through digitized procedures, knowledge administration frameworks, and responsive capacities

An organization IT base allows organizations to take advantage of enhanced business practices. An especially critical feature of ICT framework is flexibility. Margetts and Dunleavy (2012) affirm that ICT base flexibility ought to be seen as an organizational core competency and that ICT framework flexibility is important to handle expanded client requirements without increasing expenses. As indicated by Navarra and Cornford (2011), integration between business and information systems (IS) planning, normal adjustment in IS planning, ICT administrative assets, and e-government execution achievement are all variables likely to influence alignment. Their relative significance, on the other hand, depends on the organizational setting and on whose viewpoint it is being looked from. The conceptual framework in figure 6 shows the relationship between the five dimensions of the study. Each dimension and its relationship with other variables, as depicted in the model, were discussed further in the remainder of the study.

## **RESEARCH METHODOLOGY**

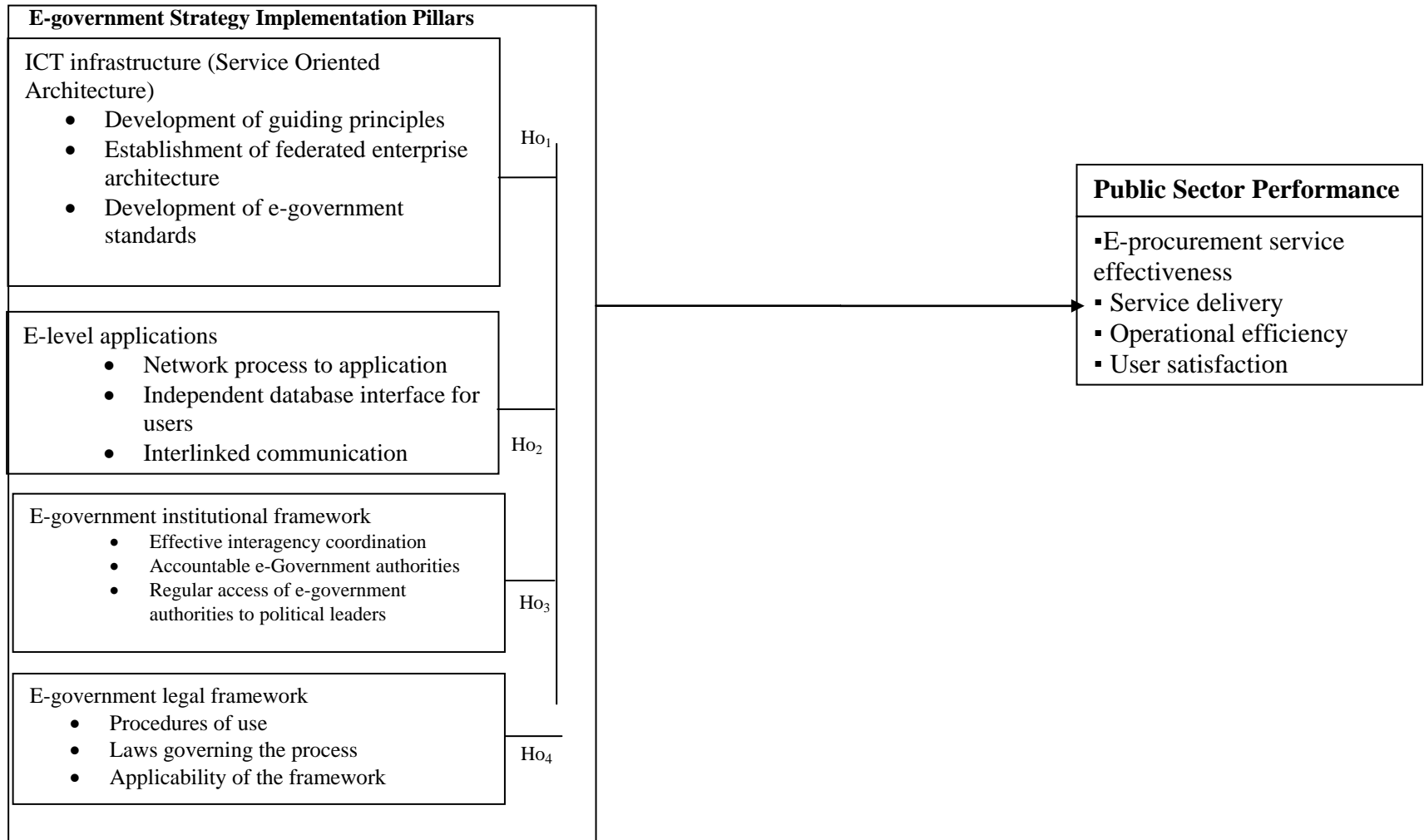
### **Research Philosophy**

A positivism angle was applied for the purpose of the research. Positivists trust that genuineness is steady and can be observed and described from an objective perspective and meddling is possible with the phenomena being considered (Reeves &Hedberg, 2003). This perspective is by implication bolstered by Kaplan and Maxwell (1994) who, in an audit of 902 Information Systems examination articles, found that all the observational studies were done on the premise of the positivist methodology. Positivism has likewise had an especially fruitful relationship with the physical and natural sciences.

Positivism angle was applicable to this study since it was valuable in serving to clarify the interaction between e-government procedure and execution. The study concentrated on e-government implementation, which was thought to be a greater amount of the sociological sciences as well as physical sciences. Positivism investigation does predefine dependent and independent variables, as well as focuses on the full multifaceted nature of human sense making as the circumstances arise (Kaplan & Maxwell, 1994).

**Independent variables**

**Dependent variable**



**Figure 6: Conceptual Framework**

## **The Research Design**

This study was undertaken through the utilization of a descriptive study design. The descriptive study design was adopted because of the way that it permits examination of the relations of variables under study, utilizing linear regression model. It additionally permits more noteworthy adaptability in terms of cash and time and in addition maintaining a strategic distance from the hardship of chasing for respondents more than once to deliver high response rate (Reeves & Hedberg, 2003). These reasons validate why this study embraced a descriptive research design.

## **Locale of Study**

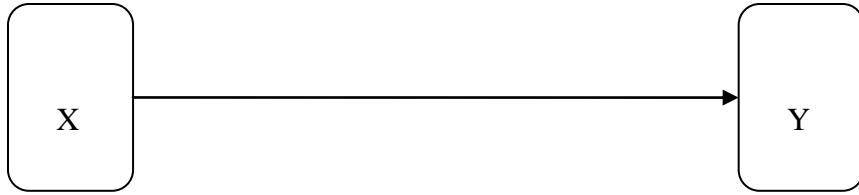
The study drew its population from the public sector in Kenya as represented by government ministries. The ministries were studied at their headquarters, which are located in Nairobi County. Nairobi County includes the managerial locale of the capital city of Kenya. Nairobi County is in this way synonymous with the city itself. As per the 2009 Population Census, Nairobi is the Kenya's biggest urban center with 3.1 million individuals (KNBS, 2010). The choice of Nairobi County as the study zone was impacted by the fact that it houses all administration ministerial stations.

Nachmias and Nachmias (2008) perceived that components, for example, familiarity to a zone, constraints of time, effort and cash may impact a locale chosen by the researcher. Hence, Nairobi was well known to the researcher. That is the reason why the researcher chose Nairobi County for the study. It was also judicious for the researcher to recognize an area that promoted information gathering. In addition, Orodho (2005) notes that doing a study in a setting where you are known as an associate and a companion promotes information gathering. Nairobi County has throughout the years grown enormously both in population and commercial enterprises, which had subsequently urged the Kenya government to create the Ministry of Metropolitan to deal with this growth.

The researcher had the capacity to conduct follow-up of these ministries as majority of them were reachable and centrally located. These combinations of qualities made it a proper area for the study. Also the couple of studies completed in Nairobi just investigated the impact of ICT on the development of large enterprises overlooking the e-government strategy implementation and performance of the public segment in Kenya.

## **Model Specification**

The empirical model defines the relationship between the study variables through empirical research. According to Easton and Mcoll (1997) the process of defining the empirical model by inclusion of relevant independent variables and exclusion of irrelevant independent variables is referred to as model specification. The study utilized a model of simple linear regression in measuring the connection between the two variables i.e. dependent and independent variables as proposed by Orodho (2005) and as shown in figure 7.



**Figure 7: Model for Direct Relationship**

(Y= E-government performance,  $\beta_0$  = Constant terms,  $\beta_1$ .  $\beta_4$  = coefficients of the independent variables,  $X_1$  = ICT infrastructure,  $X_2$  = E-level applications,  $X_3$  = E-government institutional framework,  $X_4$  = E-government legal framework,  $\epsilon_1$  = Error term which is the composite of other types of individual differences not explicitly identified in the model). The regression model for the relationship is expressed as follows:

$$Y = \beta_0 + \beta_1 \chi_1 + \beta_2 \chi_2 + \beta_3 \chi_3 + \beta_4 \chi_4 + \epsilon, \dots \dots \dots \text{Model 1}$$

### **The Target Population**

According to Nachmias and Nachmias (2008), a population is the collection of all cases that agree with some selected set of conditions. In regard to the 2009 Population Tally, Nairobi is the largest urban center in Kenya with 3.1 million persons (Kilele, 2010). The area is projected to be 30,389.7 KM<sup>2</sup> (Economic Survey, 2014).

The component of investigation for this research was the government Ministry. The populace of the study comprised the 18 ministries by which the current Government has organized its operations (GoK, 2014). The unit of observation in each ministry comprised the technical departments supporting service delivery and the users of the services. The populace for the study was 13,228 who comprised of 13,174 users (members of the public) estimated to visit government ministries for services and 54 members of staff who were the key informants for the study (KNBS, 2014).

### **Sampling Design and Procedure**

A sample refers to a descriptive subsection of a population (Nachmias & Nachmias, 2008). With regard to Orodho (2005), the greater upper limit of the sample size is 2000- 3000 whereas the allowed lower limit is 30 cases for statistical data analysis. Multistage sampling was applied in the study to obtain the target respondents for the study. According to Nachmias and Nachmias (2008), multistage sampling is applied for it represents a more complicated form of mass sampling where bigger clusters are further divided into lesser, more targeted groups for the surveying purposes. The multistage sampling method was applicable in the study in the following stages.



### **Stage 1: Identification of the level of study .I.e. technical areas supporting service delivery**

The e-government strategy was assessed at the operational level. Thus, the target respondents in this study comprised of 13, 228 respondents who included Directors of administration, ICT heads, customer care supervisors as the key informants in the government ministries and also the users (members of the public) who visited the current 18 Ministries with e-government related issues. The study targeted 13,174 individuals from the general public who are approximated to have visited the 18 Ministries customer service desks daily with issues of e-government which included; e-tax forms, business licenses, e-health services, registration of persons as well as police documents which mainly include abstracts (KNBS, 2012).

### **Stage 2: Determination of sample size**

The total population of the respondents was over ten thousands and to get a representative population sample, the following sample determination formula where the population is above 10,000 was used.

The sample size was determined using statistical population surveys whereby:

$$N=Z^2 *pq / d^2$$

Where: N = desired minimal sample size (where pop>10,000)

Z = Standard normal deviation which is equal to 1 at 95% confidence level.

P = Proportion of the target population estimated to have a particular characteristic being measured. In this case it was estimated to be 0.5.

$$q = 1 - P$$

d = the level of statistical significance set which in this case is 0.05.

$$N = 1.96^2 \times 0.5 \times 0.5 / 0.05^2 = 384$$

In order to obtain reliable results from the study it was necessary to have a representative sample, hence the sample size was 384 with a 5% margin of error and 95% confidence level.

### **Stage 3: Use of stratified method**

The population from the various strata was not evenly distributed and use of a proportionate method would make some strata to be underrepresented. Researcher suggested the use of disproportionate stratified sampling whereby the proportionate sample was adjusted to embrace a better representation of the population strata. The population of 384 was aligned per the four strata. The disproportionate distribution of the sample size was done as shown in table 2.

**Table 2: Proportionate Sample Size**

Strata	Population	Proportionate sample	Disproportionate sample
Directors of Administration	18	18	18
ICT Departmental Heads	18	18	18
Customer care supervisors	18	18	18
Users (members of the public)	13174	382	330
Total	13228	384	384

#### **Stage 4: Selection of the respondents**

The researcher carried out purposive or judgmental sampling amongst the Directors of Administration, ICT Departmental Heads and the customer care supervisors. This judgmental sampling is in other ways a representation of a populace of concern without selecting by chance. One of the popular uses of judgmental sampling is in researches based on extremely small number of sites. Simple random technique was used to obtain eligible e-government users. All the eligible participants were selected and those who consented to participate were recruited into the study.

#### **Validity of the Research Instrument**

During questionnaire construction, various validity checks were conducted that ensured the instrument measured what it was supposed to measure and performed as it was designed to perform. The validity tests conducted were; content validity, face validity and construct validity. To ensure content validity, the questionnaire was formulated and operationalized as per the study variables that ensured adequacy and representativeness of the items in each variable in relation to the purpose and objectives of the study. Further, content validity was verified through expert opinions from supervisors and practitioners. Face validity was achieved when the questionnaire was subjected to expert analysis and opinions from two external experts who thoroughly checked the representativeness of the research instrument at face value with a view to ascertain whether it measured the constructs of the study. Further the study considered construct validity issues through restricting the questions to the conceptualization of the variables and ensured that the indicators of each variable were within the same construct. The purpose of this check was to ensure that each measure adequately assessed the construct it was supposed to assess.

#### **Reliability of the Research Instrument**

The Cronbach's alpha dependability coefficient test of unwavering quality was utilized to test the dependability of the instruments. The Cronbach's alpha reliability coefficient is depicted as an arithmetical coefficient of dependability. Moreover, the variables obtained from test instruments are recognized to be reliable when they give steady and dependable results over repeated

application of the test. The validity of the research instrument was tested for internal consistency by use of Cronbach’s Alpha with a 70% acceptance level.

**Table 3: Reliability Analysis**

<b>Variables</b>	<b>Number of items</b>	<b><math>\alpha</math> Scores</b>	<b>Comments</b>
ICT infrastructure (Service Oriented Architecture)	3	0.747080	Acceptable
E-level applications	3	0.686741	Acceptable
E-government institutional framework	3	0.762428	Acceptable
E-government legal framework	3	0.726524	Acceptable
Public sector performance	3	0.88726	Acceptable
Overall		0.76201	Acceptable

*Source:* Survey data (2015)

The results in Table 3.4 above indicate that both the staff and user questionnaire construct factors were generally reliable as shown by an overall reliability score of 0.752578. Therefore, for this research, both the questionnaire instruments were a reliable measure of; e-government strategy pillars, e-government platform as well as public sector performance.

### **Data Collection Procedure**

The study collected primary data using both an interview guide and a semi structured questionnaire. The closed ended questions were considered appropriate since they conserve time and they were easy to fill as well as easy to analyze as they were in an immediate usable form. Open ended questions were used as they encouraged the respondent to give in-depth response without feeling held back. To enhance quality of data obtained, Likert type questions were included. The questionnaire was chosen as an instrument for the study due to its practicability and applicability to the research problem and the size of the population. The interview guide was administered to the directors while there were two sets of questionnaires for the staff as well as for the members of the public herein referred to as users.

To ensure effective collection of necessary data, the researcher involved services of research assistants. These research assistants were identified and trained to equip them with the necessary skills prior to the actual data collection. The main purpose of training research assistants was to ensure that ethical research considerations were strictly observed. Specifically, research assistants ensured that enough copies of questionnaires and covering letters were prepared and also contacted the respondents by mail or telephone requesting them to take part in the study. After preparing enough copies and familiarizing with the locations, the researcher assigned the research assistants specific duties for the respective units in Nairobi County which helped the public visiting the ministries customer care desks to fill them.

Primary data was gathered in the field after obtaining the Research Permit, developing the work plan, pre-testing the instruments through a pilot study, and preparing enough copies of the instruments (questionnaires) ready for distribution. The researcher personally visited all the

ministries and administered the questionnaires to the ministry staff. The researcher visited the Ministry Directors of Administration's and explained the purpose of the study and assured them that the respondents' identity was kept confidential. The members of the public were approached at the customer service desks where they were sensitized on the purpose of the study and on consenting, they were given time to respond to the questions. Where assistance was needed for clarification purposes the research assistants assisted them. This ensured high response rates. The staff working with the ministries was given enough time to fill the questionnaires and after one week, the questionnaires as well as the interview guides were collected. Cooper (1984) asserts that one of the ways to maximize questionnaire response as well as the return rate is by sending a preliminary notification about the questionnaires, and writing passionate requests for cooperation by the respondents. To this end the researcher made passionate appeals for all respondents to cooperate by filling the questionnaires and alert the researcher for collection.

### **Data Analysis**

Data analysis was done using both descriptive and inferential statistical techniques. Data collected was sorted, classified and coded then tabulated for ease of analysis. Qualitative data was summarized and categorized according to common themes. The SPSS (version 17) computer software aided the analysis, as it was more user friendly and most appropriate for analysis of management related attitudinal responses (Newton & Jeonghun, 2010). Descriptive statistics was employed to analyze the data. Tables and other graphical presentations as appropriate were used to present the data collected for ease of understanding and analysis. Tables were used to summarize responses for further analysis which facilitated comparison. This generated quantitative reports through tabulations, percentages, and measure of central tendency. Cooper and Schindler (2003) note that the use of percentages is important for two reasons; first they simplify data by reducing all the numbers to range between 0 and 100. Second, they translate the data into standard form with a base of 100 for relative comparisons. The mean score for each attribute were calculated and the standard deviation used to interpret the respondents deviation from the mean. The results were presented on frequency distribution tables, pie charts and bar charts. Here the interest focused on frequency of occurrence across attributes of measures. Qualitative data was analyzed using content analysis by first summarizing the information gathered, followed by categorization, coding into emerging themes, and presented in a narrative form. In addition advanced statistical techniques (inferential statistics) were used. Regression analysis was used to determine the relationship between the dependent and independent variables.

Both dependent and independent factors were subjected to normality test to check if the data was normally distributed or not. The testing for normality in this study was conducted using Kolmogorov Smirnov test and Shapiro Wilk test. These tests were used to confirm the residuals of regression coefficients in a linear model to confirm the models normality. The test was done such that given  $H_0$  and  $H_1$ , with  $\alpha=0.05$ , the rule of thumb according to Nachmias and Nachmias (2008) is that reject  $H_0$  if p-value is less than  $\alpha$  or else fail to reject  $H_0$ :

Where:  $H_0$ : The data is normally distributed

$H_1$ : The data is not normally distributed

Multicollinearity was checked by running diagnostic tests before the actual analysis of the clean data. Gujarati (1995) states that the rule of thumb for checking the problem of multicollinearity is that no correlation between independent variables is greater than 0.78. Multicollinearity can also be detected by examining the regression coefficients, to see the changes when other variable are included or excluded from the model; large changes in the regression coefficients indicate that the particular variable causes multicollinearity and should be excluded from the model (Cooper & Schindler, 2008). This process can be repeated until the model regression coefficients do not change significantly by further addition or removal of explanatory variables in the model multicollinearity also result in large standard errors of the regression coefficients and reduction in standard errors for the coefficients indicates reduction in multicollinearity.

### **Test of Hypotheses**

From the conceptual framework adopted in chapter two on literature review, the key empirical models that were established and tested in this study are presented herein in table 4 (hypothesis testing and interpretation) following, in the order of the research objectives.

## **RESEARCH FINDINGS**

### **Diagnostic Tests**

In order to test for the normal distribution of response data, a Kolmogorov – Smirnov, Normal QQ plot test for dependent and independent variables was conducted. This non parametric significance test was appropriate since the research situation called for comparison of an observed sample distribution with a theoretical distribution (Easton & Mcoll, 1997). The Kolmogorov-Smirnov test was designed to test the hypothesis that a given data set could have been drawn from a given distribution. Unlike the chi-square test, it is primarily intended for use with continuous distributions and is independent of arbitrary computational choices (Newton & Jeonghun, 2010). Prior to running the logistic regression model, both the continuous and discrete explanatory variables were checked for the existence of multicollinearity problem. The problem arises when at least one of the independent variables is a linear combination of the others. The existence of multicollinearity might cause the estimated regression coefficients to have the wrong signs and smaller t-ratios that might lead to wrong conclusions. There are two measures that are often suggested to test the presence of multicollinearity. These are: Variance Inflation Factor (VIF) for association among the continuous explanatory variables and contingency coefficients for dummy variables (Nachmias & Nachmias, 2008). The technique of variance inflation factor (VIF) was employed to detect the problem of multi-collinearity among the continuous variables. The seven key constructs in the study were subjected to a normality test using Kolmogorov Smirnov test and Shapiro Wilk test as well as quantile-quantile (Q-Q) plots.

**Table 4: Hypotheses Testing and Interpretation**

Objective	Hypothesis	Analysis method	Interpretation of Results
1. To establish the relationship between ICT infrastructure and public sector performance in Kenya	Hypothesis 1: ICT infrastructure has no relationship with public sector performance in Kenya	Multiple Regression model of the form: $Y = \beta_0 + \beta_1 \chi_1 + \beta_2 \chi_2 + \beta_3 \chi_3 + \beta_4 \chi_4 + \epsilon$ , where: Y is e-government performance $\beta_0 =$ Constant terms $\beta_1 - \beta_4 =$ coefficients of the independent variables $X_1 =$ ICT infrastructure $X_2 =$ E-level applications $X_3 =$ E-government institutional framework $X_4 =$ E-government legal framework $\epsilon_1 =$ Error term (Composite of other types of individual differences not explicitly identified in the model) Regression model	Values of $R^2$ as: 0.7 above strong relationship 0.5 – 0.6 moderate 0 – 0.4 weak
2. To determine the relationship between e-level applications and public sector performance in Kenya	Hypothesis 2: E-level applications have no relationship with public sector performance in Kenya		
3. To examine the relationship between e-government institutional framework and public sector performance in Kenya	Hypothesis 3: E-government institutional framework does not influence public sector performance in Kenya		Bvalues –ve (negative association) +ve (positive association)
4. To establish the relationship between e-government legal framework and public sector performance in Kenya	Hypothesis 4: E-government legal framework does not relate to public sector performance in Kenya	3 regression models used are as follows;  Model 1: $Y = \beta_0 + \beta_1 \chi_1 + \beta_2 \chi_2 + \beta_3 \chi_3 + \beta_4 \chi_4 + \epsilon$ (dependent) Model 2: $Y = \alpha + \beta_m \chi_m$	$P > 0.05$ accept $H_0$ $P < 0.05$ accept $H_A$



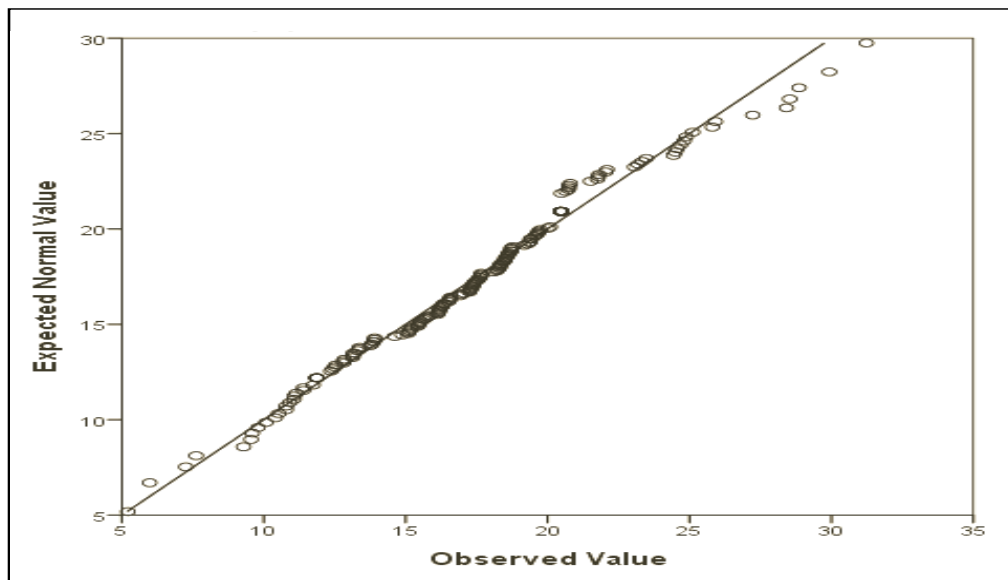
**Normality Test**

The testing for normality in this study was conducted using Kolmogorov Smirnov test and Shapiro Wilk test.

**Table 5: Checking for Normality of E-government Performance**

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
E-government performance	.784	299	.059	.782	299	.061
Infrastructure (Service oriented architecture)	.044	299	.200	.991	281	.093
E-level applications (software interface)	.094	299	.090	.980	125	.065
E-government institutional framework	.048	299	.087	.994	165	.755
E-government legal framework	.114	299	.054	.958	70	.060

Thus, table 5 indicates that using both tests of normality, that is Kolmogorov Smirnov test and Shapiro-Wilk tests, the p-value for both tests is greater than 0.05, thus the study failed to reject H0 and a conclusion was made that data on both the dependent and the independent factors were normally distributed and as a result subsequent analysis was to be done. The normality of the dependent and the independent variables was determined by use of a Quantile - Quantile (Q-Q) plot. The plot is useful in the early stages of analysis when exploring data before actually calculating a correlation coefficient or fitting regression curve. It helped to determine whether a linear regression model is appropriate (Easton & Mcoll, 1997). The results of the Q - Q Plot indicated that the dependent variable was normally distributed (Figure 12) so are the independent variables as shown in Appendix X.



**Figure 8: Normal Q-Q Plot of E-government Performance**

From the findings, the normal Q-Q plot of e-government performance had most of its cases lying on the 45<sup>0</sup>line, thus the observed values of government performance in the ministries are in agreement with the hypothetical distribution and hence normally distributed. Further, the Q-Q plots affirmed the normality of the data.

### **Test for Multicollinearity**

The study utilized correlation matrix to find out whether the independent variables are adequately correlated to show a substantial causal correlation.

**Table 6: Correlation Matrix**

	E-government performance	ICT infrastructure	E-level applications	E-government institutional framework	E-government legal framework
E-government performance	1.00				
ICT infrastructure	-0.0241	1.000			
E-level applications	-0.0191	0.4973	1.000		
E-government institutional framework	0.1109	0.0297	-0.0298	1.000	
E-government legal framework	-0.0054	-0.0579	0.0542	-0.0931	1.000

Tests on the correlation between independent variables in the present study showed that none of the relationships surpass this threshold. As presented in table 6, the correlation coefficients for all variables were less than 0.8 implying that the study data did not exhibit severe multicollinearity as recommended by Cooper and Schindler (2008).

### **Test of Hypotheses**

Regression analysis was utilized to examine the hypotheses in order to ascertain the nature of the relationship between the independent and dependent variables of the study.

The researcher conducted a multiple linear regression analysis to ascertain the relationship between e-government performance and the four independent factors namely: ICT infrastructure, e-level applications, e-government institutional framework and e-government legal framework.

**Table 7: Regression Results for the Direct Relationship**

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate		
	.838 <sup>a</sup>	.702	.700	.07458		
<b>ANOVA</b>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11.72	9	1.302	44.231	.001(a)
	Residual	3.432	324	0.066		
	Total	15.152	333			
<b>Coefficients Results</b>						
		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
(Constant)		0.116	.186		0.623	.003
ICT infrastructure		0.577	.068	.559	8.478	.000
E-level applications		0.157	.043	.257	3.676	.001
E-government institutional framework		0.082	.042	.301	2.252	.000
E-government legal framework		0.121	.002	.245	6.906	.001

Predictors: (Constant), ICT infrastructure, E-level applications, E-government institutional framework, and E-government legal framework

Dependent Variable: E-government performance

The regression analysis indicates a strong linear relationship where  $R^2 = 0.702$  and Adjusted  $R^2 = 0.700$  which indicates that 70% of the corresponding change in e-government performance can be explained by a unit adjustment in ICT infrastructure, e-level applications, e-government institutional framework and e-government legal framework. A further test on the beta coefficient of the resulting model, the constant  $\alpha = 0.116$  is significant ( $p = 0.000$ ) less than  $p = 0.05$ . The coefficient  $\beta = 0.577, 0.157, 0.082$  and  $0.121$  of the four independent variables were also significant at  $p < 0.05$ . This explains that if  $\beta_1 X_1, \dots, \beta_4 X_4$  were held constant then e-government performance will be 0.116 (low) and therefore the gradient ( $\beta$ ) and the e-government performance would be very low. The ANOVA section in table 7 show that the regression model is significant with  $F = 44.231$  and a p-value of 0.001 and these results show that the model was significant.

### Test of Hypothesis One

The first study hypothesis aimed at evaluating the relationship between ICT infrastructure and public sector performance in Kenya. ICT infrastructure had a beta value ( $\beta_1 = 0.577$ ). The coefficient had a p-value of 0.000 thus the null hypothesis should be rejected. The study concluded that ICT infrastructure has a positive relationship with public sector performance in Kenya. This can be attributed to the findings on the period of time members of public had used online government services since over the last period of 5 years the government has increased

the IT infrastructure countrywide thus increasing the user's embracing of e-government. This finding agreed with a study by Compeau *et al.*, (2014) in that technological advancement improves performance by drastically reducing the cost of operations of the businesses and increases the effectiveness all through an organization. This can also be a reason as to why developing countries in Africa are increasingly installing e-government to solve their development challenges by investing in it from their own resources as well as through funding from foreign institutions. Government institutions are not an exception in this trend as they are increasingly becoming reliant on e-government for the delivery of services to the members of the public.

The findings are in line with the Dawes and Pardo (2013) who assert that there are many functions of IT in an organization, through a well-structured infrastructure as portrayed in Management Information Systems Theory, to enhance an operation's efficiency, development of business dealings efficiently and also improve communication channels. Information technology infrastructure is a significant component in e-government and is instrumental in the strategic planning of an organization.

Mahmood and Mann (2011) study did not use inferential statistics but relied on descriptive results only; this study used regression analysis to test the hypotheses. The findings indicate that in designing an instrument for measuring e-government performance, the item composition might vary depending on the ICT Infrastructure and hence there is need to prescribe a universal instrument to all service situations. The study proposes adoption of universal service delivery instrument for similar or related services and use of contingent instruments in service sectors that are unrelated like the T-test. The research has thus brought new perspectives. Additionally, the current study adopted a positive view in the enactment of technologies infrastructure. In short, the study concentrated on the ICT infrastructure effectiveness unlike the majority of cited studies, which tend to focus on ICT infrastructure implementation failures.

### **Test of Hypothesis Two**

The study hypothesis aimed at determining whether e-level applications have a relationship with public sector performance in Kenya. E-level applications had a beta value ( $\beta_1 = 0.157$ ). The coefficient had a p-value of 0.001 thus; the null hypothesis should not be accepted. The study concluded that e-level applications have a significant relationship with public sector performance in Kenya. The findings can be attributed also to the number of support staff as shown on respondent's job position that ensures effective e-government application use. This was in agreement with the results of Pallotti and Oreste (2015), Van Bavel, and Burgelman (2013), in that the true locus of competitive advantage and superior firm performance lies in dynamic e-level applications that again replicate the ability to realize higher-order IT applications, particularly in reaction to changing business environments and strategic opportunities. In agreement with these ideas, data systems management researchers have conceptualized applications of data management in e-government implementation as associated capability-

building processes and defined them as managerial skills for the acquisition, management, and use of e-government in key business processes and strategies.

The findings are similar to those of Chau and Hu (2011) in the Management Information Systems Theory that the authorization process put specific emphasis on the engineering aspects of programmes, but focus has been broadened, so that it no longer puts such an emphasis on the engineering features of programmes. It is this expansion in the application of information systems concepts that has partially encouraged the application of these concepts in extending dimensional knowledge space from e-government to informatics as a whole.

The study findings fill Siau and Long (2006) gap by conducting the study in a public sector. Siau and Long (2006) did not focus on the public sector but rather on a private firm whose study findings were then generalized. The findings prove that e-level applications as a variable of e-government strategy implementation can produce significant results and act as a parsimonious tool of measuring e-government performance. Future research will use the results of this study as a reference point.

### **Test of Hypothesis Three**

The hypothesis aimed at establishing the relationship between e-government institutional framework and public sector performance in Kenya. E-government institutional framework reliability had a beta value ( $\beta_1 = 0.082$ ). The coefficient had a p-value of 0.000 thus the null hypothesis was rejected. The study concluded that e-government institutional framework has a positive relationship with public sector performance in Kenya. This was also supported by findings on respondent's job position and institutional framework, which have also ensured effective staff expertise distribution in the ministries. These findings agree with those of Burns and Wholey (2013) who assert that e-government institutional framework ensures that its implementation is seen to be well matched with organizational values, experiences, beliefs, and needs of adopters. Citizens who are e-savvy and use the internet frequently to connect and execute functions are keen to interface with other people, organizations, businesses, and government using a well-structured e-government institutional framework.

According to the findings by Bose, (2014), e-government has high chances to be adopted when it is well matched with individuals' job responsibility and value system. E-government is therefore likely to be adopted not only if it is aligned with the institutional framework but also when it links well with user needs and expectations. The study findings contribute to the strategic management body of knowledge by establishing that compatibility of e-government institutional framework within the Ministry strategic plans will speed up the rate of e-government adoption and ensure improved performance.

### **Test of Hypothesis Four**

The fourth hypothesis of the study aimed at analyzing whether e-government legal framework relates to public sector performance in Kenya. E-government legal framework reliability had a beta value ( $\beta_1 = 0.121$ ). The coefficient had a p-value of 0.001 thus the null hypothesis is rejected. The study concluded that e-government legal framework significantly relates to public sector performance in Kenya and this can be accredited to staff length of continuous service and job position within the ministry that show that those involved in articulating e-government legal framework are employees in the managerial position and had operated with the ministry for a duration of above 10 years. The findings were similar with the findings by Rhodes and Weller (2013) and Parent and Gemino (2013) who assert that e-government legal framework is one of the main factors for attaining an innovative phase of e-government for national development. Government policy and regulations, competitive pressure and external IS support are considered to be factors that influence institutions' willingness to adopt e-government.

The study acknowledges that e-government legal framework in particular has been ignored in Unified Theory of Acceptance and Use of Technology (UTAUT) before, but this study demonstrates that an appreciation of e-government legal framework has a significant and positive influence on e-government performance and its role in Management Information Systems theory cannot be ignored. The findings of the study contribute to the general body of knowledge in articulating the relationship between e-government legal framework and e-government performance and present a meaningful association between the two.

The study fills the study gap left by Christou and Simpson (2009) as their study did not consider ICT infrastructure, e-level applications, e-government institutional framework and e-government legal framework as the study variables. The study by Drucker (2010) notably did not consider e-government legal framework as a variable to e-government reengineering while this study has analysed e-government legal framework as a variable. The study findings confirm that e-government legal framework has a significant connection with the execution of e-government strategy and performance of the public sector in Kenya.

### **CONCLUSIONS**

The study concluded that ICT infrastructure has a positive relationship with public sector performance. It was also concluded that e-level applications have a significant relationship with public sector performance. The study concluded that e-government institutional framework has a positive relationship with public sector performance while e-government legal framework significantly relates to public sector performance. The study findings thus conclude that all the independent variables had a positive relationship with e-government performance.

The results show that all the FOUR research null hypotheses were not accepted and hence there is a confirmed relationship between the researched variables. The independent variables had a significant influence on e-government performance. The study therefore becomes a reference



point for future strategic management scholars for it offers additional perspectives by bridging the knowledge gaps in e-government plan execution and public sector performance.

## **CONTRIBUTIONS OF THE STUDY TO KNOWLEDGE**

This study investigated the relationship between e-government strategy implementation and Public sector performance in Kenya. Most of the empirical studies reviewed primarily focused on the private sector with a few identifying a number of possible factors that influence the adoption of e-government within the public sector. In addition most of these studies tended to adopt rather narrow definitions and conceptualizations of e-government. In particular it is important that more case studies be conducted in this area so that the issue of causality can be more explicitly addressed.

This study adds to the existing body of empirical literature by extending the conceptualization of the linkage between the three isolated constructs; e-government platform, e-government strategy implementation and performance of the public sector, and also presents the association between them. This integrated model has significant implications for policy towards enhancement of service delivery performance in the public sector.

The study also contributes to theoretical literature by providing the basis for empirical testing of the research hypotheses. The study supports the postulates of MIS and RBV theories in using IT capabilities to enhance service delivery performance in public sector.

## **RECOMMENDATIONS FOR POLICY**

As per the study variables which include ICT Infrastructure, e-level Applications, e-government Institutional framework and e-government legal framework, the findings of the study are of importance to various stakeholders, if proposed policy recommendations are put in place. The study recommends that e-government policy should be re-evaluated to enhance the effectiveness of the current e-government institutional framework and align it with the technological changes and needs of the users. The study further recommends that it should be the responsibility of government to evolve a comprehensive e-government legal framework on which ministries can anchor e-government implementation policies in line with their strategic objectives. It should also be the priority of the government to provide the necessary legal and policy framework to support the development of information and communication infrastructure within the ministries. The study finally recommends that the ministries should design strategic policies that are flexible enough to cope with technological changes. The ministries should have clearly defined service delivery charters that are anchored on e-government platform. This could contribute to improvement of e-government strategy implementation towards achieving enhanced service delivery and overall public sector performance.

## **LIMITATIONS OF THE STUDY**

A replication of this study should be carried out but this time using a larger sample, hence more time should be allocated for the research. The study was restricted to the use of interview guide and questionnaire as tools of primary data collection. The investigative nature of this study also sparked misplaced doubt. Respondents feared that the research intended to involve individuals in a negative manner. To this end, this doubt caused resistance and lack of cooperation. The researcher excluded this paranoia by clarifying the aims of the research. The study was also limited by lack of prior locally based studies in the topical area and hence inadequacy of the relevant empirical literature to regulate it. This was overcome by exploration of studies carried in related areas in different parts of the globe. The study was also hindered by the expansive geographical area under its jurisdiction. The study overcame this by proper planning that subsequently enabled the researcher to cover the entire Ministries. The study also used the centralized service centers known as the Huduma Centers where citizens go to enquire for services. The study was also limited by its nature as it touched mainly on a sensitive e-government area but this was overcome by determination and resilience of the researcher.

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