

**E-GOVERNMENT ADOPTION BY KENYA MINISTRIES**

**BY**

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**DECLARATION**

I hereby declare that this is my original work and has not been submitted for examination to any other academic body.

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## **DEDICATION**

This information systems project is dedicated to my mother and father who raised me well and always pushed me to pursue education. To my siblings Naftaly, Njeri and Nduta who have always loved and supported me in all my endeavors.

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## **ABSTRACT**

The central aim of this study was to assess the state of e-government in Kenyan ministries. The specific objectives of the study were to: determine the level of e-government adoption within the ministries; establish the drivers leading to the use of e-government within the ministries; and determine the challenges that ministries are experiencing in using the e-government platform. This study was guided by the e-government platforms namely, government and government (G2G), government and citizens (G2C), and government and businesses/commerce (G2B). The study adopted cross sectional survey research design. The target population of this study comprised of the 18 ministries in Kenya. The study adopted probability sampling technique to promote equal chance of representation of the subjects and generalizability. The primary data was collected using a questionnaire which used as a data collection instrument. Descriptive and inferential statistics was used to analyze the collected data. The study found out that the presence of computer usage policies is strongly associated with the use of e-government systems and adoption of e-government by Kenyan ministries. E-governance was found to offer many benefits to the citizens as it has much potential to bring many dreams and goals of good governance into reality. This study therefore, concluded that government employees in different departments of ministries have to work together in a smooth and seamless way. With the intelligent and effective applications of ICT, combined with other e-government drivers, ministries can be more responsive in providing communication with citizens to effectively meet public needs, and ultimately, build a more sustainable future for the benefit of the whole of country. The study further recommends that the ministries should come up with workable and effective systems which can predict and manage e-governance adoption and increase its usage among the employees and clients.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background**

Society today can be described as the digital age. Countries all over the world are moving from the traditional industry, which was characterized by use of heavy machines into economies based on information computerization. Informatization which is the extent by which an area becomes information based has redefined industries, politics, cultures and the social order (Klüver & Stoica, 2006). It has created a knowledge based society that's been surrounded by a high-tech global economy which influences manufacturing and service sectors to operate in an efficient and convenient way. This new industry has enabled individuals to explore their personalized needs, therefore simplifying the procedures of making decisions for transactions and significantly lowering costs for both the producers and buyers. ICTs have lowered costs for companies by automating some of the manual work being done by employees leading to reduced work force and job losses. For example in the United States, the number of people employed in manufacturing jobs fell from 17,500,000 to 11,500,000 between January 1972 to August 2010 (Baan, 2013). Workers have also been forced to compete in a global job market as technology has enabled skilled workers to work anywhere without geographical limitations.

Governments have increasingly adopted use of technology to improve service delivery. Technology has enabled citizens to more easily and quickly obtain government services and information through websites, emails, telephone calls and/or social media (The Partnership of Public Service, 2013). Various information channels are being consolidated to the cloud to save money on equipment and maintenance. This has

prompted governments to change the way they deliver services, as citizens are now connected directly with the service they need. Improvements to service delivery include providing citizens with frequently updated websites with popular or vital topics such as tax information and platforms to respond to national emergencies. Links and information to frequently asked questions answer the top questions from the public. Technology also used by governments to push various national ideologies. Technological platforms raise awareness on values such as innovation and new ways of thinking by having online challenges/competitions where people get various awards.

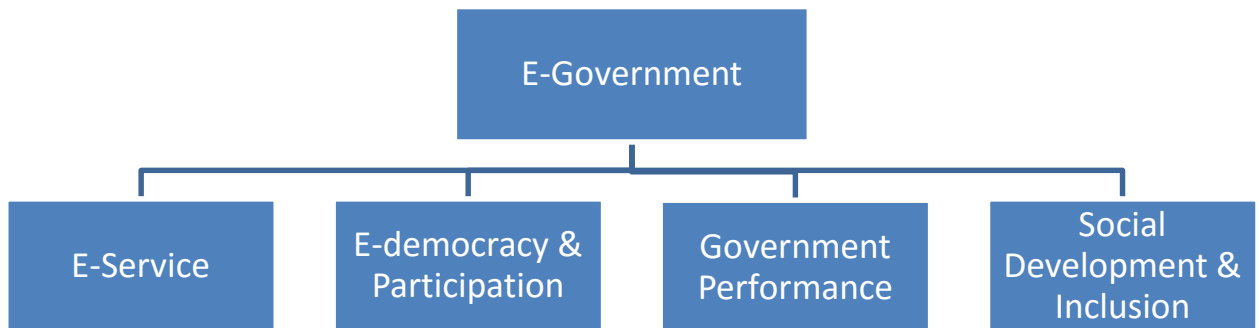
Top quality search engines are used on government websites to provide valuable and specific information. They enhance search results by cutting down extra results and enabling their customization. Governments have realized the positive impact that technology can have on their day to day operations and are now embracing it in what is known as e-governance.

### **1.1.1 E-Government**

E-government refers to the use of information and communication technologies to improve the activities of public sector organizations (Heeks, 2008). It is the adoption of digital tools and systems by a government to provide better services to citizens and businesses. It consists of the digital interactions between a citizen and their government (C2G), between government and government agencies (G2G), between government and citizens (G2C), between government and employees (G2E), and between government and businesses/commerce (G2B).

According to Khasawneh and Abu-Shanab (2013), e-governments play four major functions which are service provision, e-democracy and participation, public performance and social development and inclusion. In terms of service provision, governments of today are riding the wave of social networks to promote their services and open channels with citizens in a continuous dialogue.

**Figure 1.1: Dimensions of E-Government**



Source: Abu-Shanab (2012)

Adoption of digitized systems improves the efficiency of governments through faster service delivery while reducing costs. In Kenya, e-government ensures faster processing and issuance of birth certificates, national identity cards, passports, registration of business names, and applications for marriage certificates, drivers' licences and police abstracts. E-government also facilitates better communication between governments and businesses. Establishment of e-procurement portals facilitate G2G and B2B communication which permit smaller businesses to compete for government contracts as well as larger businesses. This creates an open market and stronger economy. Digitized

systems necessitate moving away from heavily paper based systems to electronic ones. This allows the process to be handled by lesser employees and therefore reduce operating costs.

Today, the world is going mobile. A report by the International Telecommunication Union (ITU) said there were about six billion mobile subscriptions out of nearly seven billion people at the end of 2011 (BBC, 2015). In Kenya, 82% of the population has mobile phones. The ability of e-government services to be accessible to citizens irrespective of location would mark an improvement in public service. M-Government which is a subset of e-government refers to the use of mobile and wireless information and communication technologies to support public sector work processes. Governments have been forced to make services accessible through the phone especially in the developing world where internet access rates are low but mobile phone penetration is growing rapidly, particularly in urban areas. Globally, the number of mobile phones has surpassed the number of fixed/wired phones. This is the case in 49 middle-income countries and 36 low-income countries including Burkina Faso, Chad, Honduras, Indonesia, Jordan, Mexico, Mongolia, Nigeria, Philippines, Saudi Arabia, and South Africa (Lallana, 2008). Mobile digitization creates the notion of an 'opened up' government which reflects greater transparency and makes the government accountable to the people.

Governments face significant challenges in adopting e-governance. Key among them is the digital divide as universal access to the internet is still far away in many countries (Hamaus, 2012). Lack of skills increases resistance to technology as staff are unable to

use technological platforms. High cost of internet connectivity and lack of supporting infrastructure in the remote areas such as electricity, computers and connectivity hinders access to online government services (Prathab and Girish, 2006). Governments face the challenge of assessing local needs of the population living in remote areas and customizing e-governance solutions to meet those needs. Various factors influence adoption of e-government services. They include performance expectancy, social influence, age and level of education as the more educated one tends to be, the more they accept technology.

Ndou (2004) introduced three critical transformation areas through which e-governments play a critical role in transforming and developing society. The first one is internally where the adoption of ICT improves the efficiency and effectiveness of internal transactions which are conducted through the network of government and public agencies with minimum effort, time and cost needed. The second one is externally in which several opportunities are opened up for citizens to interact with governments and conduct activities electronically in more transparent ways. ICT also creates opportunities for partnership and collaboration among different government institutions, suppliers, service providers and external agencies. The third one is relational through which governments try to rebuild their relations with citizens in a way that makes citizens trust in government and their new ways of performing e-transactions. Vertical and horizontal integration of services are realized, enabling the integration of information and services from various government agencies to help citizens and other stakeholders get seamless services. This study will focus on these three areas.



### **1.1.2 E-Government Initiatives in Kenya**

The government of Kenya has embarked on heavy technology adoption and digitizing of its services. It formed ICT Authority - a state corporation tasked with rationalizing and streamlining the management of all its functions (ICT Authority, 2014). The body enforces ICT standards in government and enhances the supervision of its electronic communication. Digital initiatives started by the government include issuance of new generation digital identity. The identity cards put into single document personal information from the tax office, registrar of motor vehicles and the registrar of persons (Mutegi, 2014). The cards provide the country with a national identity platform that will be the cornerstone of the security strategy by improving the identification process and adopting an accurate national database. The Kenyan government also launched biometric registration for civil servants with the goal of rooting out ghost workers earning double salaries from different ministries and others who draw civil-service salaries but are no longer working (Obwocha, 2014). This move is expected to save the county, as well as the national government, millions of shillings as well as reduce the huge wage bill.

The Kenya Revenue Authority launched *iTax* which is a fully integrated automated solution for the administration of domestic taxes. The web supported platform provides internet based taxpayer registration, filing and status enquiries with real-time monitoring of accounts (Kuria, 2015). The Kenyan government also launched an e-procurement system which is expected to strengthen relationships with suppliers by providing easy access to documentation and simplifying of the bidding process while providing clear audit trails and identification of the originator of all transactions (PSCU, 2014). The government's Huduma centers provide services and information from one stop shops

through integrated technology platforms. The public is able to get birth certificates, national identity cards, passports, registration of business names, and applications for marriage certificates, drivers' licences, police abstracts, EACC clearance certificate, NHIF registration, NSSF member statements, registration of welfare groups, status of pension claims, student loan application and other services (MyGov, 2015).

The Konza technology park is another initiative that shows that the government is keen on technology adoption. The technology city will be on a 5000 acre site and it will host a business process outsourcing park, Science Park, convention center, mega malls, hotels, international schools, world class hospitals, Championships Golf Course, Financial District, High Speed Mass Transportation and Integrated Infrastructure. The park's main objective is to promote the acquisition and usage of ICT and promote good ICT governance (Anthopoulos, 2015). To enhance security, the government of Kenya embarked on installation of surveillance cameras in Nairobi and Mombasa. The project has led to setting up of a central command center, laying of a network infrastructure and installation of 1800 CCTV cameras, 7600 new police phones and 600 vehicle mounted systems (Mulligan, 2011).

Under the ministry of education, the government has rolled out various initiatives to enhance service delivery in the provision of quality education. Key among them is the laptop project which seeks to introduce laptops as a teaching and learning tool in the public primary school system. The project involves issuance of laptops to all class one children, digitizing the school curricula and training teachers on the new curricula. Through the project, the government seeks to incorporate ICT to support and enhance the

attainment of curriculum objectives, enhance the appropriate competencies including skills, knowledge, attitudes and values, and manage education effectively and efficiently at all levels. The goal is to come up with an educational system that is strongly oriented towards producing citizens who are comfortable and productive in a hi-tech world (Denvir, 2014). In the health sector, the government has partnered with various institutions to roll out initiatives which improve access to healthcare. It has for instance partnered with Merck and kicked off e-diagnostic and consultation clinics at Kenyatta National Hospital and Machakos Level 5 Hospital. The e-health platform will allow patients and healthcare providers in remote areas through using the power of IP and video conferencing to interact with specialists at Kenyatta Hospital to extend the reach of healthcare into remote areas (Ogara and Odhiambo-Otieno, 2003).

### **1.1.3 Kenya Ministries**

Kenya has a total of 18 ministries (see appendix II). The ministries are headed by cabinet secretaries who are appointed by the president (GoK, 2014). The Ministry of Interior and Coordination of National Government is charged with the responsibility of public administration, internal security, immigration and registration of persons, betting control probation services, prison services and championing campaign against drug and substance abuse. They also coordinate state functions and offer reception services to all Government ministries (“Ministry of Interior,” 2015). The National Treasury formulates financial/economic policies and develops and maintains sound fiscal and monetary policies that facilitate development (“The National Treasury,” 2015).

The responsibility of the ministry of defense is to defend and protect the sovereignty and territorial integrity of the republic of Kenya. They assist and cooperate with other authorities in situations of emergency and disaster and may be deployed to restore peace in any part of Kenya affected by unrest or instability (“Ministry of Defense,”2015).The Ministry of Foreign Affairs and International Trade manages the country’s foreign policy and Bilateral and Multilateral Relations, liaises with foreign missions in Kenya, handles protocol matters, organizes international trade affairs and manages Kenya’s diaspora issues (“Ministry of Foreign Affairs,” 2014).

Ministry of devolution and planning broadly covers issues of economic planning and development, devolution, public service management, youth, gender and special programs. Their mandate also includes the functions of the twenty six affiliated parastatals, Semi-Autonomous Government Agencies, Commissions and Independent Offices (“Ministry of Devolution,”2015). The ministry of education provides, promotes and coordinates lifelong education, training and research for Kenya’s sustainable development. It is mandate is to strengthen the National Science Technology and Innovation (STI) standing and its competitiveness, improve the quality, relevance, equity and access to higher education and technical training (“Ministry of Education,” 2015). The Ministry of Health has a responsibility to build a progressive, responsive and sustainable health care system that will ensure the attainment of the highest standard of health to all Kenyans (“Ministry of Health”, n.d.).

The transport and infrastructure ministry is mandated with the management of National Roads Development Policy and Transport Policy, standardization of vehicles, registration

of engineers, protection of road reserves etc (“Ministry of Transport,”2014). The ministry of land, housing and urban development, coordinates physical planning, develops affordable housing policy, coordinates planning of public works, manages government and public buildings, manages land registration etc (Ministry of Land, 2014). The ministry of agriculture, livestock and fisheries conserves, protects and manages agricultural livestock and fisheries resources for socio-economic development (Ministry of Agriculture, 2014). The ministry of energy and petroleum facilitates provision of clean, sustainable, affordable, reliable, and secure energy services for national development while protecting the environment (Ministry of Energy, 2014).The ministry of industrialization and enterprise development manages the industrialization policy, coordinates development of micro and small enterprises, promotes cooperative ventures, manages cooperative savings, credit and other financial services policy etc (Ministry of Industrialization, 2015).

The ministry of labour, social security and services formulates, reviews and implements social security, programmes for persons with disabilities, national human resource planning, coordination of national employment etc (Ministry of Labour, n.d.). The ministry of mining manages the mining policy and mineral exploitation, coordinates maintenance of geological data, formulates policies on the management of quarrying and mining of rocks and industrial minerals etc (Ministry of Mining, n.d.). The ministry of information, communications and technology regulates the information and communication sector as well as managing and developing the information, broadcasting and communication policy (Ministry of Information, 2014). The ministry of commerce, tourism and East Africa region manages EAC and regional integration affairs, develops

and promotes trade policies and promotes and markets Kenya as a tourist destination (Ministry of East Africa Affairs, n.d.). The ministry of sports, culture and the arts is tasked with the development of sports and the arts as industries of wealth and employment creation (Sports, Culture and the Arts, n.d). The ministry of environment, water and natural resource is responsible for policies and programmes aimed at improving, maintaining, protecting, conserving and managing the richness of Kenya's natural resources including water, forestry, wildlife and environment. In addition, it is tasked with the responsibility of ensuring that Kenyans have good access to clean, safe, adequate and reliable water supply (GoK, 2015).

## **1.2 Statement of the Problem**

There are certain factors that hinder the successful adoption of e-governance. Key among them is corruption which leads to resistance to change by civil servants. For example in Kenya, heads of ministries, state departments and agencies have continuously resisted using the e-procurement system and have instead purchased goods and services outside it (Namunane and Karanja, 2015). This has increased corruption loopholes as tenders and businesses are awarded in non-transparent ways. Mwololo and Mitullah (2009) conducted an evaluation on two municipalities to assess the successes of the Kenya e-government initiatives based on transparency, accountability and efficiency. In terms of transparency, 80% of citizens felt that computerization had improved government transparency. In terms of accountability, 80% of citizens also felt that it had improved as a result of e-Government services. Over 82% of citizens felt that services by the government were more effective as a result of the electronic platforms.

According to Bhatnagar and Singh (2010), corruption has been reduced in many governments in developing countries due to adoption of e-governance. These governments have chosen to go on-line in departments such as customs, income tax, sales tax, and property tax which have a large interface with citizens or businesses and are perceived to be more corrupt. E-governance has led to exposing of public officials who misallocate scarce resources by distorting public priorities to facilitate their lifestyles instead of focusing on the ordinary citizens (Ogema and Otika, 2013). There are various types of information that e-governance makes transparent hence reducing chances of corruption (Bhatnagar and Singh, 2010). For example information on rules and procedures that govern services and public officials responsible for different tasks leads to standardized procedures for delivery of services. This reduces arbitrariness (e.g. demand for unnecessary documentation) and citizens can resist attempts to delay processing.

There have been a number of studies on e-governance in Kenya. Muganda and Belle (2010), examine how e-government is conceptualized as well as its possible relationship with the expected impacts. They try to shed some light on why e-government initiatives fail by conducting an exhaustive survey among government agencies and consultants in Kenya. They found that the factors or components making up conceptualization were categorized under the following views as Network Diffusion View (NDV), Service Delivery View (SDV), Extensive Value Network (EVN), Network Restructuring Device (NRD), and Evolving Actor Network (EAN). The expected impacts of e-government were found to fall into four major clusters termed as Enhanced Interactions and Accessibility (EIA), Enhanced Cooperation and Awareness (ECA), Better Connected

Public Administration (CPA) and Enhanced Citizen Opportunities (ECO). This study is different from the current one as it uses Kenya to try and establish why e-government initiatives fail in developing world contexts. The current study sought to analyze how the Kenyan government had made progress in use of ICT by reviewing some of its successful initiatives.

Njuru (2011) looks at the implications of e-government on public policy as well as the challenges of adopting technology in Kenya. According to the writer's literature, use of technology has the potential to improve citizens' participation in the public policy process thus improving good governance and political participation. E-government has significant effects on public policy including transparency and accountability, equal access of public information, reduction of corruption and favoritism, increased efficiency and effectiveness, enhanced political participation and democratic governance as well as promotion of public – private partnerships. Challenges include resistance to change particularly among elder members of the society, lack of skills and competences among government staff, the digital gap between those who are conversant with technology and those who are not, and security and privacy related concerns brought about by technology. Findings show that the government of Kenya has failed to sensitize the public on how to make use of technology to access services and hasn't provided incentives to encourage ICT use. While Njuru focuses on the effect that e-governance has on service delivery to the public, the current study investigated the levels of IT adoption in all the 18 ministries. The scope of the current study not only focused on government to consumer (public), but also on government to government and government to business.



### **1.3 Objectives**

The general objective of this study was to assess the state of e-government in Kenyan ministries. Specifically, to:

- a) Determine the level of e-government adoption within the ministries
- b) Establish the drivers leading to the use of e-government within the ministries
- c) Determine the challenges that ministries are experiencing in using the e-government platform

### **1.4 Value of the study**

From the theoretical point of view this study hopes to provide an understanding on the level of e-government adoption in Kenyan ministries. This can help to improve service delivery in the civil service. The findings from this study will help Kenyan ministries in developing effective e-government policies to improve and increase efficiency productivity. E-government is an important aspect that is very useful to the long-term organizational effectiveness. This study provided a framework for policy formulation as it highlighted the various policies which affect implementation and utilization of e-governance services. The research can as well enable policy makers to come up with frameworks to assess the return on value investments in technology and the value which e-government services add to the government and its citizens. The research provided scholars with knowledge on the various systems used within the Kenyan ministries and forms a basis of further research on the best systems that would give maximum utility to government and even attempt to address the challenges facing e-government adoption as well as giving viable recommendations.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter gives an account on what has been published including the current knowledge and theoretical contributions on e-governance and service delivery. It begins by identifying the service delivery indicators for countries as defined by the World Bank. It later compares Kenya's level of e-governance with other African and developed countries. It then delves into the challenges that countries face in implementing e-governance which is followed by those factors that drive it. Various theories are then used to analyze one of Kenya's most successful e-governance projects (huduma centres) including the factors that have led to its success.

### **2.2 Theoretical Review**

A number of scholars have criticized the poor quality, methodological weaknesses and lack of theoretical rigor in e-government research. It has been suggested that e-government will not be taken seriously as a discipline, even within public administration, until it develops a solid body of supporting theories. This point is stressed because criticisms of e-government research encompass other shortcomings in the body of research notably problems with definitions, failure to engage with the complexities of public administration and politics and methodological weaknesses (Yildiz 2007). This study therefore, will anchor on the Actor-Network Theory, Meta-Theory and Theory of Change.

### **2.2.1 Actor-Network Theory**

This theory was developed by Science and Technology Studies (STS) scholars Michel Callon and Bruno Latour, the sociologist John Law, and others, it can more technically be described as a "material-semiotic" method (Law, 1987). This means that it maps relations that are simultaneously material (between things) and semiotic (between concepts). This theory assumes that many relations are both material and semiotic. Actor-Network Theory (ANT) is a framework and systematic way to consider the infrastructure surrounding technological achievements. Assigns agency to both human and non-human actors such as artifacts (Law & Singleton, 2013).

ANT is a constructivist approach in that it avoids essentialist explanations of events or innovations (for instance, explaining a successful theory by understanding the combinations and interactions of elements that make it successful (T 0, rather than saying it is "true" and the others are "false"). However, it is distinguished from many other STS and sociological network theories for its distinct material-semiotic approach (Callon, 1991 and Latour, 1992).

### **2.2.2 Meta-Theory**

A meta-theory is used to reduce theoretical confusion. Ideas from the philosophy of the social sciences are used to develop a meta-theory of e-government consisting of three dimensions: explaining/understanding, holism/individualism and change/maintenance. This meta-theory is used to analyze strategies on e-government in both public administration and information systems (Meijer & Zouridis, 2006). Heeks

and Bailur (2007) argue that we should not have the ambition to develop a comprehensive theory of e-government but rather a meta-theory that can function as an umbrella for positioning the various approaches. The three dimensions result in eight ideal-typical theoretical approaches and these approaches are illustrated on the basis of key publications in this field. Bekkers & Meijer (2012) concluded that a meta-theory can serve four different functions namely: challenge researchers to highlight their perspective, develop an agenda for e-government research, influence the societal agenda and, most importantly, develop more balanced education programs.

### **2.2.3 Theory of Change**

Theory of Change (ToC) is a specific type of methodology for planning, participation, and evaluation that is used in the philanthropy, not-for-profit and government sectors to promote social change. ToC defines long-term goals and then maps backward to identify necessary preconditions (Brest, 2010). ToC explains the process of change by outlining causal linkages in an initiative, i.e., its shorter-term, intermediate, and longer-term outcomes. The identified changes are mapped –as the “outcomes pathway” – showing each outcome in logical relationship to all the others, as well as chronological flow. The links between outcomes are explained by “rationales” or statements of why one outcome is thought to be a prerequisite for another (Clark and Taplin, 2012).

According to Taplin *et al* (2013) the innovation of Theory of Change lies in making the distinction between desired and actual outcomes, and in requiring stakeholders to model their desired outcomes before they decide on forms of intervention to achieve those outcomes. A common error in describing Theory of Change is the belief that it is simply

a methodology for planning and evaluation. Theory of Change is instead a form of critical theory that ensures a transparent distribution of power dynamics. Further, the process is necessarily inclusive of many perspectives and participants in achieving solutions. Lyon (1992) points out that the role of technology in government has altered the nature of government in enhancing the ability of government to control people by improving the capacities and capabilities to monitor the behavior of people. The system change that technology offers to government organizations is that of creating a ‘surveillance state’, in which the functioning of society can be viewed from a panoptical view.

## **2.3 E-Government Platforms**

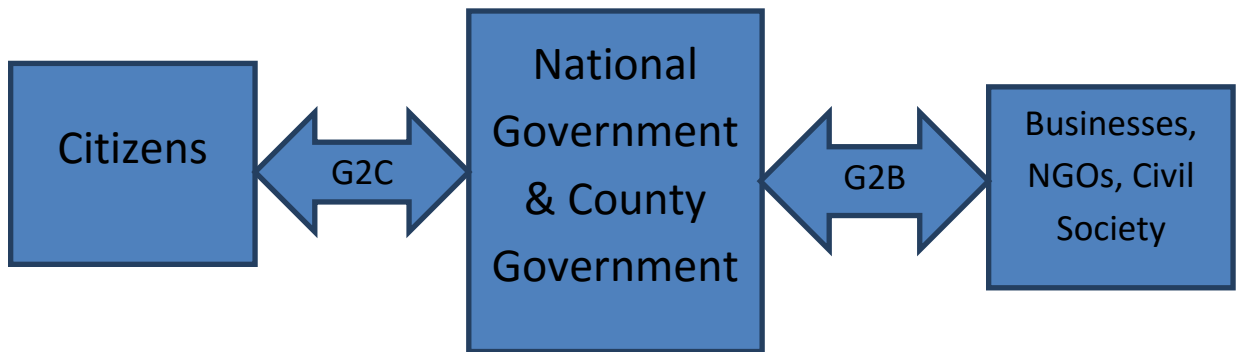
Governments use technology to enhance the access to and delivery of services to benefit citizens, business partners and employees. There are four basic models in which governments interact:

### **2.3.1 Government to Government (G2G)**

G2G refers to sharing data and conducting electronic exchanges at the national, provincial and local levels (United Nations, UN Global E-Government Survey 2003). According to Riley (2001), governments depend on other levels of government within the state to effectively deliver services and allocate responsibilities. For example in Kenya, there’s a devolved system of government. There are 47 county governments which are in charge of overseeing some functions such as provision of health care, pre-primary education and maintenance of local roads which were previously the responsibility of

Kenya's national government (Kimenyi, 2013). For e-governance to be successful, collaboration and cooperation among different government levels is mandatory. According to Ndou (2004), online communication and cooperation allows government agencies and departments to share databases, resources, pool skills and capabilities, enhancing the efficiency and effectivity of processes.

**Figure 2.1: G2B and G2C**



Source: Author (2015)

### **2.3.2 Government to Citizen (G2C)**

Government to citizen also known as government to consumer refers to the initiatives designed to facilitate people's interaction with government as consumers of public services and as citizens (United Nations, UN Global E-Government Survey 2003). The goal of G2C is to offer a variety of ICT services in an efficient and economical manner. According to Rohilla (2014), G to C makes it possible for citizens to make transactions such as payment of taxes and renewing of licences with ease and within the shortest time possible. Government to Citizen initiatives also strive to enhance access to public information through the use of websites and kioks (Rohilla, 2014). One of the main goals of implementing such initiatives has been to create a 'single window' where citizens can

carry out a variety of tasks that involve multiple government departments. In such cases, the government would provide better services as the citizen wouldn't need to contact each government department individually (Rohilla, 2014). According to a United Nations E-Government Survey (2010), countries are creating websites that support citizens by making it easier for them to find information, by integrating sites into a one stop shop, and by creating single sign on for access to all government services. From the survey, Republic of Korea is the most successful in creating 'connected presence' for the country's citizens, followed by the United States, Canada, United Kingdom and Canada.

### **2.3.3 Government to business (G2B)**

Government to Business and Business to Government refers to the electronic interactions between government agencies and private businesses (Ndou 2004). It involves business-specific transactions such as payments with regard to sales and purchases of goods and services (United Nations Global E-Government Survey 2003). For businesses, conducting online transactions with government reduces red tape and simplifies regulatory processes. The delivery of integrated, single-source public services creates an enabling environment to conduct business. As an example, the Republic of Korea has one of the most impressive e-procurement implementations through its continued development of the Government e-Procurement System (United Nations, 2005). It has a single window for public procurement which provides full integration from initial purchase request and bid information to actual payment.

## 2.4 Drivers of E-Government

The internet has opened a new medium of communication for individuals and businesses and provided opportunities to communicate and get information in an entirely different way (Kumar *et al.*, 2007). It has made information and services accessible in ways that could not have been conceived years ago. The growth of the internet was initially due to private sector interests but governments are now becoming part of this revolution. Governments worldwide have been making significant attempts to make their services and information available on the World Wide Web. In 1995 there were only 142 government websites. This number increased to 2,617 by 1998 (Muir and Oppenheim, 2002). A UN study in 2001 reported the existence of more than 50,000 government-managed websites, and that almost all developed countries had launched serious and comprehensive e-Government initiatives with firm commitment and big budgets (White Paper, 2006).

The number of cellular telephones in a country informs the level of usage of government websites (Mavetera, 2006). As the number of cell phones in a country increase, people accessing the internet proportionately increases hence more people are able to access online government services. The higher the literacy rate in a country, the higher the likelihood of citizens accessing e-government services. As people are empowered through education, they become internet – aware and therefore prefer using online platforms to access government services as opposed to the traditional ways. According to Heeks (2008), pressure from external sources such as civil societies has pushed governments towards e-governance. The drive for reforms has made governments adopt



ICT which encourages transparency, openness and efficiency. A push by key government officials for conversion to digitized platforms has hastened the adoption of e-governance. In Kenya for example, the president directed all government agencies to adopt the IFMIS e-procurement system so as to better manage public finances and resources.

Overall vision and master-plan for good governance has contributed to success of e-government projects (Heeks, 2008). As an example, Cameroon has set up a web-based mechanism that provides information about the tax system as well as interacting with citizens and businesses (Olivier, 2002). The project has been successful as it has eliminated information poverty and poor information flows that characterize many developing countries. Effective change management that involves senior leadership who are project champions will ensure successful adoption of e-government (Heeks, 2008). Leadership in such cases can use incentives to create commitment and ownership to e-government projects as well as be involved as stakeholders to build support and minimize resistance. India as an example built one-stop centers for citizens to make all kinds of government payments as opposed to having people visit at least seven offices where they would stand in queues just to pay taxes (Kiran,2002). The state government which was the major stakeholder was able to provide better services to its citizens as well as demonstrate the benefits of ICTs in governance. For governments to implement and sustain e-governance, presence of the necessary skills and knowledge in technology is crucial. Management and staff need such skills for running of operations to ensure efficient service delivery.

Various factors that influence adoption of e-government services by the Kenyan public can be defined under the technology acceptance model. Performance expectancy is one of the factors and it refers to the degree in which individuals believe that using a system will help them improve their job performance (Venkatesh *et al.*, 2003). Government staffs therefore make use of the technological platforms as they believe it makes their work easier. Degree of ease associated with the use of e-government systems affects adoption of e-government by Kenyans (Marchewka *et al.*, 2007). Kenyans also positively or negatively influence each other socially, and this affects their uptake of technology (Alawadhi and Morris, 2008). Different age groups react differently to the adoption of technology (Dwivedi and Lal, 2007). The younger Kenyan generation will increasingly tend to make use of the technological initiatives by government while the older generation tends to resist it. Different education levels between citizens also affect use of e-government platforms (Choudrie and Lee, 2004). The educated group readily accepts it while the uneducated tend to resist.

## **2.5 Challenges to E-Government Initiatives**

According to Ndou (2004), ICT infrastructure is a main challenge for e-governments. To enable appropriate sharing of information and opening up of new channels for communication as well as delivery of services, internetworking is required (Tapscott, 1996). Basic IT infrastructure that captures the advantages of new technologies and communication tools is essential. For example, different access methods such as remote access by cellular phones and satellite receivers need to be taken into consideration by governments in order for all members of society to be served irrespective of their

physical and financial capabilities. Inadequate supply of electricity to remote areas also hampers usage of internet (IssaSikiti da Silva, 2013). This is true for Kenya as a significant part of the rural communities is not yet connected to the national grid.

Many developing countries suffer from the digital divide as universal access to the internet is still far away in many countries. According to the World Bank (2003), the divide between richer countries and developing ones is large with high-income economies having about 416 personal computers per 1000 people and low income economies having only 6 per 1000 people. Based on the United Nations e-government survey (2012), all of the top 20 world e-government development leaders are high income countries. It is however important to note that some developing countries (such as Kazakhstan and Chile) have begun to catch up with some higher – income countries as they appear in the emerging leaders in e-government deployment list.

Resistance to change in the public sector due to lack of skills has affected the ability by governments to provide services in the new technological platforms. Technical skills for installation, maintenance, designing and implementation of ICT infrastructure, as well as skills for managing and using online processes, functions and customers are necessary (Ndou, 2004). For example in Kenya, heads of ministries, state departments and agencies have continuously resisted using the e-procurement system (Namunane and Karanja, 2015). The system known as Integrated Financial Management Information System was adopted by government as the sole accounting system for public expenditure. It will eliminate wastage and opportunities for corruption (efficiency and transparency), improve the payment system to suppliers by introducing greater accountability and

allowing justice to be dispensed by ensuring that records are not lost (ICT Authority, 2014).

Governments especially in developing countries find it difficult to provide e-services to the public due to poverty (Gupta and Sharma, 2012). Significant proportions of population cannot afford to access the services even when they are available (Hamaus, 2012). Governments also face the challenge of assessing local needs of people living in remote areas and customizing e-governance solutions to meet those needs. To enhance usability, they should create local content based on local language. Factors such as class, race and geography could further complicate e-governance as communities feel disenfranchised (Lerner *et al.*, 2002).

Moen *et al.* (2007) found that more than 80% of e-governments in the world are vulnerable to common web application security attacks. 90% of industrialized countries are more vulnerable compared to 50% of under-developed countries. A UN 2012 survey shows that only 20% of portals have clearly indicated the presence of security features despite trusted security and privacy measures constituting a crucial success factor for e-Governments. Services provided by e-Governments to citizens, enterprises, public officers and agencies via the internet and mobile connections are vulnerable to a variety of threats in the form of cyber-attacks using techniques like packet sniffer, probe, malware, internet infrastructure attack, denial of services attack, remote to local attack and user to root attack (Jiménez, 2013). Governments can easily avoid simple and well known web application vulnerabilities. A research conducted on e-government websites from 212 countries revealed that 81.6% were vulnerable to Cross Site Scripting (XSS)

and Structured Query Language (SQL) injection. XSS is a vulnerability which attackers exploit to steal users' information while SQL attack injection compromises data integrity making it unreliable, inaccurate and/or incomplete.

According to Ndou (2004), developing countries face a major challenge in e-governance as they do not have e-business and e-government laws. Processing of e-government principles and functions requires a range of new rules, policies, laws and legislative changes to address electronic activities including electronic signatures, electronic archiving, freedom of information, data protection, computer crime, intellectual property rights and copyright issues.

## **2.6 Empirical Studies in E-Government**

According to UN E-government Survey (2008), European countries make up 70 percent of the top 35 countries. Asian countries make up 20 percent while North America and Oceania regions make up 5 percent of the top 35 countries. Africa lags far behind these regions. European countries have invested heavily in deploying broadband infrastructure as well as in deploying e-government applications. Within Africa, Southern Africa leads followed by Northern Africa, Eastern Africa, Central Africa and West Africa respectively. Compared to other Eastern Africa countries, Kenya ranks third following Seychelles in second place and Mauritius in first. The Kenyan government enhanced its online presence for the benefit of tourists as well as citizens. The country launched a well laid out and easy to navigate website as well as a platform that highlights e-government resources and provides news on items such as the e-transaction bill developed by the government.

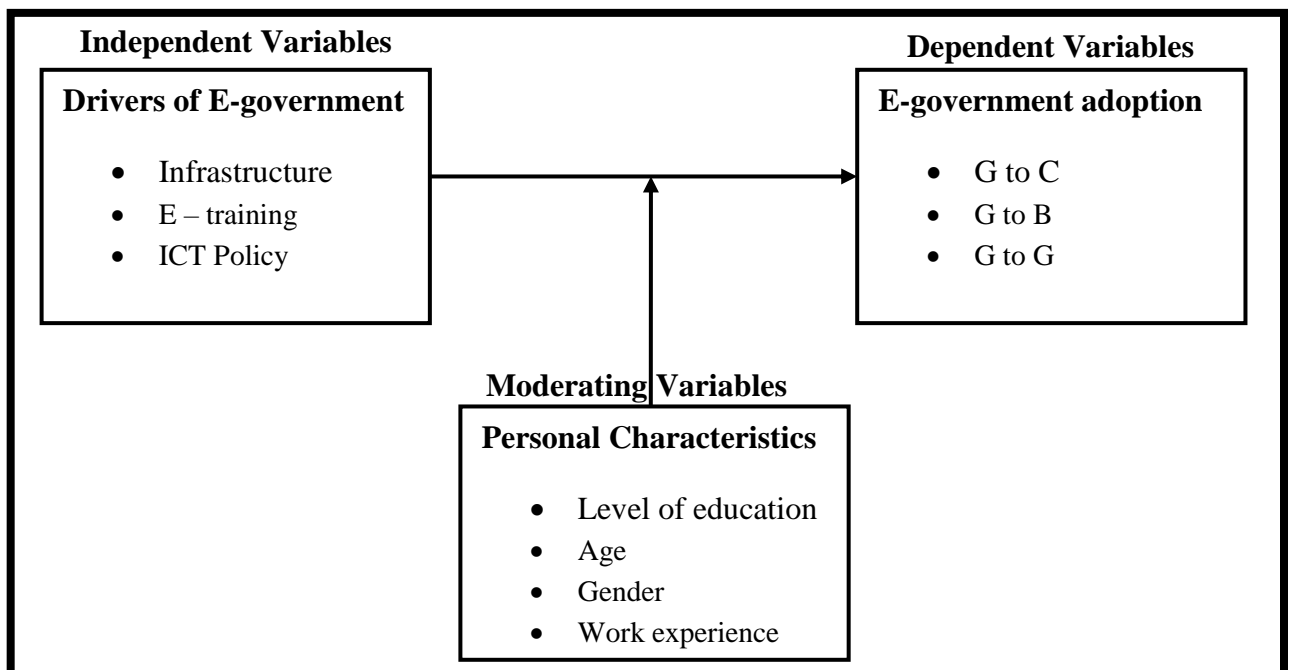
The United Nations E-Government Survey (2012) puts the top 20 countries in e-government development as high-income developed economies. Of the 20, 14 are in Northern America and Europe, 3 in East Asia (Korea, Singapore and Japan), 2 in Oceania (Australia and New Zealand), and 1 in Western Asia (Israel). In Africa, Southern Africa outpaces all other sub-regions followed by Northern Africa, Eastern Africa, Middle Africa and lastly Western Africa. Africa has seen improvements in e-government with countries in the region looking to increase their online presence through developing websites for government ministries and agencies. In the rankings, Seychelles comes first followed by Mauritius and South Africa as Kenya ranks eighth.

Kenya has successfully managed to introduce e-Government services that have improved service delivery and reduced corruption (Nelson *et al*, 2009). Only a small percentage of the population has however been impacted despite targeting the entire population. The 2014 UN E-government development index which is a comparative ranking of the countries of the world based on the extent of e-government readiness and e-participation, ranks Kenya 119 out of 193. Compared to 2010's rating of 124 countries out of 193, the country has improved meaning that more and more citizens are making use of the government's online platforms. Kaaya (2004) conducted a study on implementing e-government services in East Africa by assessing status through content analysis of government websites. The study found that Kenya had 33 websites compared to Tanzania's 37 and Uganda's 28. 95% of Kenya's ministries websites are owned by government departments compared to Tanzania's 95% and Uganda's 88%.

## 2.7 Conceptual Framework

For successful adoption of e-governance, ministries need to invest in the necessary infrastructure. This includes computers (hardware), network setup, software and electricity. Infrastructure provides the backbone of service delivery. For staff to make use of these resources, they need to be adequately trained (e – training). They need to be sensitized on the abilities of the systems and how they can utilize them to achieve efficiency. Ministries need to adopt ICT policies that will guide and direct the organization on matters regarding IT adoption.

**Figure 2.2: Conceptual Framework**



Source: Author (2015)

Several factors such as education levels, age and gender tend to influence staff members when it comes to technology usage. Educated staffs tend to appreciate and easily accept

technology while uneducated staffs tend to resist it. Young people tend to be receptive to new things and ways of working while old people always prefer the old ways of doing things. Men usually have a certain level of curiosity that pushes them to exploit and love technology while ladies tend to accept technology as it is without any explorations. The above independent and moderating variables affect the ability of government to deliver services to other agencies (G2G), businesses (G2B) and Consumers (G2C).

## **2.8 Summary of Literature**

The literature review comprises of the introduction part which introduces the sections in chapter. This research discussed three theories which are link to e-government namely Actor-Network Theory, Meta-Theory and Theory of Change. An overview on what has been published in regards to the three e-government platforms namely Government to Consumer, Government to Government and Government to Business are highlighted. The e-government drivers such as internet connectivity, cellular telephones and good leadership can enable government to adopt technology that will improve service delivery. Technology acceptance model is used to analyze the factors that influence adoption of e-government services. This is then followed by the major challenges faced by African countries including lack of infrastructure, digital divide, resistance to change, poverty, web application security attacks and lack of e-governance laws. The section of the empirical studies summarizes the various surveys related to e-government that analyze the performance of Kenya in relation to other African countries. The chapter ends with the conceptual framework that gives an overview of the independent and moderating variables that affect the dependent variables.



## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Research Design**

Research design refers to the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose (Brown & Heywood, 2005). This study adopted cross sectional survey research design. Descriptive survey was appropriate because it involves collecting primary data on attitudes, ideas, behavior and intentions of a target population (Yin, 2009). Sproull (1995) recommends survey design for collecting primary data on social issues such as attitudes, behaviours and intentions. This method therefore, enabled the researcher gain a deeper understanding of the reasons and opinions of employees in government ministries' efforts to adopt e-government. This study sought to analyze e-government adoption by investigating how the ministries were using Information Technology to provide better services to citizens, businesses and other government agencies.

### **3.2 Target Population**

Population can be defined as the individuals that meet the selection criteria for a group to be studied (Easton and McColl, 1997). Population also refers to the larger group from which a sample is taken (Orodho & Kombo, 2002). The target population of this study comprised of the 18 ministries in Kenya (Directorate of Personnel management, 2013). Staffs that use IT systems to offer services to citizens were best placed to give feedback pertaining to the efficiency experienced when using the system.

### **3.3 Sample and Sampling Technique**

The study adopted probability sampling technique to promote equal chance of representation of the subjects and generalizability. According to Trochim (2006), a probability sampling method is any method of sampling that utilizes some form of random selection. In order to have a random selection method, you must set up some process or procedure that assures that the different units in your population have equal probabilities of being chosen. The study used sampling plan which comprised of cluster sampling, and simple random sampling technique. Usually, the population elements are already grouped into sub-populations and lists of those sub-populations already exist or can be created. According to Brown *et al.* (2000), one advantage of cluster sampling is that it is cheap, quick, and easy. Instead of sampling the entire country when using simple random sampling, the research can instead allocate resources to the few randomly selected clusters when using cluster sampling and results are generalized to the entire population. A sample size of 3 employees per ministry was chosen to respond on the subject matter under investigation. Thus, with the 18 ministries currently in Kenya, the total sample size of 54 employees was selected to participate in this study.

### **3.4 Data Collection**

Creswell (2002) describes data collection as the means by which information is obtained from the selected subject of an investigation. Data to be used in this study was collected through a census of all the 18 ministries in government. The primary data was collected using a questionnaire as a data collection instrument. The questionnaire can contain both structured and unstructured questions (Gill, *et al.*, 2008). The open-ended questions was

used to limit the respondents to given variables in which the study is interested while unstructured questions was used in order to give the respondents room to express their views in a more pragmatic manner (Kothari, 2004). Some questions were in the scale 1 to 5 based on likert scale. Likert scales are a non-comparative scaling technique and they give respondents some level of flexibility as respondents are asked to indicate their level of agreement with a given statement (Cooper & Schindler, 2008).

The questionnaires were given to one IT manager in every ministry, one operations manager and one employee working in the operations department. IT managers are essential because they understand the various kinds of technology being implemented in a ministry and their advantages, as they are the ones who give direction on technology implementation and adoption. Operations managers oversee and have responsibility for all the activities in the ministry. They appreciate the use of technology in running the day to day organizational tasks. A staff member working in the operations department interacts with the systems on a daily basis and is heavily affected by system downtime and therefore delivery of customer service.

### **3.5 Data Analysis**

The study employed quantitative data analysis to collect, transform and model collected data into useful information. Quantitative data analysis refers to the techniques by which researchers convert data to numerical form to enhance understanding and interpretation (Muhamad & Yaakub, 2013). Descriptive analysis technique was used to give simple summaries about the sample data and presented quantitative descriptions in a manageable form. Descriptive statistics included: charts, tables, frequencies and percentages.

According to Kothari (2004), together with simple graphics analysis descriptive statistics form the basis of nearly all the quantitative analysis of data. Numerical values form what is referred to as the descriptive statistics as they give meaning to the data collected. In interpretation of the findings, objectives A, B and C used descriptive statistics, while inferential analysis was used to measure the relationship between independent and dependent variables. The regression equation used in this study is expressed as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Y is dependent variable (e-government adoption)

$\beta_0$  is the constant (coefficient of intercept)

$X_1$  is independent variables

$X_2$  is moderating variables

$\beta_1, \dots, \beta_2$  are the regression coefficients of the variables

$\varepsilon$  is the error term

## CHAPTER FOUR: RESEARCH RESULTS AND DISCUSSION

### 4.1 Introduction

This chapter presents the analysis and findings of the study as set out in the research methodology. The research data was gathered exclusively through questionnaires as the primary research instrument. The study sought to establish the level of e-government adoption in Kenyan ministries.

### 4.2 Response Rate

The study targeted to collect data from 54 respondents working in the Kenyan ministries. 48 out of the 54 target respondents filled in and returned the questionnaire resulting in 88.9% response rate, but only 6 questionnaires were either not returned or was not filled properly and therefore were not included in this analysis. The response rate was computed as follows:

$$\frac{48}{54} \times 100 = 88.9\%$$

This response rate is considered to be acceptable and fit for analysis and reporting. The response rate was satisfactory to make conclusions for the study as it was representative. According to Mugenda & Mugenda (2003), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and above is excellent. Based on the assertion, the response rate was considered excellent.

**Table 4.1 Response Rate Distribution**

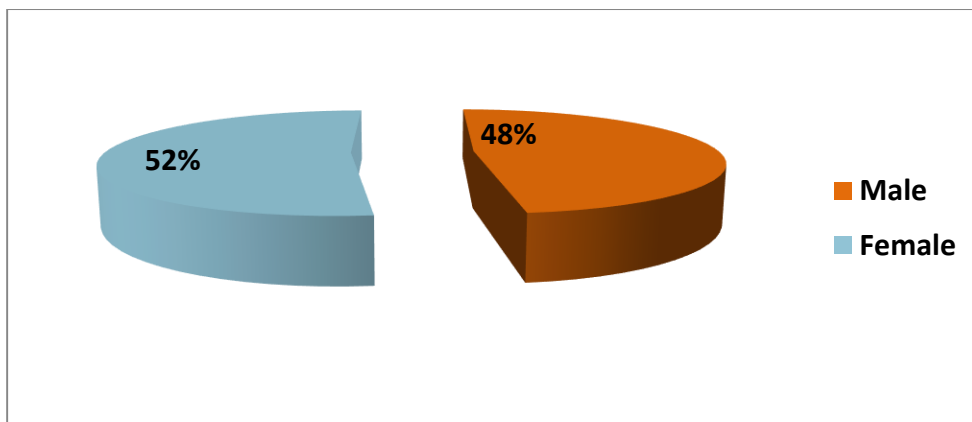
<b>Response Rate</b>	<b>Frequency</b>	<b>Percentage</b>
Responded	48	88.9
Not responded	6	11.1
<b>Total</b>	<b>54</b>	<b>100</b>

### **4.3 Background Information of Respondents**

#### **4.3.1 Gender of the Respondents**

The study sought to establish the gender of the respondents of the government ministries who participated in this research. 52% of them were female while 48% were male as shown in figure 4.1. These findings show that there is a fair gender distribution and therefore is a sign of balance and diversity among the Kenyan Ministries.

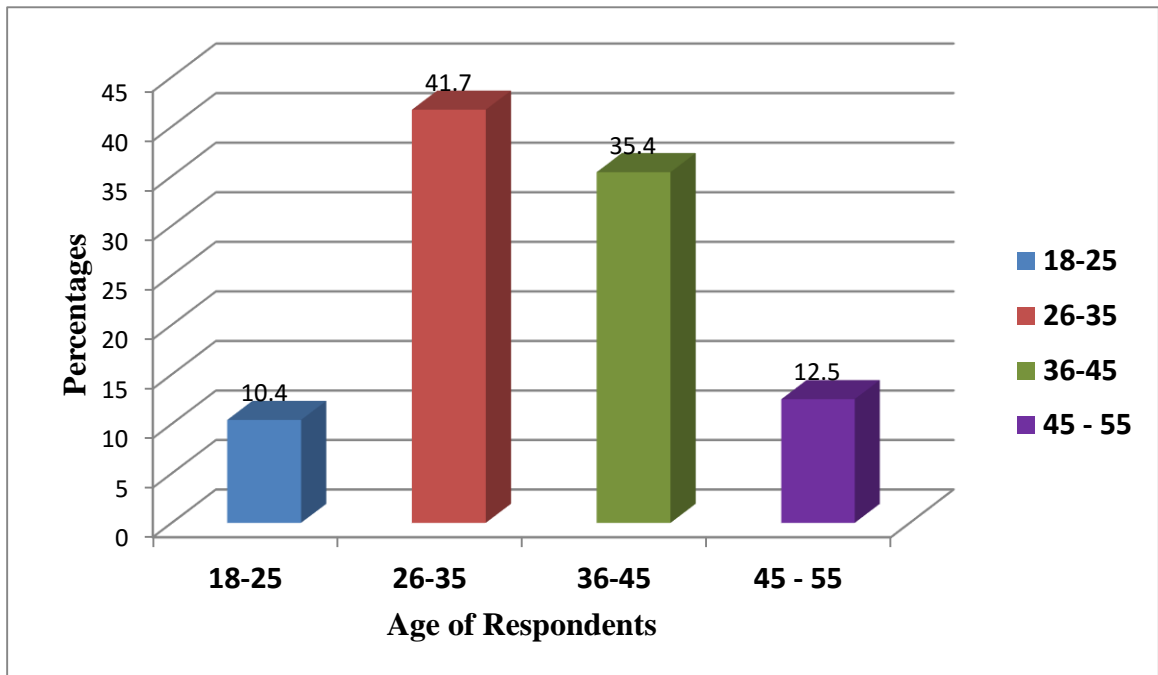
**Figure 4.1 Gender**



### 4.3.2 Age of Respondents

The researcher made the decision to divide respondents' age into different reasonable ranges from 18 to over 55 years. From the responses received, majority of the respondents fall in age bracket of 36 – 45 with 41.7%, followed by age bracket of 18 – 25 which has 35.4%, those who were of the between 46 – 55 years had 12.5%, while the range of 18-25 years represented 10.4% as illustrated in figure 4.2. Therefore, this representation indicates that the people who participated in the study were mature and the majority of the workforce in Kenyan ministries comprised of mixed age groups, and therefore indication of mature information.

**Figure 4.2 Age Bracket of Respondents**



### 4.3.3 Education Level of the Respondents

This study had an interest in establishing the education level of the respondents. The findings are shown in Table 4.2. The results shown in this table, it can be deduced that most of the respondents (56.3%) had attained university degrees, 39% had tertiary level and only 4.7% of the respondents had attained secondary education level. This is an indication that most of the employees in the ministries have the prerequisite education levels to do their work. In the level of education of the respondents indicates that the well-educated respondents mean that they were well informed and furnished this study with proper information which is significant for this study.

**Table 4.2 Education Level of the Respondents**

<b>Education Level</b>	<b>Frequency</b>	<b>Percent</b>
Secondary	2	4.7
Tertiary	19	39
University	27	56.3
<b>Total</b>	<b>48</b>	<b>100</b>

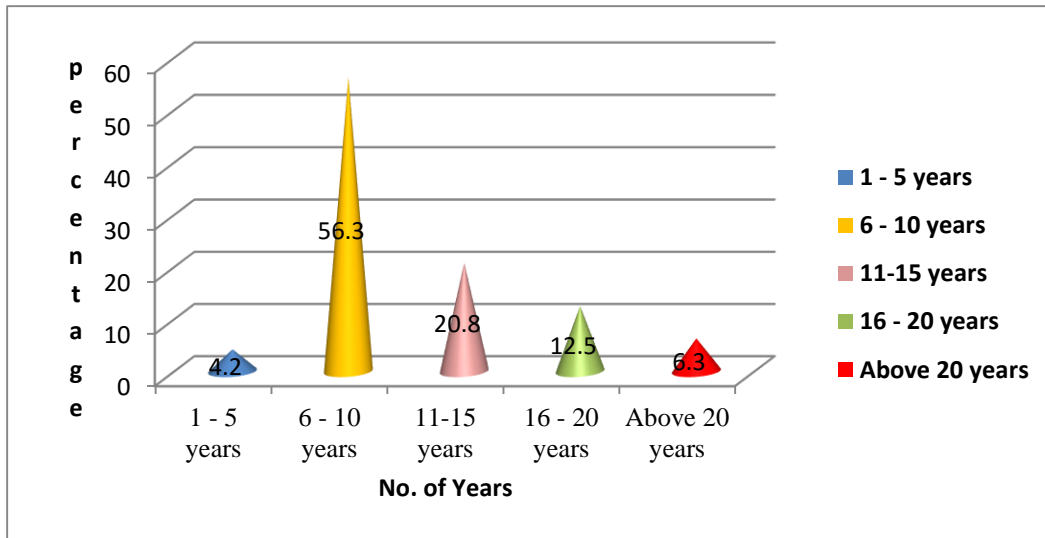
### 4.3.4 Duration of Years Respondent Has Worked In Ministry

Similarly, the study wanted to determine the length of time that the respondents have worked in their respective ministries. The findings shown in Figure 4.3 indicate that 56.3% of the respondents had worked in the ministry for 6 – 10 years, 20.8% for 11 – 15 years, 12.5% for 16 – 20 years and 6.3% for more than 20 years, while 4.2% had worked between 1 – 5 years. These results indicate that most of the respondents had worked long enough in the organization to understand how it works and its operations. Thus, an



indication that the respondents have adequate working experience in their respective ministries; therefore possess the necessary knowledge and information which is considered valuable for this study.

**Figure 4.3: Respondents' Working Experience in Ministries**



#### 4.4 Level of E-Government Adoption

The study sought to determine the respondent's rate of agreement with various statements on level of e-government adoption among the Kenyan ministries and the results are as displayed in table 4.3. On whether the ministries use the systems to serve customers on a daily basis, most of the respondents (52%) strongly agreed, (20.8%) agreed, (16.7%) disagreed, (6.3%) were uncertain (4.2%) strongly disagreed. The study required the respondents to give their views on whether the systems they use are interconnected with other government ministries. 29.2% of the respondents disagreed, 27.1% strongly agreed, 22.9% agreed, 16.7% were neutral while 4.2% strongly disagreed. On whether the major functions in ministry are performed electronically, 27.1% strongly agree, 25% were

uncertain, 20.8% agreed, 18.8% disagreed, while 8.3% strongly disagreed. The respondents were asked to give their viewpoints on whether they use tools like e-mails and instant messaging to communicate with other staff members. The responses of those who strongly agreed and agreed were 37.5% respectively, 10.4% were uncertain, 8.3% disagreed, and 6.3% strongly disagreed.

The respondents were asked to indicate if they always rely on an online database to retrieve information when doing their jobs. 37.4% of the respondents agreed that they rely on online databases, 25% were neutral, 18.8% disagreed, 12.5% strongly agreed, while 6.3% strongly disagreed. On the question of whether their respective ministries had an electronic payroll system that pays salaries and keeps records for tax information, the respondents who strongly agreed and agreed were represented by 39.6% respectively, 14.6% were unsure, 4.2% disagreed while 2% strongly disagreed. The study further inquired whether the ministries had e-learning platforms that enabled staff to access information in regards to training and learning opportunities. The findings show that 29.2% disagreed, 25% agreed, 22.9% strongly agreed, 14.6% were undecided, whereas 8.3% strongly disagreed. The respondents were as well asked to state whether the nature of their work had gradually moved from handling a lot of paper to being paperless. The responses display that 29.2% of the respondents strongly agreed, 27% agreed, 20.8% disagreed, 16.7 were neutral, and 6.3% strongly disagreed.

**Table 4.3 Level of E-Government Adoption**

<b>Respondents' Opinion on E-Government Adoption</b>	<b>Percentage Response (%)</b>						<b>Total</b>
	<b>Strongly Agree</b>	<b>Agree</b>	<b>Uncertain</b>	<b>Disagree</b>	<b>Strongly Disagree</b>		
I always use the systems to serve customers on a daily basis	52.0	20.8	6.3	16.7	4.2	<b>100</b>	
The systems I use are interconnected with other government ministries	27.1	22.9	16.7	29.2	4.2	<b>100</b>	
All of the major functions in my ministry are performed electronically	27.1	20.8	25.0	18.8	8.3	<b>100</b>	
I use tools such as e-mails and instant messaging to communicate with other staff members	37.5	37.5	10.4	8.3	6.3	<b>100</b>	
I always rely on an online database to retrieve information when doing my job	12.5	37.4	25.0	18.8	6.3	<b>100</b>	
My ministry has an electronic payroll system that pays salaries and keeps records for tax information.	39.6	39.6	14.6	4.2	2.0	<b>100</b>	
There's an e-learning platform that enable staff access information in regards to training and learning opportunities	22.9	25.0	14.6	29.2	8.3	<b>100</b>	
The nature of my work has gradually moved from handling a lot of paper to being paperless	29.2	27.0	16.7	20.8	6.3	<b>100</b>	
I use an online application to maintain my personal information including managing my leave days (absence recording)	8.3	43.8	10.4	27.1	10.4	<b>100</b>	
The ministry has adopted a staff performance system that assists in setting objectives and measures performance against the objectives	20.8	35.5	20.8	14.6	8.3	<b>100</b>	

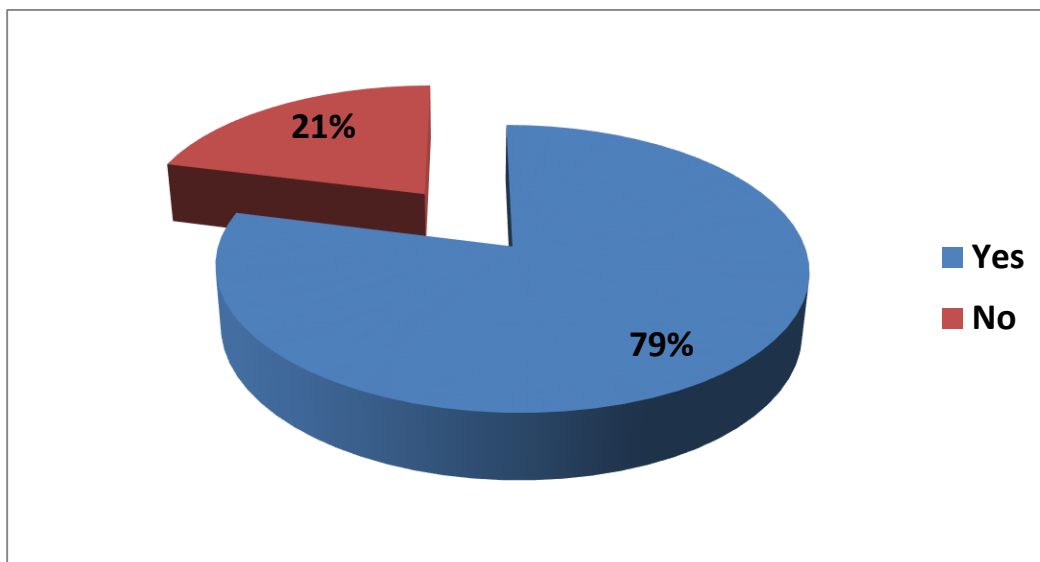
On whether they use an online application to maintain their personal information including managing their leave days (absence recording), 43.8% of the respondents agreed, 27.1% disagreed, 10.4% were uncertain, 10.4% strongly disagreed and 8.3% strongly agreed. Consequently, the study sought to establish whether the ministries had adopted a staff performance system that assisted in setting objectives and measure of performance against the objectives. The results given point out that 35.5% of the respondents agreed, those who strongly agreed and were neutral each had the same representation of 20.8%, 14.6% disagreed, while 8.3% strongly disagreed.

#### 4.5 Drivers of E-Government Usage

##### 4.5.1 Computer Usage

The study sought to inquire if the respondents use computers in their daily tasks.

**Figure 4.4: Computer Usage**

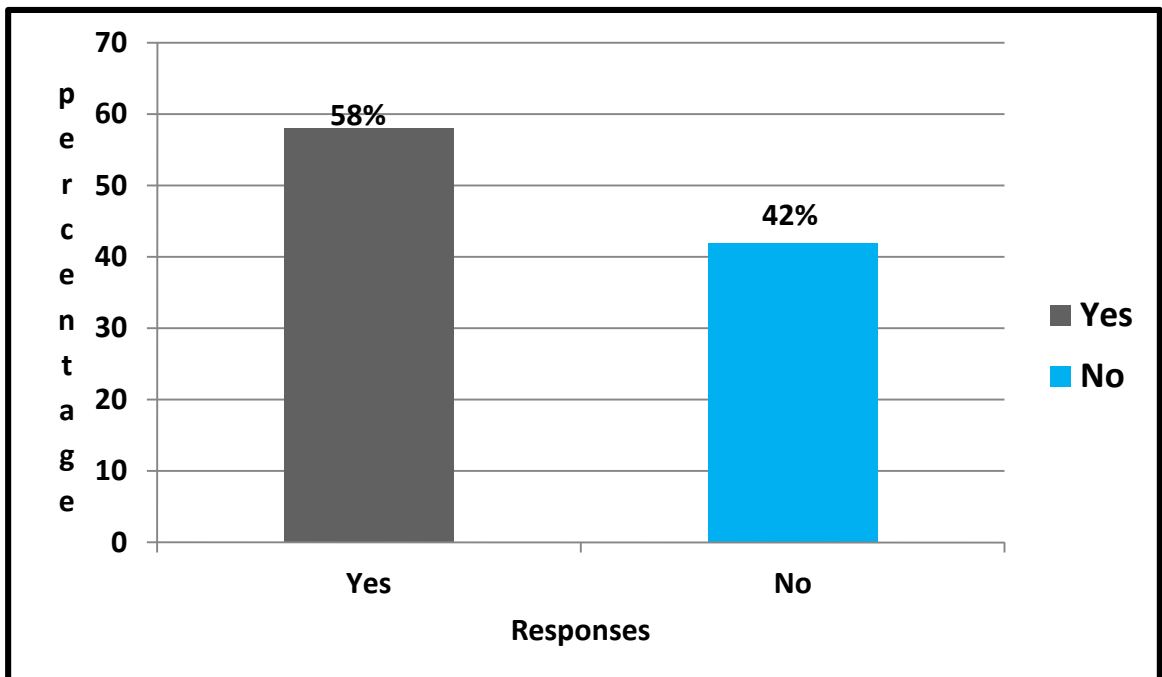


From the results shown in figure 4.3, it is construed that 79% of the respondents acknowledged that they use computers in the everyday duties while 21% said otherwise. This findings reveal that a computer as one othe e-government driver is utilized by the Kenyan ministries in their daily cores.

#### 4.5.2 Whether Employees Sign Policies for Computer Usage

The respondents were asked to state whether they sign any policy document as regards to proper usage of computers. 58% said that they signed a document that regards computer usage while 42% of the respondents did not sign any policy on computer usage.

**Figure 4.5: Policy for Computer Usage**



### 4.5.3 Adequacy in IT Training for Ministries' Employees

The study sought to establish the respondents opinion on whether their relevant ministries offer them adequate training on information technology and the results are as shown in table 4.4. The respondents gave equally divided opinions as 50% agreed that they are given adequate IT trainings while the other 50% felt otherwise.

**Table 4.4: Adequacy in IT Training for Ministries' Employees**

<b>Respondents Opinion</b>	<b>Frequency</b>	<b>Percent</b>
Yes	24	50
No	24	50
<b>Total</b>	<b>48</b>	<b>100</b>

### 4.5.4 Ministries' Support on Computer Usage

The study found out that the ministries were giving their employees support as regards to the use of computers. The results shown in table 4.5 signify that majority (73%) of the respondents admitted that their respective ministries offered them support of computer usage while 27% affirmed that they were not given support for computer usage.

**Table 4.5: Support on Computer Usage**

<b>Respondents Opinion</b>	<b>Frequency</b>	<b>Percent</b>
Yes	35	73
No	13	27
<b>Total</b>	<b>48</b>	<b>100</b>

#### 4.5.5 Consideration of IT as Vital Tool

The respondents were asked to indicate whether they consider information technology as an important tool for the ministries and the results are as shown in table 4.6. Overwhelming percentage of respondents (92%) felt that information technology was a vital tool for the ministry while 8% gave contrary responses. Therefore, this is an indication that information technology is an essential instrument which is used by ministries in carrying out their daily activities.

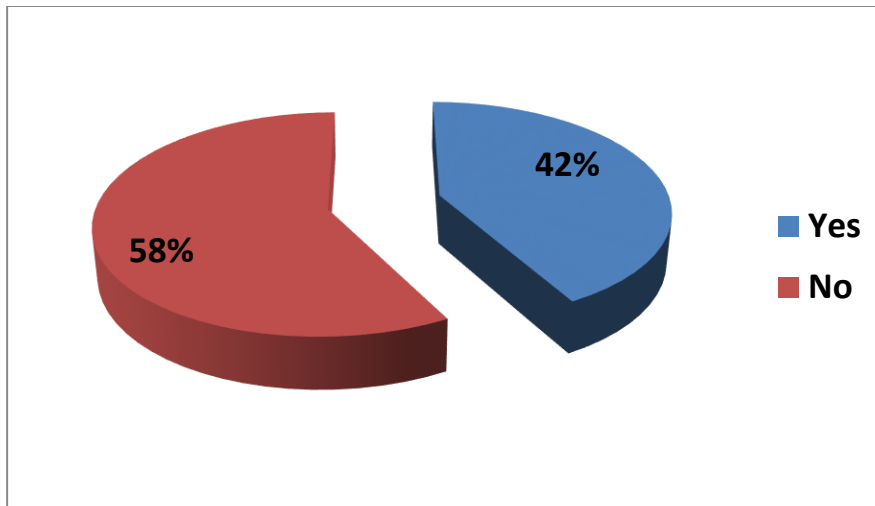
**Table 4.6: Consideration of IT as Vital Tool**

<b>Respondents Opinion</b>	<b>Frequency</b>	<b>Percent</b>
Yes	44	92
No	4	8
<b>Total</b>	<b>48</b>	<b>100</b>

#### 4.5.6 Whether Ministries Allocate Enough Fund for New IT Systems

The research further inquired about funds allocation for new IT systems. 58% of the respondents said that their ministries had not allocated funds for new IT systems, but 42% indicated that their ministries had put aside some funds for adopting new IT systems for the ministry.

**Figure 4.6: Whether Ministries Funding New IT Systems**



#### **4.6 E-Government Challenges**

On scale of 1 – 5, the respondents were asked to give their opinions on the several e-government challenges and the results are as shown in table 4.7. The responses given on whether insufficient skills are a challenge in using computers, 29.2% disagreed, 27.1% agreed, 22.9% strongly disagreed, 12.5% were neutral, and 8.3% strongly agreed. The challenge of systems using complicated language which makes it difficult to navigate, received the following views. 33.3% agreed, 33.3% disagreed, 14.6% strongly disagreed, 12.5% were not decided, while 6.3% strongly agreed. The study sought to establish the respondents' viewpoints on the issue of the systems being slow and often go down and the findings show that 29.8% were uncertain, 25.5% strongly agreed, 25.5% disagreed, 12.8% agreed, but only 6.4 strongly disagreed.



**Table 4.7: E-Government Challenges**

<b>Respondents Opinion on E-Government Challenges</b>	<b>Percentage Response (%)</b>					
	<b>Strongly Agree</b>	<b>Agree</b>	<b>Uncertain</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Total</b>
Due to insufficient skills, I find it very difficult to use the computer	8.3	27.1	12.5	29.2	22.9	<b>100</b>
The systems use complicated language that makes it difficult to navigate	6.3	33.3	12.5	33.3	14.6	<b>100</b>
The systems are slow and often go down	25.5	12.8	29.8	25.5	6.4	<b>100</b>
It is difficult to get immediate support when one requires technical assistance	27.1	16.7	14.6	27.0	14.6	<b>100</b>
Compared to the previous manual process, IT systems don't accurately capture the scope of work	27.1	12.5	8.3	33.3	18.8	<b>100</b>
IT resources such as computers, scanners and printers are inadequate compared to the staff levels	39.6	16.7	10.4	20.8	12.5	<b>100</b>
There are many sub-systems with different functionalities which require different knowledge to operate	10.4	50.0	16.7	18.8	4.1	<b>100</b>
The systems are not flexible as they don't allow reducing the cost of mistakes by undoing or redoing	18.8	8.3	16.7	54.2	2.0	<b>100</b>
The ministry does not regularly train staff with the adoption of new/changing technology	18.8	20.8	12.5	25.0	22.9	<b>100</b>
From my interaction with members of the public, they have not been educated and they are therefore not able to use the online platforms to access services	22.9	29.2	8.3	25.0	14.6	<b>100</b>

The responses on whether it was difficult for government employees to get immediate support when they require technical assistance, 27.1% strongly agreed, 27% disagreed, 16.7% agreed, 14.6% were unsure, and 14.6% strongly disagreed. The respondents were asked to tell if IT systems don't accurately capture the scope of work as compared to previous manual process. The responses were that 33.3% disagreed, 27.1% strongly agreed, 18.8% strongly disagreed, 12.5% agreed, and 8.3% were neutral. The study sought to establish the respondents' view on whether IT resources such as computers, scanners and printers are inadequate compared to the staff levels. 39.6% strongly agreed, 20.8% disagreed, 16.7% agreed, 12.5% strongly disagreed, except 10.4% who were uncertain. On the issue of ministries having many sub-systems with different functionalities which require different knowledge to operate, 50% agreed, 18.8% disagreed, 16.7% were impartial, 10.4% strongly agreed, however, 4.1% strongly disagreed.

The study further inquired on whether the systems were not flexible as they don't allow reducing the cost of mistakes by undoing or redoing, the responses given were that 54.2% disagreed with statement, 18.8% strongly agreed, 16.7% were uncertain, 8.3% agreed, while 2% strongly disagreed. On the question of the ministry not regularly training staff with the adoption of new/changing technology, 22.9% strongly disagreed, 25% disagreed, 20.8% agreed, 18.8% strongly agreed, and 12.5% were neutral. Based on statement of whether from their interaction with members of the public, they have not been educated and they are therefore not able to use the online platforms to access services, 29.2% agreed, 25% disagreed, 22.9% strongly agreed, 14.6% strongly disagreed, while 8.3% were unsure.

## 4.7 Adoption of E-Government

### 4.7.1 Whether the Ministries are Linked Electronically

The study sought to establish whether the ministries are connected electronically. The responses shown in table 4.8 indicate that majority (67%) of the respondents agreed that the ministries are connected electronically, while 33% believed that the ministries were not linked electronically. This is an indication that Kenyan ministries have embraced e-governance and therefore an assurance of its adoption.

**Table 4.8: Ministries Electronic Linkages**

<b>Respondents Opinion</b>	<b>Frequency</b>	<b>Percent</b>
Yes	32	67
No	16	33
<b>Total</b>	<b>48</b>	<b>100</b>

### 4.7.2 Whether Ministries Have Online Collaboration Tools for Interaction

There were equally divided views on the question of whether there are online collaboration tools (e.g. forums, discussion groups, chat) that necessitate interaction with staff from other government departments. Where 50% of the respondents said that there were online collaboration tools of interaction and the other 50% felt otherwise as shown in table 4.9.

**Table 4.9: Online Collaboration Tools for Interaction**

<b>Respondents Opinion</b>	<b>Frequency</b>	<b>Percent</b>
Yes	24	50
No	24	50
<b>Total</b>	<b>48</b>	<b>100</b>

#### **4.7.3 Ministries Publishing Information Electronically**

The study findings show that the ministries had electronically published information pertaining to their services. From the results displayed in table 4.10, it can be deduced that 71% of the respondents felt that their respective ministries had published electronically while 29% gave the opposite views.

**Table 4.10: Whether Ministries Publish Information Electronically**

<b>Respondents Opinion</b>	<b>Frequency</b>	<b>Percent</b>
Yes	34	71
No	14	29
<b>Total</b>	<b>48</b>	<b>100</b>

#### **4.7.4 Possibility of Public to Pay For Services Electronically**

The study sought to inquire if it was possible for the public to pay for services offered by ministry electronically and the findings are as shown in table 4.11. The responses show that 68% of the respondents felt that it was possible for public to pay for the services

offered by ministries electronically, but 32% of the respondents said that there was no such possibility.

**Table 4.11: Possibility of Public to Pay For Services Electronically**

<b>Respondents Opinion</b>	<b>Frequency</b>	<b>Percent</b>
Yes	33	68
No	15	32
<b>Total</b>	<b>48</b>	<b>100</b>

#### **4.7.5 Single Sign for Accessing Different Services**

This study further required the respondents to give their views on whether there was a single sign on website which can give the public access to different services. The responses given in table 4.12 indicate that 60% of the respondents agreed that there ministries' website had a single sign which allowed public to be served with different services, while the other 40% of the respondents indicated that there was no such sign on their ministries' website which could allow public to access the services.

**Table 4.12: Whether There is A Single Sign for Accessing Different Services**

<b>Respondents Opinion</b>	<b>Frequency</b>	<b>Percent</b>
Yes	29	60
No	19	40
<b>Total</b>	<b>48</b>	<b>100</b>

#### 4.7.6 Information on How Suppliers Can Get Contracts/Tenders

Similarly, the study sought to inquire if the Kenyan ministries provided information in its website on how suppliers can get contracts/tenders and the feedbacks are as shown in table 4.13. Majority (65%) of the respondents agreed that the ministries in which they served, provided information about how suppliers get contracts and tenders on their website. On other hand, 35% of the respondents gave opposite views.

**Table 4.13: Information on How Suppliers Can Get Contracts/Tenders**

<b>Respondents Opinion</b>	<b>Frequency</b>	<b>Percent</b>
Yes	31	65
No	17	35
<b>Total</b>	<b>48</b>	<b>100</b>

#### 4.7.7 A System for Bidding Government Tenders Electronically

On the issue of whether there is a system that enables suppliers to bid for various government tenders electronically, 65% of the respondents said that their respective ministries had a system which allowed bidders to bid government tenders electronically while 35% of the respondents disagreed to this question as shown in table 4.14.

**Table 4.14: Whether there is a System for Bidding Government Tenders Electronically**

<b>Respondents Opinion</b>	<b>Frequency</b>	<b>Percent</b>
Yes	31	65
No	17	35
<b>Total</b>	<b>48</b>	<b>100</b>

#### **4.7.8 Businesses Conducting Online Transactions with the Ministries**

To end with, the study sought to find out if the businesses are able to conduct online transactions with the Kenyan ministries. The responses given in table 4.15 indicate that 63% of the employees who were interviewed responded positively on this question while 37% gave negative views.

**Table 4.15: Whether Businesses Conduct Online Transactions with the Ministries**

<b>Respondents Opinion</b>	<b>Frequency</b>	<b>Percent</b>
Yes	30	63
No	18	37
<b>Total</b>	<b>48</b>	<b>100</b>

#### **4.8 Regression Analysis**

Regression analysis was carried out to establish the relationship between the independent and dependent variables used in this study. The  $R$  squared was used to check how well the model fitted the data. The coefficient of determination,  $R^2$  was used in this study as a

useful tool because it gives the proportion of the variance (fluctuation) of one variable that is predictable from the other variable. It is a measure which allows the determination of how certain factors can be used in making predictions from a certain model/graph. The coefficient of determination is the ratio of the explained variation to the total variation. The coefficient of determination is such that  $0 \leq r^2 \leq 1$ , and denotes the strength of the linear association between X and Y. For that reason, it is interesting to find out if the independent variables relate to the dependent, where this study tested three models based on dependent variables under investigation, namely: G2G, G2C, and G2B.

#### **4.8.1 Regression Model Summary G2G E-Government Adoption**

The model summary of a linear relationship between dependent variable and independent variables given in table 4.16 illustrates an  $R$  value of 0.620 and  $R^2$  value of 0.385. This shows that gender, age, level of education, years of service in the ministry, daily usage of computers, policies for computers usage, adequate it trainings, support computers usage, it as an important tool, and adequate funds allocated, can only explain 38.5% of the variations in G2G e-government adoption. This is an indication that the remaining percentage can be explained by other factors other than those used in this study. The study realized an error margin of 0.42112. Therefore, this error estimate can be considered as influential since it is a representation of the unexplained part of the model which indicates presence of other factors that would improve the model.



**Table 4.16: Regression Model Summary G2G**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.620 <sup>a</sup>	.385	.219	.42112

**a. Predictors:** (Constant), Gender, Age, Level of Education, Years of service in the ministry, Daily usage of computers, Policies for computers usage, Adequate IT trainings, Support computers usage, IT as an important tool, and Adequate funds allocated

#### **4.8.2 Analysis of Variance (ANOVA) E-Government Adoption**

The study further carried out regression estimate to provide an ANOVA for the study model and the results are as shown in table 4.17. The regression model ANOVA indicates that the regression had a lower sum of squares (4.105) as compared to the model residual's (6.562) with a mean square of 0.410 for the regression and 0.177 for the residuals. The Analysis of Variance (ANOVA) results produced an *F*-significance value of 2.315 and *p* – value of 0.031. This indicates that the model has a probability of less than 3.1% of giving false prediction. Therefore, this would imply that the independent variables used in this study have a positive effect in determining G2G e-government adoptions.

**Table 4.17 Analysis of Variance (ANOVA)**

	<b>Model</b>	<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1	Regression	4.105	10	.410	2.315	.031 <sup>a</sup>
	Residual	6.562	37	.177		
	Total	10.667	47			

**a. Predictors:** (Constant), Gender, Age, Level of Education, Years of service in the ministry, Daily usage of computers, Policies for computers usage, Adequate IT trainings, Support computers usage, IT as an important tool, and Adequate funds allocated

**b. Dependent Variable:** G2G E-government Adoption

#### **4.8.3 Regression Coefficients of G2G E-Government Adoption**

Table 4.18 illustrates regression coefficients estimating linear relationship between independent variables and dependent variable. The regression model outcomes show that the independent variables have differing relationship to the dependent variable. The model provided a constant coefficient of 0.257 ( $t = 0.495$ ) with  $p$  – value of 0.624. Adequate training of employees on IT was found to be statistically significant determinant of G2G e-government adoption among the Kenyan ministries as it provided a positive coefficient of 0.337 ( $t = 2.174$ )  $p$  – value of 0.036. Policies for computers usage gave a positive coefficient of 0.261 ( $t = 1.531$ )  $p$  – value of 0.134. Likewise, allocation of adequate funds emerged as a significant factor to determine G2G e-government adoption as it provided a positive coefficient of 0.232 ( $t = 1.466$ ) and  $p$  – value of 0.151.

**Table 4.18 Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.257	.519		.495	.624
Gender	-.029	.137	-.030	-.213	.832
Age	-.080	.113	-.142	-.705	.485
Level of Education	.017	.119	.021	.146	.885
Years of service in the ministry	.032	.073	.094	.439	.663
Daily usage of computers	-.251	.208	-.216	-1.210	.234
Policies for computers usage	.249	.163	.261	1.531	.134
Adequate IT trainings	.317	.146	.337	2.174	.036
Support computers usage	.052	.162	.049	.324	.748
IT as an important tool	.337	.279	.198	1.209	.234
Adequate funds allocated	.142	.097	.232	1.466	.151

**a. Dependent Variable:** G2G E-government Adoption

On the other hand, age and gender of respondents were found to be statistically insignificant in determining adoption of G2G e-government. The age of respondents gave a negative coefficient of -0.142 ( $t = 0.7051$ ) with a  $p$  – value of 0.485. This is an

indication that a decrease in age bracket can lead to adoption of G2G e-government. Therefore, it can imply that the younger an employee is, the more he/she can embrace e-government adoption in G2G. On the same note, gender had a negative coefficient of -.030 ( $t = 0.213$ ) and  $p$  – value of 0.832. An indication that women employees in the government ministries tend to accept the adoption of e-government as compared to men.

#### 4.8.4 Regression Model Summary G2C E-Government Adoption

The model summary of G2C e-government adoption in table 4.19 shows a linear relationship of independent variables and dependent variable. The  $R$  value is 0.641 and  $R^2$  value of 0.411. This shows that the independent variables under investigation can only explain 41.1% of the variations in G2C e-government adoption. The study gave an error margin of 0.40523. Therefore, this error margin can be considered as significant since it represents the unexplained section of the model which shows that there is presence of other factors beside the one used in this study that would improve the model.

**Table 4.19: Regression Model Summary**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.641 <sup>a</sup>	.411	.252	.40523

a. Predictors: (Constant), Gender, Age, Level of Education, Years of service in the ministry, Daily usage of computers, Policies for computers usage, Adequate IT trainings, Support computers usage, IT as an important tool, and Adequate funds allocation.

#### 4.8.5 Analysis of Variance (ANOVA) G2C E-Government Adoption

The ANOVA regression model shown in table 4.20 indicates that the sum of squares was 4.237 as compared to the model residual's which had 6.076. The model reported a mean square of 0.424 for the regression and 0.164 for the residuals. The Analysis of Variance (ANOVA) results produced an *F*-significance value of 2.580 and *p* – value of 0.018. Therefore, this would imply that the variables used for this analysis that is, age, level of education, years of service in the ministry, daily usage of computers, policies for computers usage, adequate it trainings, support computers usage, it as an important tool, and adequate funds allocation, have a positive significance in determining e-government of G2C.

**Table 4.20 Analysis of Variance (ANOVA)**

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	4.237	10	.424	2.580	.018 <sup>a</sup>
Residual	6.076	37	.164		
Total	10.313	47			

a. Predictors: (Constant), Gender, Age, Level of Education, Years of service in the ministry, Daily usage of computers, Policies for computers usage, Adequate training on IT, Support computers usage, IT as an important tool, and Adequate funds allocation

b. **Dependent Variable:** G2C E-government Adoption

#### 4.8.6 Regression Coefficients

Regression coefficients estimating linear relationship of independent and moderating variables against G2C e-government adoption are as shown in table 4.21.

**Table 4.21 Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.442	.499		.884	.382
Gender	-.028	.131	-.030	-.214	.831
Age	.001	.108	.001	.005	.996
Level of Education	-.125	.115	-.156	-1.091	.282
Years of service in the ministry	.066	.070	.197	.936	.355
Daily usage of computers	-.122	.200	-.107	-.613	.544
Policies for computers usage	.250	.157	.266	1.595	.119
Adequate training on IT	.254	.140	.274	1.810	.078
Support computers usage	.096	.156	.092	.618	.541
IT as an important tool	.263	.268	.157	.982	.333
Adequate funds allocation	.137	.093	.226	1.462	.152

**a. Dependent Variable: G2C E-government Adoption**

The regression model results show that the independent variables have varying relationship to the dependent variable. This model gave a constant coefficient of 0.442 ( $t = 0.884$ ) with  $p$  – value of 0.382. Adequate training on IT had a statistically significant effect towards the adoption of G2C e-government as it provided a positive coefficient of 0.274 ( $t = 1.810$ ) and  $p$  – value is 0.078. Setting policies which controls the usage of computers in the government ministries was also found to be statistically significant factor in G2C e-government adoption as it gave a positive coefficient of 0.266 ( $t = 1.595$ ) and a  $p =$  value of 0.119. Similarly, allocation of adequate funds towards e-government adoption has a positive coefficient of 0.226 ( $t = 1.462$ ) with a  $p =$  value of 0.152. On contrary, level of education provided a negative coefficient of -0.156 ( $t = 1.091$ ) and a  $p =$  value of 0.282. This is indication that, employees who have low level of education do not contribute much to adoption of G2C e-government. Using of computers in the daily activities tend to reduce adoption of G2C e-government adoption as it gave a negative coefficient of -0.107 ( $t = 0.613$ ) with a  $p =$  value 0.544.

#### **4.8.7 Regression Model Summary G2B E-Government Adoption**

The study further estimated regression model summary of G2B e-government adoption and the estimations of the linear relationship between the variables used for this model are as illustrated in table 4.22. The  $R$  value is 0.776 and  $R^2$  value of 0.602. This shows that the drivers of government and moderating factors used for this analysis jointly can account for 60.2% of the variations in G2B e-government adoption among the Kenyan ministries. An error margin of 0.34362 was cited for this regression model and this represented the unexplained section of the model (49.8%) which shows that there exist other factors which would improve the model other than those measured in this study.

**Table 4.22: Regression Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.776 <sup>a</sup>	.602	.495	.34362

a. Predictors: (Constant), Gender, Age, Level of Education, Years of service in the ministry, Daily usage of computers, Policies for computers usage, Adequate training on IT, Support computers usage, IT as an important tool, and Adequate funds allocation

#### **4.8.8 Analysis of Variance (ANOVA) G2B E-Government Adoption**

Table 4.23 shows the outcomes of the ANOVA regression model. The regression sum of squares was 6.610 while the residual's was 4.369. The mean square of regression was 0.661 and the residual mean square was represented by 0.118. The ANOVA results provided an *F*- statistics of 5.598 with a strong *p* – value was 0.000, an indication that the independent and moderating variables used in this study are highly significant in determining G2B e-government adoption.

**Table 4.23 Analysis of Variance (ANOVA)**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6.610	10	.661	5.598	.000 <sup>a</sup>
	Residual	4.369	37	.118		
	Total	10.979	47			

a. **Predictors:** (Constant), Gender, Age, Level of Education, Years of service in the ministry, Daily usage of computers, Policies for computers usage, Adequate training on IT, Support computers usage, IT as an important tool, and Adequate funds allocation

b. **Dependent Variable:** G2B E-government adoption



#### 4.8.9 Regression Coefficients

The results of regression coefficients used to measure the linear relationship between selected independent variables and G2B e-government adoption are as indicated in table 4.24.

**Table 4.24 Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.273	.423		-.645	.523
Gender	-.113	.111	-.117	-1.015	.317
Age	-.003	.092	-.005	-.033	.974
Level of Education	.095	.097	.114	.974	.336
Years of service in the ministry	-.002	.060	-.007	-.038	.970
Daily usage of computers	-.062	.169	-.053	-.368	.715
Policies for computer usage	.441	.133	.455	3.322	.002
Adequate training on IT	.421	.119	.440	3.532	.001
Support computers usage	-.114	.132	-.106	-.859	.396
IT as an important tool	.231	.227	.134	1.016	.316
Adequate funds allocation	.117	.079	.188	1.480	.147

a. Dependent Variable: G2B E-government adoption

Policies and training were the only variables which were found to be statistically significant in determining the G2B e-government adoption. Policies regulating computer usage came out as a significant factor to be considered in determining the G2B e-

government adoption as it gave a positive coefficient of 0.455 ( $t = 3.322$ ) and  $p =$  value 0.002. Adequate training on IT was also found to be statistically significant as it provided a positive coefficient of 0.440 ( $t = 3.532$ ) with a  $p -$  value of 0.001. Gender, age of respondents, years of service in the ministry, daily usage of computers and support for computer usage presented negative coefficients.

The different age groups in the Kenyan ministries react differently to the adoption of technology. The younger generation will tend to make use of the technological initiatives provided by government while the older generation tends to resist it. Different education levels between employees were also found to affect the use of e-government platforms. The educated groups are likely to accept and embrace new technologies as it is easy for them to get skills to enable them adopt and fit in through training. On other hand the uneducated employees tend to resist change in technology. Government staffs therefore make use of the technological platforms as they believe it makes their work easier. The presence of computer usage policies is associated with the use of e-government systems and adoption of e-government by Kenyans.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter presents summary of the key findings presented by the study, conclusions and gives appropriate recommendations there-to. This was done based on research findings analyzed in the study to examine the level of e-government adoption by the Kenyan ministries. The suggestion for further research is also given in this chapter.

### **5.2 Summary of Findings**

The study sought to assess the state of e-government in Kenyan ministries. The research questions were to: i) determine the level of e-government adoption within the ministries; ii) establish the drivers leading to the use of e-government within the ministries; and iii) determine the challenges that ministries are experiencing in using the e-government platform. Therefore, the summary of the findings is as follows:

#### **5.2.1 The level of e-government adoption within the Kenyan ministries**

The findings indicate that to some extent the Kenyan ministries have adopted e-governance. Using likert scale, the study findings revealed that the ministries use the systems to serve customers on a daily basis, as 52% of the respondents strongly agreed while 20.8% agreed. On whether the systems they use are interconnected with other government ministries, 29.2% of the respondents disagreed, 27.1% strongly agreed, 22.9% agreed. To some extent, the ministries held their major functions electronically, because 27.1% strongly agree to this view. The use of tools like e-mails and instant

messaging to communicate with other staff members was being practiced as those who strongly agreed and agreed had 37.5% respectively.

The study found out that the Kenyan ministries always relied on an online database to retrieve information when doing their jobs with 37.4% of the respondents agreeing to this statement. 39.6% of the respondents strongly agreed that the ministries have an electronic payroll system that pays salaries and keeps records for tax information. The ministries also had e-learning platforms that enabled staff to access information in regards to training and learning opportunities. The nature of government employees' work had gradually moved from handling a lot of paper to being paperless this based on the responses given in this study where 29.2% of the respondents strongly agreed and 27% agreed. The use of an online application to maintain employees personal information including managing their leave days (absence recording) was practiced in these ministries as 43.8% of the respondents agreed to this account. 35.5% of the respondents agreed that their respective ministries had adopted a staff performance system that assisted in setting objectives and measure of performance against the objectives.

### **5.2.2 The drivers leading to the use of e-government within the ministries**

The study inquired on the drivers which can lead to e-government usage within the Kenyan ministries. The findings show that 79% of the respondents acknowledged that ministries use computers in their daily tasks. Ministries have policies which guide employees with regards to proper usage of computers. There were divided opinions on the issue of ministries offering workers adequate training on information technology, as 50% of the respondents agreed while the other half disagreed. The study found out that

the ministries were giving employees support as regards to the use of computers those was shown by the majority (73%) of the respondents who admitted that they were offered support on computer usage. 92% felt that information technology was a vital tool for the ministries. 58% of the respondents were of the opinion that the ministries allocated funds for new IT systems.

### **5.2.3 The challenges experienced in using the e-government platform**

The results on challenges which can hinder e-government in Kenyan ministries indicate that insufficient skills, is not a challenge in using computers. 33.3% of the respondents felt that there was a challenge of systems using complicated language which made it difficult to navigate. The issue of the systems being slow and often go down was not a challenge to the ministries. It was difficult for government employees to get immediate support when they require technical assistance as 27.1% strongly agreed to this statement. IT systems were accurately capturing the scope of work as compared to previous manual process. 39.6% of the respondents strongly agreed that IT resources such as computers, scanners and printers were inadequate compared to the staff levels.

50% of the respondents revealed that the ministries had many sub-systems with different functionalities which required different knowledge to operate. On the challenge of the systems not being flexible in allowing reduction of cost of mistakes by undoing or redoing, 54.2% of the respondents disagreed. 25% of the respondents disagreed to the statement that ministry not regularly train staff with the adoption of new/changing technology. Moreover, 29.2% agreed that there was difficulty in interaction with

members of the public, as they had not been educated and they were therefore not able to use the online platforms to access services.

#### **5.4 Conclusion**

From the findings of this study, it can be concluded that government employees in different departments of ministries have to work together in a smooth and seamless way. This is to ensure that cost savings, efficiency and customer satisfaction are reaching highest possible levels. E-governance offers many benefits to the citizens as it has much potential to bring many dreams and goals of good governance into reality. The issues of illiteracy and pervasive corruption in the ministries can be addressed by using skillful application of e-governance initiatives. Despite its enormous potentials, it was observed that the benefits of e-governance are not duly reaped by the government ministries. E-governance can very positively turn a paradigm shift from traditional bureaucratic administration to a more responsive, accountable and effective administration which many ministries in Kenya have been aspiring for a long time.

With the intelligent and effective applications of ICT, combined with other e-government drivers, ministries can be more responsive in providing communication with citizens to effectively meet public needs, and ultimately, build a more sustainable future for the benefit of the whole of country. Furthermore, it should be noted that Internet is not a universal remedy for solving all ministries governance problems, but it offers a new communication channels for bridging the gap between the government and its citizens offering a possibility for an interactive dialogue.

The main stumbling blocks in this study were found to be: systems were using complicated language which made it difficult for users to navigate; there was some difficulty for government employees to get immediate support when they required technical assistance; inadequacy of IT resources such as computers, scanners and printers as compared to the staff levels; majority of ministries had many sub-systems with different functionalities that required different knowledge to operate; and there was difficulty in interaction with members of the public, as they had not been educated and they were therefore not able to use the online platforms to access services

### **5.5 Recommendations**

The study recommends that the ministries should come up with workable and effective systems which can predict and manage e-governance adoption and increase its usage among the employees and clients. The e-government usage within the ministries requires proper management, modern tools and skills which can allow the operation. Therefore, the ministries should procure new communication channels and enforce viable and workable policies to control the usage of e-governance instruments. Despite the efforts of e-government adoption among the Kenyan ministries, there are some shortcomings which are hindering this effort. To counter these problems, the ministries ought to carry out administrative reform either in the name of better public productivity or for the sake of more accountability, transparency or general public participation.

## **5.6 Suggestion for Further studies**

This study focused on major variables namely, level of e-government adoption, e-government drivers and e-government challenges. It is therefore recommended for further studies based on factors other than the one used in this study which can establish the e-governance adoption. The study was also confined to Kenyan government ministries, but there is need to find out the level and state of e-government adoption in private and other sectors which play key role development of the country to help in finding further insight of the matter.



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**APPENDICES**

**APPENDIX I: QUESTIONNAIRE**

**SECTION A: GENERAL INFORMATION**

This section highlights basic knowledge about the respondent.

1. Name (Optional): .....

2. Gender: Male  Female

3. Age:

18 – 25 years  46-55 years

26 – 35 years  Above 55 years

36-45 years

4. What is your highest level of Education?

Primary Level  Tertiary / College Level

Secondary Level  University Level

5. Position .....

6. Number of years served in the position.....

7. Name of your department.....

8. Number of years of service in the ministry.....

9. Number of years served in the position.....

## SECTION B: LEVEL OF E-GOVERNMENT ADOPTION

Please indicate whether you agree or disagree with the following statements (1 – Strongly Agree, 2 – Agree, 3 – Neither Agree nor Disagree, 4 –Disagree, 5 – Strongly Disagree)

	1	2	3	4	5
1. I always use the systems to serve customers on a daily basis.					
2. The systems I use are interconnected with other government ministries.					
3. All of the major functions in my ministry are performed electronically.					
4. I use tools such as e-mails and instant messaging to communicate with other staff members.					
5. I always rely on an online database to retrieve information when doing my job.					
6. My ministry has an electronic payroll system that's pays salaries and keeps records for tax information.					
7. There's an e-learning platform that enable staff access information in regards to training and learning opportunities.					
8. The nature of my work has gradually moved from handling a lot of paper to being paperless.					
9. I use an online application to maintain my personal information including managing my leave days (absence recording).					
10. The ministry has adopted a staff performance system that assists in setting objectives and measures performance against the objectives.					



## SECTION C: DRIVERS OF E-GOVERNMENT USAGE

1. Do you use computers in your daily tasks?

Yes  No

2. Did you sign any policy document as regards to the proper usage of computers?

Yes  No

3. Do you think your ministry offers adequate IT trainings to its employees?

Yes  No

4. Does your ministry give you any other support as regards to the use of computers?

Yes  No

5. Do you consider IT an important tool for the ministry?

Yes  No

6. Has your ministry allocated adequate funds for adoption of new IT systems?

Yes  No

## SECTION D: E-GOVERNMENT CHALLENGES

Questions asked will be on a scale of 1-5; 1.Strongly Agree, 2. Agree, 3.Neither, 4.Disagree, 5.Strongly Disagree.

	1	2	3	4	5
1. Due to insufficient skills, I find it very difficult to use the computer.					
2. The systems use complicated language that makes it difficult to navigate.					
3. The systems are slow and often go down.					
4. It is difficult to get immediate support when one requires technical assistance.					
5. Compared to the previous manual process, IT systems don't accurately capture the scope of work.					
6. IT resources such as computers, scanners and printers are inadequate compared to the staff levels.					
7. There are many sub-systems with different functionalities which require different knowledge to operate.					
8. The systems are not flexible as they don't allow reducing the cost of mistakes by undoing or redoing.					
9. The ministry does not regularly train staff with the adoption of new/changing technology.					
10. From my interaction with members of the public, they have not been educated and they are therefore not able to use the online platforms to access services.					

## SECTION E: ADOPTION OF E-GOVERNMENT

1. Is your ministry connected to other ministries electronically?

Yes  No

2. Are there online collaboration tools (e.g. forums, discussion groups, chat) that necessitate interaction with staff from other government departments?

Yes  No

3. Has your ministry electronically published information pertaining to its services?

Yes  No

4. Is it possible for the public to pay for services offered by your ministry electronically?

Yes  No

5. Is there a single sign on website which will give the public access to different services?

Yes  No

6. Has the ministry provided information in its website on how suppliers can get contracts/tenders?

Yes  No

7. Is there a system that enables suppliers to bid for various government tenders electronically?

Yes  No

8. Are businesses able to conduct online transactions with the ministry?

Yes  No

## **APPENDIX II: GOVERNMENT MINISTRIES**

Ministries in Government include:

1. Ministry of Interior and Coordination of National Government
2. Ministry of Devolution and Planning
3. The National Treasury
4. Ministry of Defense
5. Ministry of Foreign Affairs & International Trade
6. Ministry of Education
7. Ministry of Health
8. Ministry of Transport and Infrastructure
9. Ministry of Information, Communications and Technology
10. Ministry of Environment, Water and Natural Resource
11. Ministry of Land, Housing and Urban Development
12. Ministry of Sports, Culture and the Arts
13. Ministry of Labour, Social Security and Services
14. Ministry of Energy and Petroleum
15. Ministry of Agriculture, Livestock and Fisheries
16. Ministry of Industrialization and Enterprise Development
17. Ministry of Commerce, Tourism and East Africa Region
18. Ministry of Mining

Source: <http://www.mygov.go.ke/>