

**FACTORS INFLUENCING THE SUCCESSFUL  
IMPLEMENTATION OF E- GOVERNMENT IN  
KENYA: THE CASE OF THE DIRECTORATE OF  
E-GOVERNMENT.**

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BY

**ODANGA TECHLAH ACHIENG**

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT FOR  
THE REQUIREMENT OF THE AWARD OF MASTER OF ARTS DEGREE IN  
PROJECT PLANNING AND MANAGEMENT OF THE UNIVERSITY OF  
NAIROBI.**

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## **DEDICATION**

I dedicate this research project to my beloved parents: Dr. Augustine Odanga and Mrs. Monica Odanga. Without their patience, understanding, support and most of all love, the completion of this work would not have been possible.

## **ACKNOWLEDGEMENT**

First I would like to thank my project supervisor Dr. Harriet Kidombo of University of Nairobi, for giving me the wonderful opportunity to learn. I would like to oblige her for her encouragement, constructive suggestions and moral support. She showed me different ways to approach a research problem and the need to be persistent to accomplish any goal. I am also grateful to all my lecturers because it is through their work that I finally got the chance to undertake this study.

I also thank my parents for giving me life in the first place, for educating me with aspects from both arts and sciences, for unconditional support and encouragement to pursue my interests, even when the interests went beyond boundaries of classroom education.

Last but not least, thanks to all those who gave me their help on earlier drafts of this paper and to my friends for their constant support and encouragement throughout the study period. May the Almighty bless them all.

## **ABBREVIATIONS AND ACRONYMS**

<b>B2B</b>	<b>Business to Business</b>
<b>B2C</b>	<b>Business to Consumer</b>
<b>DeG</b>	<b>Directorate of e- Government</b>
<b>G2C</b>	<b>Government to citizen</b>
<b>G2B</b>	<b>Government to Business</b>
<b>G2G</b>	<b>Government to government</b>
<b>G2E</b>	<b>Government to Employees</b>
<b>ICT</b>	<b>Information and Communication Technology</b>
<b>OECD</b>	<b>Organisation for Economic Co-Operation and Development</b>

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## **ABSTRACT**

The achievement of e-government in Kenya has been one of the main priorities of the Kenya government towards the realization of national development goals and objectives for Wealth and Employment Creation, as stipulated in the Kenya Vision 2030. The e-government Strategy is designed to achieve pre-determined set of goals and objectives in line with development priorities outlined in the Economic Recovery Strategy for Wealth and Employment Creation. Currently, in Kenya, there are a number of Government Ministries developing electronic information systems, catering to varied information needs of different categories of users. There is, however, very limited exchange of information among the institutions and between the information providers and the potential consumers. The study, therefore, sort to investigate the factors that influence the successful implementation of e-government. The descriptive design research was used for this study. In addition, by employing the combined approach, the researcher was able to obtain the advantages of both quantitative and qualitative approaches and overcome their limitations. The findings indicated that a majority of the respondents agreed that the ICT skills of personnel influenced the implementation to a very large extent; this was similar to findings on back end infrastructure, ICT cost of implementation, change in technology, and legal framework.

The Government of Kenya is beginning to understand better that real value can be obtained through successful implementation of e-government, but that the need for basic assessments of benefits and costs, risks and opportunities remains. As a result of successful implementation of e-government, over 90 per cent of respondents point out an improvement in overall service delivery as a result of using e-government; almost 75 per cent indicated improvement in service quality. 82 per cent of respondents surveyed believed that data was available to authorized users more than 75% of the time. Fifty of the 56 participants surveyed indicated that online availability of government information is to a level of more than 75%.

The researcher recommended the implementation of continuous legal and legislative ICT reforms to keep pace with the dynamic nature of technological development and changes

as a way of ensuring sustainable development. Secondly, extensive training and refresher courses on ICT to government staff and stakeholders to should be applied to improve on computer literacy skills and usage. Provision of institutional support by the Directorate of e-Government to other ICT departments and organizations in implementation of e-government projects identified and conceptualized by them to improve and harmonize the implementation of the e-projects. Lastly, government should define e-government priorities within the framework of their national policy goals, e-government vision and strategic objectives by evaluating the way different applications draw on scarce available resources and add different value to and impact on the governance process. Several issues for further research were found that should be investigated to generate knowledge and information as they were beyond the scope of this research but featured prominently during data collection. These issues include the main challenges of e-government implementation in Kenya; the development of local technologies and ICT infrastructures and strategic issues for the implementation of e-government services to businesses.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background to the study**

As the influence of e-commerce and e-business is increasing in our lives, governments, organizations and society have started to recognize the need of information technology and Internet (Choudrie, 2005). According to Signore et al., (2005) the private sector has been known for its need to always keep in line with new trends; but now governments are also focusing on providing maximum service online. Information and Communication Technology (ICT) has been viewed as a vital facet for the successful implementation of e-government. Therefore, governments are eager to promote the access and usage of ICTs so as to give an opportunity to citizens, so that they can get involved in decision making process (Signore et al., 2005). The ICT infrastructure helps e-government to communicate with its citizens, support e-government operations, provide effectiveness, and offer better services. Private sector organisations have many choices of application and technologies to support e-business. Due to continual improvement in ICTs, there are applications and technologies that help the public sector to implement valuable e-government and support their business process.

According to Burn and Robins (2003) the Internet has been playing a huge role in interacting with organizations on a large scale. Internet has the potential to communicate information and develop business transitions. As a result, a new environment has been created where companies can work together through networks of customers and suppliers. The Government can reach many citizens through the Internet, and therefore through online services, major change and re-invention of governments are becoming fast.

According to Davison et al., (2005), in the business world, significant concentration has taken place on the adoption of web based technologies, precisely in B2B (Business to Business) and B2C (Business to Customer). New segments have gained the interest especially those involved with the government, such as G2B (Government to Business),

G2C (Government to Citizens), G2E (Government to Employees) and G2G (Government to Government).

Fang (2002), states that it is not a dream that governments offer their services on one counter without wasting citizens' time. This means that services are available throughout the day and night. This will be possible in the near future if governments are willing to use e-government. Each citizen can fully utilize the government service through a website where all forms, news, information and other services will be available.

In Europe and USA, commercial banks have already introduced this technology. Citizens can do many transactions through ATM, by email or by the Internet. This will increase revenue, save time and also enhance the citizen's trust. Governments can also adopt this trend to make their internal operations more efficient, save cost and serve their customers in a better way. Long term goals and short term steps make good approach towards implementing e-government (Backus 2001).

Developed countries are getting many benefits and increasing their efficiency in different citizen's services through e-government. Experience from developed countries indicates that it is not difficult for developing countries to achieve the same benefits if they start reengineering, decentralizing their processes and using the Internet. E-government is not just to put a website on the Internet. It is a tool that will strategically support and reduce the gap between the government and its citizenry. The use of ICT facilitates the governments operation and assists them to develop effective and efficient interaction between citizens, business, public and other agencies (Basu, 2004).

According to Ebrahim and Irani (2005), government leaders and officials know the importance of e-government role in improving the government's services to its citizens and giving plenty of benefits to the community, but adoption of e-government is not so simple and cannot be applicable in a short time. It needs proper planning and framework to put government information and services online.

Many developing countries are increasingly realizing that e-government does not only enhance governance and create jobs, but it also enhances the lifestyle of its people. However, due to lack of planning and framework, many government organizations are still at the immaturity level. E-government is still facing many challenges as it is in the development process. Government must consider some elements of policy, including authoritarian issues, economic matters and the right of users before designing and executing e-government websites. The implementation of e-government will raise a number of barriers for citizenry and to some extent the government itself, for instance, innovation of technology and its citizenry face the enormous challenge of overcoming these obstacles to be able to maximize the benefits of using e-government (Choudrie et al., 2005).

### **1.1.1 E-Government in Kenya**

Kamar (2006) states that the achievement of e-government in Kenya has been one of the main priorities of the government of Kenya towards the realization of national development goals and objectives for Wealth and Employment Creation, as stipulated in the Kenya Vision 2030. The government of Kenya established the e-government Programme in June 2004. It has since then committed itself towards achieving an effective and operational e-government to facilitate better and efficient delivery of information and services to the citizens and also to promote productivity among public servants, encourage participation of citizens in government and empower all Kenyans.

According to Kenneth (2006), e-government in Kenya is a fundamental element in the modernization of government. It provides a common framework and direction across the public sector and enhances collaboration within and among public sector organizations and institutions, between government and the business community, and between government and the citizens that it serves in the implementation of government Policies. It also identifies ways of developing the skills needed by public servants to realize the new opportunities offered by ICT advancement such as the internet.

The e-government Strategy in Kenya is designed to achieve pre-determined set of goals and objectives, which are: better and efficient delivery of government information and



services to its citizens; promotion of productivity among public servants, and encourage participation of citizens in government and empower all Kenyans in line with development priorities outlined in the Economic Recovery Strategy for Wealth and Employment Creation (Cabinet Office, 2004)

### **1.1.2 The Directorate of e-Government**

The Directorate of e-government (DeG) was established in June 2004 as a Government commitment to make e-Government a reality and to ensure that it provides better services to Kenyans. DeG is headed by the ICT Secretary at the Presidency and Cabinet Affairs Office, Office of the President.

The mandate of DeG is to provide leadership, facilitation and coordination of e-Government services across ministries and accounting units. DeG further coordinates and prepares the e-Government Strategy including the implementation plan, and monitoring and evaluation of the process. (Government of Kenya, 2003).

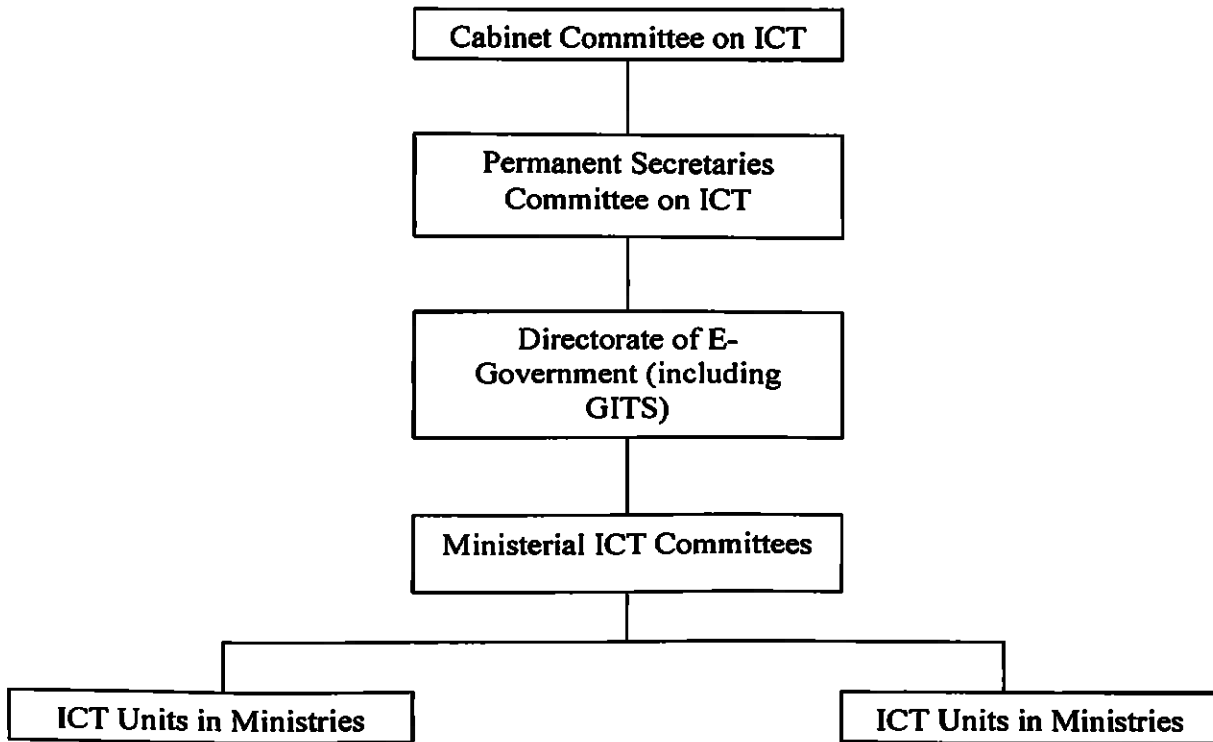
The Directorate of e-Government discharges the following functions: First, to develop, coordinate and define ways so that electronic and information technology business strategies assist government to operate more effectively and efficiently in delivering services to citizens. Secondly, DeG provides coordination and advice on issues pertaining to electronic business, telecommunications and technology. Thirdly, it plans and develops strategies and direct government wide activities to support other agencies. Lastly, DeG participates in the development, analysis and evaluation of government wide technology issues, policies and legislation (Government of Kenya, 2003)

The Directorate of e-government has a total number of 560 ICT officers within the central government working under different Ministries, 15 of these officers are stationed at the Directorate of e-government head offices located on the 10<sup>th</sup> floor of Harambee House. This number does not include those ICT officers who are working within the various State Corporations.

### 1.1.2 Structure of the Directorate of e-Government

Below is a diagram showing the structure of DeG

*Figure 1.1: Organogram of the Directorate of e-government*



**Legend:**

ICT = Information and Communications Technology

GITS = Government Information Technology Services

From the diagram above, the Cabinet Committee on ICT (chaired by the Minister of State for Provincial Administration and National Security and members are the Minister for Finance, the Minister for Tourism, Minister for Information and Communications, the Minister for Education, the Minister for Higher-Education Science and Technology, the Minister for Transport), which oversees the implementation of the e-Government Strategy (Government of Kenya, 2003).

The Permanent Secretaries Committee consists of Permanent Secretaries and Accounting Officers. This Committee is charged with the coordination of the implementation of the e-Government initiatives. It is chaired by the Head of the Public Service and provides the institutional support and ownership needed to marshal resources and manpower to expedite the implementation of e-Government. The Committee meets at least once a month (Government of Kenya, 2003).

At the level of the Ministries, e-Government Committees exist to review the various ICT policy initiatives in the Ministries, undertake audit of the ICT capacity, establish support to the Ministerial Policy Mandate, identify technical and institutional gaps and inadequacies, and make recommendations on the way forward. Each Committee is chaired by the Permanent Secretary in the ministry and consists of the Head of the Central Planning Unit, the Chief Finance Officer, Senior Principal Personnel Officer, Deputy Secretary/Administration and Head of ICT Unit. The Ministerial Committee meets once a month (Government of Kenya, 2003).

The Directorate of e-Government under the Head of Public Service is the Steering Technical Team which serves as the e- Government Secretariat, charged with the coordination and preparation of the e-Government Strategy including the implementation plan, and monitoring and evaluation of the process. (<http://www.e-government.go.ke/>)

## **1.2 Statement of the problem**

Barriers associated with the e-government, such as privacy and security issues of citizens are of great concern because citizens and government employees who have insufficient knowledge of e-government and very minimal computer literacy pose a great challenge when changing from government to e-government (Davison et al., 2005). Rules and regulations, procedures, processes, mechanical support and power are typically products of government. Among these policy formulation is the most difficult to customize (Cleveland, 2005) consequently government not only needs fast computers to do the tasks but also need intellectual, skillful people to control the computers by filtering when and how to make exceptions to routine and more precisely what to perform or declare. Yen & Evans (2005) indicated that to plan a proper e-government structure, it is important to learn from field experience. Numerous factors are involved with effective coordination between state and local government system. Previously, coordination has been poor but it is expected that e-government applications will increase the coordination and reduce the gap between state and local government bodies. E-government is a process that needs proper planning, support, resources, funds and lastly political goodwill (The World Bank e-government hand book, 2002). Ambiguity and misinterpretation of e-government

development concept is also a cause of failure of e-government programs (Ndou, 2004).

E-government is an extensive and multidimensional area. To implement a successful e-government, there is a need for understanding and clarity in concept. As Davison et al., wrote in 2005, that government should change the view of people to appreciate that e-government will ease transactions for its citizenry. If the governments can realize this role, then e-government has the power to change the way public sectors are doing business and hence build a bridge between the citizenry and government. This study therefore sort to investigate the factors that influence the successful implementation of e-government.

### **1.3 Purpose of the Study**

The purpose of this study was to identify the factors affecting the successful implementation of e-government

### **1.4 Objectives**

The study was guided by the following objectives:-

1. To establish the influence of ICT skills of personnel on the successful implementation of e-government.
2. To determine the impact of the platform of ICT infrastructure on the successful implementation of e-government.
3. To establish the influence of cost of installation and maintenance of ICT tools on the successful implementation of e-government.
4. To establish the impact of changing technology on the successful implementation of e-government.
5. To establish the influence of the legal framework on the successful implementation of e-government.

## **1.5 Research Questions**

The study answered the following questions:-

1. What is the influence of ICT skills of personnel on the successful implementation of e-government?
2. What is the impact of the platform of ICT infrastructure to the successful implementation of e-government?
3. What is the influence of the cost of installation and maintenance on the successful implementation of e-government?
4. What is the impact of changing technology on the successful implementation of e-government?
5. How does the legal framework influence the successful implementation of e-government?

## **1.6 Significance of the Study**

Policy-makers require accurate and up-to-date information on the state of play of their field of interest. In an area where both practice and technology are developing fast, such as e-government, it is important to carry out in-depth studies, in particular to understand the different kinds of challenges that are faced at the various stages of implementation of e-government. The results of such studies can be used to target financial support and to inform its policy initiatives in the field of e-government.

The study will also help IT practitioners in the public sector learn how to use and manage information technologies to revitalize business processes, improve decision-making, and gain a competitive advantage from the adoption of e-government.

## **1.7 Scope of study**

Due to time constraint, a limited research area was chosen for this study. E-government has many groups like G2C, G2G, G2B and G2E, but the study focused only on one area of e-government and that is G2C. The aim of this study was to investigate the success factors from the government's perspective not a citizen's point of view.

### **1.8 Limitation of the study**

As with any study, particularly those requiring fieldwork, or which are dependent on external sources for significant amounts of data, this project encountered difficulties and limitations. Most of the problems arose with the questionnaire and its administration. First and foremost, there was a limited timeframe to conduct the study. Secondly, the questionnaire itself was at first feared to be lacking substance so more detailed questions were added, after which, many respondents found it to be “too long”.

### **1.9 Delimitations of the study**

Due to the large number of potential participants in the study population, the population involved in the study focused only on members located within the Ministry Head quarter offices located in Nairobi. To deal with the length factor, the information on the questionnaire was tabulated to simplify it. Additionally, in order to assure manageability of the collected data, survey instruments used mostly multiple-choice items.

### **1.10 Assumptions of the study**

The study was guided by the following assumptions;

1. The sample represented the entire population.
2. The instrument had validity and was measuring the desired constructs.
3. The respondents were knowledgeable in the study area and that they answered the survey questions truthfully.
4. The participants' gender did not significantly affect their perceptions.

### **1.11 Definition of Significant Terms**

**E-government** refers to the provision of better service by using technology and the streamlining of government processes through emerging dislocated information. (Cleveland, 2005). A concept of E-government is the use of information technology among all levels of government, citizens and the business sector (Fang, 2002)

**Business to Business (B2B)** is the trading between firms (and not between businesses and consumers), characterized by (1) relatively large volumes, (2) competitive and stable

prices, (3) fast delivery times and, often, (4) on deferred payment basis. Hence it is the exchange of goods and services between businesses

**Business to Consumer** refers to the exchange of goods and services with the end consumer being the target market

**Government to citizen (G2C)** is the communication link between a government and private individuals or residents. Such G2C communication most often refers to that which takes place through Information Communication Technologies (or ICTs), but can also include direct mail and media campaigns. G2C can take place at the federal, state, and local levels.

**Government to Business (G2B)** is the online non-commercial interaction between local and central government and the commercial business sector, rather than private individuals.

**Government to government (G2G)** is the online non-commercial interaction between Government organisations, departments, and authorities and other Government organisations, departments, and authorities.

**Government to Employees (G2E)** is the online interactions through instantaneous communication tools between government units and their employees.

**Information Communication Technology (ICT)** allow users to participate in a rapidly changing world in which work and other activities are increasingly transformed by access to varied and developing technologies. ICT tools can be used to find, explore, analyze, exchange and present information responsibly and without discrimination. ICT can be employed to give users quick access to ideas and experiences from a wide range of people, communities and cultures.

**Pilot test-** This refers to a preliminary item field test, in which data from a small sample of examinees who respond to the items is collected for analysis and review.

# **CHAPTER TWO**

## **LITERATURE REVIEW**

### **2.0 Introduction**

The earlier chapter provided the background and the problem discussion of the area of this study. This chapter will provide relevant literature in the area of study. The chapter provides an extensive review of the literature and research related to e-government. The chapter will be divided into sections that include the concept of e-government, e-government in developing countries and the barriers to e-government.

### **2.1 E-government**

Technology has changed every aspect of life, how people live, work, how companies do business and especially how governments serve their people. There is a real opportunity to reinvent government with the help of technology hence governments are applying principles and technologies to achieve similar transformation. Similarly, e-government is a way to utilize technology, to enhance access and services. It has the power to create a mode of service for their citizens. E-government affects every aspects of organization. It is not just technology; not even business activity or not human resources. It is all about combined areas and at the centre there is the customer. (Silcock, 2001)

According to Ke and Wei 2004, e-government's aim is to provide its citizenry with the fastest and most convenient way of getting government services. Even though many federal, state and government institutions have enthusiastically considered a digital future and supported it as a policy direction since the mid-1990s, their efforts towards successful implementation of e-government have been blocked by various challenges. The World Markets Research Center found that out of 2,288 national governmental Web sites in 196 countries, only 8% of the websites offered online services, and only 6% supplied integrated services at their portals hence E-government is still at an infancy stage.

E-Government uses a range of information technologies, such as the Wide Area

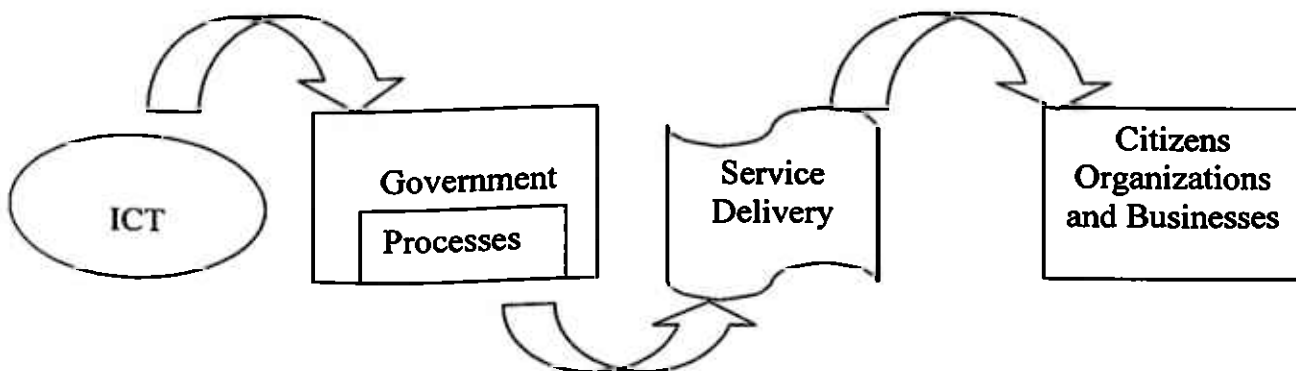


Networks, Internet, and Mobile Computing, to transform government operations in order to improve effectiveness, efficiency, service delivery and to promote democracy. ([www.e-government.go.ke](http://www.e-government.go.ke)). World public sector report (2003) defined E-government is a way transforming internal and external relationships with the use of present information and communication technology (ICT).

Studied by Burn et al., (2003) e-government is about to building relationship with community and the origin of up coming generation. It is about developing the public contract to deliver better services to citizens and businesses. E-government has four major laws:- Deliver better services around increasing alternatives for the citizens; Formulate government and make its services more accessible; Spread social activities and build relationships; and Utilize information; e-government is not about putting a few computers or creating a website for information; it is about transforming the relationship between government and the citizenry (Pardo, 2000)

E-government generally involves using ICTs to transform both back-end and front-end government processes and to provide services, information and knowledge to all government customers, that is the public, businesses, government employees and other government agencies as demonstrated in figure 2 below.

*Figure 2.1: Definition of e-government*



Adopted from: <http://www.pakistan.gov.pk>

E-government has the opportunity in which it assists citizens/clients to interact with organizations in order to fulfill their demands by offering new methods of service delivery (Burn and Robins, 2003). Internet is a cost effective tool for the government in

stipulation of information and all time service. E-government is a combination of fast information technology and government transformation. It uses new information skill and executive theory to frequently change and improve conventional government and then understand governmental directions and examine effectiveness. E-government covers a broad variety of fields with different services (Chao and Tong, 2005)

E-government involves using information technology, and especially the Internet, to improve the government service delivery to it's citizens, private partners, and other government agencies. It has the potential to connect the federal government with its citizens more directly in a manner that opens new opportunities while also raising new challenges. E-government could enable citizens to interact and receive services from the federal government (or state and local governments) 24 hours a day, seven days a week. Some observers of e-government initiatives suggest that service delivery could become more convenient, dependable, and less costly. The Gartner Group describes e-government as "the continuous optimization of service delivery, constituency participation, and governance by transforming internal and external relationships through technology, the Internet, and new media (Kamar, 2006)

E-government is not just about putting forms and services online; it also provides the opportunity to rethink how the government provides services and how it links them in a way that is tailored to the users needs (Burn and Robins, 2003, p.26). E-government provides a clear picture of the government processes and the revamped way in which services are rendered to the people. The government to E- government process gives governments an exclusive way to improve not only in operational activities, but also in-house competence. (Davison et al., 2005)

According to Ni and Ho (2004), E-government means government's efforts to improve interaction, communication and delivery of government information and services to citizens, industry, employees and governmental bodies via computer and web-enabled presence. E-government is a choice that is essential for those countries that are looking for better governance. In successful e-government, the countries' regulations and policies

play a major role. Technology also plays a supportive but important role in the entire process although it can't work alone.

“Sometimes e-government is referred to as the second revolution in public management after new public management” (Gupta and Jana, 2003). E-government not only provides better services, but also builds long term relationship with citizens and other governmental bodies. Generally E-government executes business operations through Internet based technologies. At the level of service, e-government assures to provide services throughout, user-friendliness environment and to get government services without visiting an office due to augmented technological intermediation. (Teicher et al... 2002)

According to Ebrahim and Irani (2005), in the current environment e-government is an essential aspect to the recognition of the needs of governmental institutions; it is the way to exchange views with citizen and business; it gives variety of data to citizens and business through Internet; the characteristics of E-government are not simply to provide information and services to citizens but also to expand the strategic links between community and their departments, and involvement with government levels (e.g. central, city, and local). This link and involvement supports the coordination between organizations, leveling the progress and implementation of the government strategies, transactions, and guidelines, revamped use and running of government operations, information, and resources. Governments can also finance electronically to other governmental organizations or supply information to public workforce through an intranet.

E-government is itself a process still in the early stages of development. Initial forays into e-government initiatives have focused mostly on providing enhanced access to information and basic services. Although the full transformative effects of e-government remain largely unrealized at this time, the rapid growth in interest and resources dedicated to e-government initiatives may contribute to swifter changes.

### **2.1.1 E-government functions**

E-government is like a wave that keeps rising in the public sector across the world. Many governments have started using communication technology specially Internet or web-based network to offer better service among governmental bodies, citizens, businesses, employees (Fang, 2002).

E-Government offers a number of potential benefits to citizens. It gives citizens more control on how and when they interact with the government. Instead of visiting a department at a particular location or calling the government personnel at a particular time specified by the government, citizens can choose to receive these services at the time and place of their choice. The accessibility of government services also increases since, despite government's mammoth infrastructure, there are always a limited number of personnel interacting directly with the citizens and waiting times, even on the phone, can be long. The electronic delivery of government services, especially the availability of different forms and the option of electronically submitting them, provides a considerable saving of time and money for individuals. Technology now makes it possible to personalize a website to a point where delivery of services could be tailored to meet the specific needs of an individual, thereby increasing the satisfaction of citizens from government services (Gilbert and Balestrini, 2004).

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According to Kamar (2006), the adoption and usage of online government services has a special significance for developing countries. Unlike developed countries, the governments of developing countries have an incessant shortage of resources. They are always short of skilled personnel and facilities to provide adequate services to their citizens. The concept of information and service provision by telephone is non-existent in most of the developing countries. A personal visit to the department and face-to-face interaction with government personnel is mandatory to receive any type of service. Getting a form from a government department, so conveniently available online in a number of developed countries and taken for granted, costs citizens of developing countries significant time, effort, money, and frustration. The online delivery of government services could, therefore, tremendously increase accessibility and bring

significant time and cost savings to citizens in developing countries. The element of transparency built in the online channel could also alleviate corruption, a serious problem in a number of developing countries. Therefore, e-government could virtually revolutionize the provision of government services in developing countries. Access to the Internet by citizens is a serious issue but it could be dealt with by providing public access terminals (Kamar, 2006)

## **2.1.2 E-government: a classification**

### **2.1.2.1 Government to citizen (G2C)**

This includes information dissemination to the public, basic citizen services such as license renewals, ordering of birth/death/marriage certificates and filing of income taxes, as well as citizen assistance for such basic services as education, health care, hospital information, libraries, and the like. (Yen and Evans, 2005). A primary benefit of G2C is the simple posting of forms and applications online. Constant availability of services through the Internet hence citizens can access government information instantly, conveniently without paying a visit to government offices. Other benefits to citizens are the enhancement of education information, jail security, and e-voting.

Government to citizens refers to the placement of public services online for personnel use. These services involve renewal of driving license, payment of taxes, fines and fees to state and local government (Fang, 2002). G2C allows citizen to access electronic government services anytime, directly and conveniently through the use of various channels such as PC, WebTV, mobile phone or wireless device (Ndou, 2004). It also allows the government to support and communicate with its citizens and encourage their involvement in a local community life through email or online discussion forums.

### **2.1.2.2 Government to Business (G2B)**

G2B transactions include various services exchanged between government and the business community, including dissemination of policies, memos, rules and regulations. Business services offered include obtaining current business information, downloading application forms, renewing licenses, registering businesses, obtaining permits, and

payment of taxes. The services offered through G2B transactions also assist in business development, specifically the development of small and medium enterprises. Simplifying application procedures that would facilitate the approval process for SME requests would encourage business development (Fang, 2000)

On a higher level, G2B services include e-procurement, an online government supplier exchange for the purchase of goods and services by government. Typically, e-procurement Web sites allow qualified and registered users to look for buyers or sellers of goods and services. Depending on the approach, buyers or sellers may specify prices or invite bids. E-Procurement makes the bidding process transparent and enables smaller businesses to bid for big government procurement projects. The system also assists the government to generate bigger savings, as costs from middlemen are shaved off and purchasing agents' overhead is reduced (Yen and Evans, 2005)

Some of the advantages for this type are the online regulations availability for agencies and increasing electronic tax facilities for industries. It also creates an electronic market place for government hence reduces red tape making the process of service provision easier. (Ndou, 2004) In the past, it was big problem for industries to search for information pertaining to their business (Fang, 2002)

### **2.1.2.3 Government to government (G2G)**

G2G services take place at two levels - at the local or domestic level and at the international level. G2G services are transactions between the central/national and local governments, and between department-level and attached agencies and bureaus. At the same time, G2G services are transactions between governments, and can be used as an instrument of international relations and diplomacy (Yen and Evans, 2005)

In order to recognize the importance of single access point, association and cooperation with different governmental departments and agencies is required. It allows the government to eliminate unemployment, crime, ensure security of its citizens by introducing intergovernmental assistance, amplifying the emergency help line response,

and connection to law enforcement agencies. (Fang, 2002)

Online communication and cooperation play a major role between government agencies and departments to share databases, resources, pool skills and capabilities, enhancing the efficiency and government processes (Ndou, 2004)

#### **2.1.2.4 Government to Employees (G2E)**

G2E facilitate the management and communication with government employees in order to create an effective e-career and e-office (Fang, 2002). G2E services encompass G2C services as well as specialized services that cover only government employees, such as the provision of human resource training and development that improve the bureaucracy's day-to-day functions and dealings with citizens (Fang, 2002) This group of service consists of a relationship between government and its employees by encouraging the employees to participate, providing an environment for e-learning, bringing employees together and hence increasing efficiency among them. It also gives the employees an opportunity to access the policies related to compensation and their benefits (Ndou, 2004).

Below is a diagram showing the various classifications of e-government, what information and communication each deals with and the transactions carried out on each.

*Table 2.1: Characteristics of Classification of e-government*

<b>Classifications</b>	<b>Information</b>	<b>Communication</b>	<b>Transaction`</b>
<b>G2C</b>	Information about taxes, driver's license, fees, fines and different types of bills.	Talk, listen, support and communicate with Government, encourage citizens to involve in a local community life through email.	Online discussion forum, E-voting, online service delivery.
<b>G2B</b>	Information about business permits, safety, employment, environment, and tax rules.	Communicate with Government, involve in decision making process	E-procurement, e-Transaction, e-market, online service delivery.
<b>G2G</b>	Exchange information regarding databases, resources, policies within itself or with other governments.	Online Intergovernmental communication with assistance, share national, local, data, information. regional and other foreign government organization	
<b>G2E</b>	Information about Compensation policy, benefits, career management and employee's development.	Communicate with Government, involve in decision making process regarding work and performance.	Share data, information, e-learning, e-office, online participation.

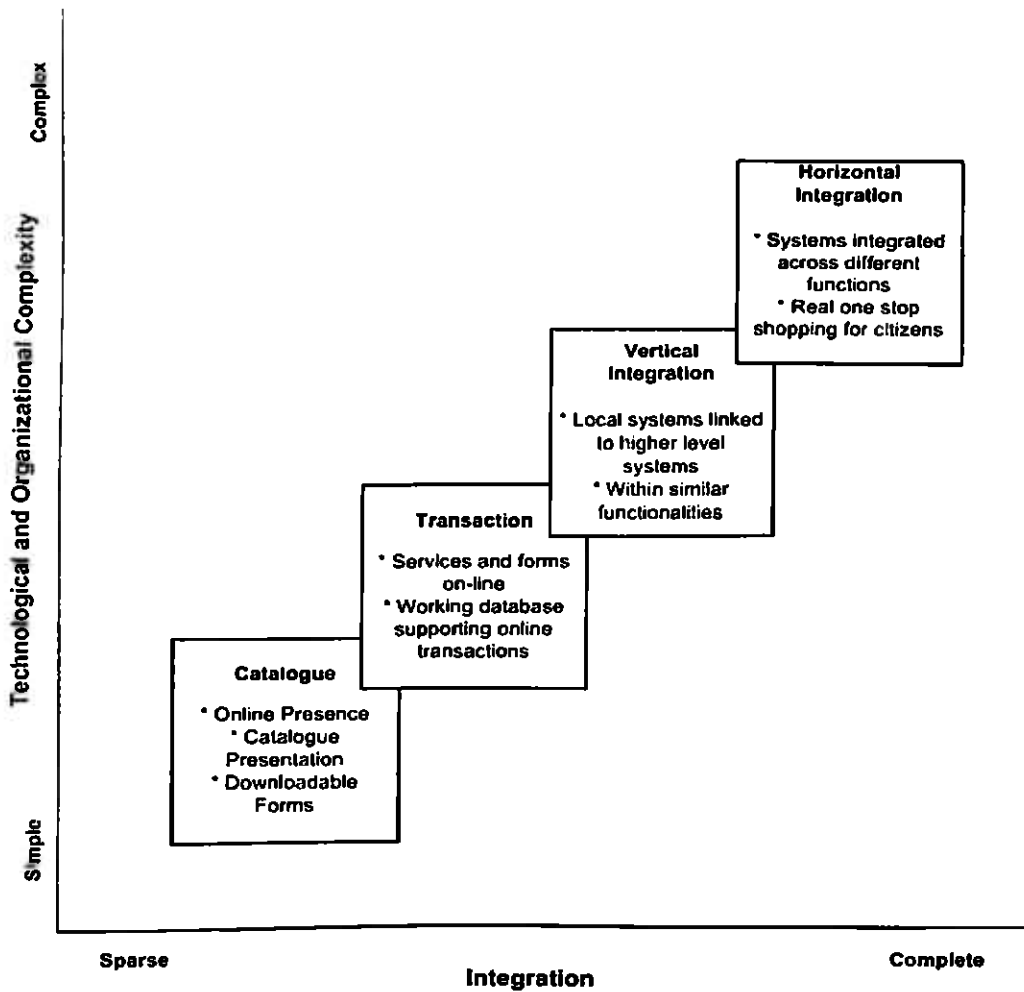
Adopted from Fang (2002)

### 2.1.3 Stages of E-government

Based on technical, organizational, and managerial feasibility, Layne and Lee (2001) regarded e-government as an evolutionary phenomenon and proposed a four-stage model. The four stages, as shown in the diagram and discussed below, are catalogue, transaction, vertical integration, and horizontal integration (Layne, 2001).



Figure 2.1: Layne and Lee's four-stage model of E-government



The diagram above shows that the model is developed by an increasing level of complexity and integration.

### 2.1.3.1 Cataloguing

From the diagram above, this level includes establishing a presence on-line through posted information and downloadable forms where citizens and businesses have come to expect it. The functionality of the cataloguing stage encompasses providing least but efficient amount of information to users, and the cataloguing should be organized at first on basis of departments and then by service, actions, or events (Layne and Lee, 2001)

### **2.1.3.2 Transaction**

This stage involves allowing for dealing with the government directly through on-line interfaces with live databases. According to Andersen and Henriksen, (2006) It provides the beginning of e-Government as an entity changing the way people interact with their providing only facts to becoming an active respondent, i.e. two-way communication, forms are filled out and government responds with confirmation and receipts, citizens move from passive to active role and can participate in online forums, and the One Stop portal provides service needs rather than citizen traversing numerous sites to find the correct information.

### **2.1.3.3 Vertical integration**

This includes local, state, and federal government to be connected for different functions and services of government which will have permanent changes in government processes and concepts of government. The functionality of vertical integration encompasses local, state, and federal counterpart systems to communicate with each other, a central database or connected web of databases and seamlessly integrate the three levels of government for cross referencing and checking (Layne and Lee, 2001)

### **2.1.3.4 Horizontal integration**

This includes the integration across different functions and services within the same level of government and providing one stop service centers. The functionality of horizontal integration encompasses databases across functional areas to communicate and share information, information obtained by one agency will propagate through out all government functions (Andersen and Henriksen, 2006).

## **2.2 E-government and developing countries**

Digital connectivity, improvement in communication and information technologies is transforming the way of doing business and organizations participation in totality. To

achieve competitive advantage the public and private sector have to reinvent themselves through continuous improvement. (Ndou, 2004)

According to Kaaya (2005) the initiatives to use ICT tools, applications and the Internet to support governance, highlight relationships and build new partnerships within civil society is known as e-government. Although ICT is offering extensive possibilities for the development of e-government, developing countries are still inactive in exploring the potential of e-government. They are faced by various challenges in the development and implementation of the e-government.

As Kenneth (2006), says the gap between the educated and uneducated is very wide in developing countries. Educated people have all the necessary information and resources to be able to use IT. In fact e-government is being implemented with the hope that it will lead to the provision of better services to the citizens. In the remote areas there are no proper roads, school or telephone lines, but through cyber cafes and satellite channels, it is possible to connect people in the remote areas with the entire world. Furthermore it is comparatively cheap to connect with people online rather than on a personal basis.

Developing countries can overcome the barriers with the help of new and innovative technology. Today, developed countries play a major part in promoting technology adoption in the developing countries (Basu, 2004)

As discussed by Jaeger and Thompson (2003), e-government is still facing many challenges as it is in the development process. The government must consider some elements of policy, including authoritarian issues, economic matters and the right of users before designing and executing e-government websites.

### **2.2.1 ICT and developing countries.**

Bhatnagar (2003), states that ICT has the power to identify and rectify some of the key barriers and challenges of entering the global economy. However ICT is also a high risk for developing countries in terms of deepening the digital divide and future

marginalization through the networking revolution. Countries which fail to use ICT tools for development will face some disadvantages especially the gap between economic status and competitiveness. To overcome this issue many developing countries have started to using ICT and encouraging e-strategies. Consequently, e-government initiatives have been successful in many developing countries. However, many other projects have failed. Studies show the success and failure rates of e-government in developing and Middle East countries. One third of projects are a total failure (e.g. the failure of decision support system in East Africa); others partially fail (e.g. the failure of management information system in Eastern Europe) and approximately one-seventh succeed.(Bhatnagar, 2003)

According to Basu (2004), no country whether developed or developing, small or large can ignore the benefits of ICT as it is a major source of modernization. Developing countries can increase their competitiveness by investing in communication technology. Developing countries realize the potential of ICT, not only as a tool of improving governance, but also as a way of improving the living standards of the people. The governments' ICT policy aims to increase information infrastructure. Development of e-government is directly connected with IT infrastructure required to execute e-government. Many developing countries do not have the infrastructure to deploy e-government.

The basic infrastructure is required to maximize the benefits from new technologies in the implementation of e-government. Government should consider all access methods like cellular phone, Internet, email, satellite receivers, among others to ensure that all members of society can be served. The availability of technological and maintenance skills required for successful e-government implementation as well as the ability to use and manage online procedures and functions are required. (Mutula, 2002)

There are three perspectives in which developing countries have viewed information and communication technology. The first one is related to promoting growth of ICT as it plays a vital role in the State's economy and gives the opportunity to enhance economic

growth and employment for countries. The ICT sector is hence a way of earning foreign exchange and offer products and services. The second perspective is the development of ICT for delivering government services. Improving in service delivery is a major issue in developing countries. e-services can improve effectiveness and increase transparency. The third perspective consists of electronic media and communication within society. Governments have to take care of the convergence of different technologies and private control over media. (Bhatnagar, 2003)

According to Chen et al., (2006) 80% of the world's population that lives in developing countries can improve their standard of living through e-government. In reality, the gap among developing and developed countries in IT infrastructure, usage and practices has been widening by the day. In addition to the lack of finances of building up an expensive national information infrastructure on which e-government is to be based, developing countries don't have the sufficient knowledge and ability to develop an e-government initiative.

### **2.3 Factors affecting successful implementation of e-government**

Even though IT cost is going down and there is the availability of good IT infrastructure, there are still barriers hampering the implementation of e-government. The good infrastructure consists of hardware and software that will ensure the security of electronic services to citizens, businesses and employees. Computer security, privacy, and confidentiality of the personal data are the major barriers hampering the implementing of e-government. E-voting for instance is a very sensitive area of e-government and hence it requires extra security to ensure smooth voting process, to securely protect each voter's personal information (Jaeger and Thompson, 2003)

According to Belanger and Hiller (2006) there are some limitations to that achievement of e- government objectives and to its application in every decision making and planning process. Rules, regulations and procedures, technical potentials and consumer feasibility, are included in the limitations.

Recent study of the municipals e-government programs, found that municipals identify the lack of technical, personnel and financial capabilities as a major barrier to development of e-government. Consumer feasibility studies support the ability and willingness of the users to use electronic gadgets. Trust is another important element in determining whether or not the consumer would like obtain goods or services through the Web. Citizens' willingness and capability play a major role to the implementation of a good electronic government. (Lam, 2005)

### **2.3.1 ICT skills of personnel**

The skills required for e-government are not simply technical, as general managers need broad skills to engage in e-government decision making. Necessary skills include not only basic technical understanding (IT literacy) but also an understanding of information management and the information society. Managers must be able to lead (and not be led by) the organization's IT department and outside partners, and they must be able to integrate the organization's ICT strategy with the broader goals of the organisation (Bhatnagar, 2002)

Furthermore, traditional management skills need to be updated and strengthened to deal with the impacts of e-government. Additional competencies are needed in areas such as organizational change, cooperation and collaboration across departments, public-private partnerships, accountability frameworks and performance management. Four specific sets of skills can be identified as essential to successful e-government strategies these are:- information technology (IT) skills; information management (IM) skills; information society (IS) skills, and updated management skills. While the borders of these skill sets are blurred, they provide a useful framework for analysis (Lam, 2005).

In the early phases of online services, when the Internet was relatively unfamiliar, many projects were driven by IT specialists. General Managers lacked interest and/or the required skills. A major challenge is to overcome the view still held by many employees and managers, that e-government skills are technical matters best left to specialists. As

ICT is increasingly integrated into public administrations, a basic knowledge of technology and the Internet is becoming essential for all employees. Basic IT skills include a working knowledge of applications and how they can improve work quality and efficiency (Akman et al., 2005).

At the management level, the adoption of e-government solutions has been hampered by business unit managers' lack of knowledge about how technology can be used as a tool to accomplish or improve government processes. Managers need to be able to work with their organization's information technology and information management experts to match government processes with appropriate technical solutions. Like all employees, managers need basic IT skills to use ICT effectively. But managers also need to be able to understand the possibilities of ICT, to set or manage the information strategy for the organisation and to deal with the impact of e-government on the organisation. They need to understand how new technology works, how it can be incorporated into existing government functions, and how e-government applications can build new government services and products or open new channels of communication. A solid understanding of the options and their strengths and weaknesses will give managers confidence to negotiate and to specify characteristics for developing projects that will work (Bhatnagar, 2002).

Lack of proper training within organizations is also considered as a barrier for e-government implementation. ICT-related skills are important not just for ICT production and service industries, but for the economy as a whole. ICT skills have become a new general skill, like literacy or numeracy, and governments have implemented a range of policies to promote the acquisition of basic and advanced ICT skills across the economy. The e-government initiative increases the importance of the ICT-related skills required by public administration work forces. (Chao and Tong, 2005)

### **2.3.2 ICT Infrastructure and Architecture integration**

Establishing common technical standards and infrastructure can pave the way for greater efficiency within government. Important economies can be gained through a "whole-of-

government” approach, both in terms of reducing redundant systems and by lowering the legal and technological barriers for collaboration across organisations. For example, governments can benefit from scale economies for some common back-office processes, such as human resources management and payroll (Lam, 2005).

In addition, shared infrastructure, for example for authentication of key customer groups, can facilitate individual agency initiatives that would otherwise lack a business case. It can also free agencies to focus on their specific content issues. Shared infrastructure, developed centrally or by a lead agency, can facilitate seamless online services and improve the business case for specific agency initiatives. The use of such infrastructure by agencies can be mandatory or available to be adopted if the infrastructure meets agency needs. For some initiatives, such as whole-of-government portals or secure networks, their value lies in their inclusive nature (Gupta and Jana, 2003).

The issue of harmonization and standards is a complex one, and solutions advanced will develop and change over time. Currently, the need for integrated transactional seamless government services has helped promote the development of middleware solutions and web services a software integrating technology incorporating standards such as Extensible Markup Language (XML) which facilitate the exchange of data between different systems. The promotion of whole of government frameworks, standards and data definitions by e-government co-coordinators will further facilitate specific proposals to develop cross agency integrated services (Belanger and Hiller, 2006)

Disparities in architecture are a major issue in failure of function integration. Different technology policies, utilization of proper technologies, lack of proper application interface and difference in framework create barriers to architecture integration (Lam, 2005).

Many developing countries are facing this problem yet they don't have appropriate ICT infrastructure for E-government development. However an ICT infrastructure does not only consist of telecommunication and equipment. It also requires E-readiness and ICT



literacy (Ndou, 2004). Having education, basic knowledge about IT is necessary to accept and use of E-government services. According to Chen et al., (2006) infrastructure development is necessary before government can consider any project related to E-government. A lack of back-end infrastructure, governments and their employees will face the problem and unable to perform transactional activity and further stages of E-government will be delayed.

According to Chen et al., (2006) harmonization is a particular important element as the current e-government context is in part due to past failures to harmonize systems and standards. Governments continue to make considerable ICT investments and at any point in time will have a wide range of ICT systems in place. However, legacy systems (systems that were designed for specific purposes) can be inflexible, and incompatible systems make it hard to deploy new applications that involve the need for data sharing or other interaction between disparate systems. Legacy systems can also lead to increased costs, for example related to data transfer. In fact, the difficulty of integrating legacy systems with new initiatives can be a major barrier to e-government. Integrating back office information management and information processing systems with the Internet to provide an online interface to clients has been a major preoccupation of e-government efforts (Chen et al., 2006)

Additionally, the security model used is one of the success factors in e- government implementation as it defines the faith and confidence between users and government. However the security model can be a major barrier in technical combination of e-government system. According to Seifert (2003) for e-government, security modules are critical not only for the delivery of services but also for building citizens confidence and trust.

### **2.3.3 Cost of Installation and maintenance**

In terms of funding, the treatment of certain ICT spending as capital rather than recurrent expenditure can be a challenge. Not all ICT expenditure is of a capital or investment nature, but involves maintenance, associated recurrent staffing costs, or small-scale

projects. However, if major projects are not considered as investment, they will need to compete with other more pressing recurrent funding proposals, and in this context will seem to involve large levels of expenditure. In related terms, to the extent that an explicit choice is made, the implementation of e-government is often unlikely to win out in competition with other compelling public policy objectives such as education, security and health. While most e-government proposals will be argued for in terms of programme outcomes rather than in terms of advancing e-government per se, the level of resources devoted to e-government is ultimately a matter for government to determine in the light of their overall priorities (Gupta and Jana, 2003).

Pardo (2000), states that budget time horizons can also pose problems for e-government. Many e-government projects will be multi-year in nature, and thus require commitments to spend resources over a long period, sometimes well beyond the annual or multi-year budgeting horizon. Such projects represent a commitment to spend future revenues, and governments are understandably reluctant to tie up future spending. Projects that do not require such a commitment may be favoured. Finally, the difficulty of measuring costs and potential benefits for e-government projects makes it hard to develop funding cases for projects and compare alternatives in a budget-setting context.

Budgeting rules can also contain a number of rigidities that hold back e-government collaboration by preventing shared funding arrangements. The vertical nature of current arrangements means that it can be difficult to request joint funding, to pay into a project being done by another agency, or to pool funds. There are few mechanisms for shared funding, and it can be difficult to assess the extent to which agencies are benefiting from (and hence should contribute to) a shared project. (Saxena, 2005).

As long as there is no framework for profit sharing, agencies have no incentives to eliminate redundant systems by sharing systems with other agencies unless they can share some of the savings generated. The use of performance-based budgeting can also create disincentives for collaboration, by rewarding independent behaviour at the expense of shared projects. The linked nature of many e-government projects across traditional

programme and organizational lines means that shared budgetary arrangements are essential. On the basis that the bulk of funds for e-government will (and should) be provided through agency budgets, the budget process can be used to promote collaboration of e-government initiatives (Belanger and Hiller, 2006)

In e-government therefore, the major issue is lack of funding. Government funds are not set up according to E-government projects. Due to the lack of financial support E-government projects cannot be successful (Belanger and Hiller, 2006)

### **2.3.4 Changing Technology**

As stated by Carter and Belanger, (2005) technological advancements and the search by suppliers for new markets have resulted in a bewildering array of technical solutions in search of problems to fix. Governments face the challenge of fostering the development of e-government while there is still great uncertainty regarding fast moving technological change, and it is difficult to anticipate future policy impacts in detail. New technologies are tempting because they often promise better solutions and enticing possibilities for business change. More often, however, they promise solutions that purport to enable an organization to implement IT without changing its business processes. It is therefore not surprising that public sector organisations keep trying to develop systems based on new technologies. Experience shows, however, that systems built on emerging and unknown technologies are very susceptible to failure. In some instances the potential benefits might warrant taking such huge risks; most often this is not the case (Gilbert and Littleboy, 2004).

Technical problems also arise from trying to choose a standard before the market has settled on a solution. In 1999, Finland was one of the earliest countries to launch a national electronic identity card that provided digital signatures for secure electronic transactions. Take-up of the card has been much lower than expected mainly due to the lack of public services that currently require public authentication. Another reason for the low take-up, however, is that in trying to develop the most secure standard possible at the time, the government did not take into consideration either the development of private

market technologies or the desired and actual needs of the potential users who are often satisfied with the use, for example, of a simple PIN code. Eventually a stronger market will probably develop for secure transactions, but by then the technological solutions will have likely evolved as well (Lam, 2005)

### **2.3.5 Legal Framework**

The success of e-government initiatives and processes are highly dependent on government's role in ensuring a proper legal framework for their operation. The introduction and uptake of e-government services and processes will remain minimal without a legal equivalence between digital and paper processes. OECD governments are aware of the need for a framework to provide for enforceable electronic transactions, both in the e-government sphere and for electronic commerce, and have taken action. For example, the legal recognition of digital signatures is necessary if they are to be used in e-government for the submission of electronic forms containing sensitive personal or financial information (OECD; Public management policy brief, 2001)

As of 2002, 26 of the 30 OECD countries have passed legislation recognizing digital signatures, though a much smaller number have actually introduced applications beyond a pilot phase. Many are waiting for the private sector to fill the void. Additionally, current public governance frameworks based on the assumption that agencies work alone (for example, in terms of performance management, accountability frameworks, data sharing) can act to inhibit collaboration and information sharing between organizations (Fors and Moreno, 2002).

According to Seifert et al., (2001), complexity of regulations and requirements on agencies can be another barrier; if agencies are unable to determine what is required of them, they may be unwilling to invest in a project that may not conform with requirements. In addition, privacy and security concerns need to be addressed through appropriate legislation and regulations (as well as in practice) before e-government initiatives can advance.

The web of government requirements around ICT procurement, industry support, contract requirements, compliance with security requirements and other standards can increase costs and drag out implementation timetables. Seamless government services involving a number of agencies unavoidably add to the complexity of implementation. The rules and regulations around ICT use can build up, and impose resource obligations on agencies. (Seifert et al., 2001)

Despite the existence of national e-government policy, many governments are trying to make their own definite policies for E- government. Lack of comprehensive course of action and inappropriate step of development may delay the process of e-government program. (Lam, 2005).

Given the pervasive nature of ICT use in government, these requirements can cover acquisition and financing, network operations and security, staffing and skills issues, service design, monitoring and reporting. They are likely to have been issued by a number of agencies, rather than a single agency or the central e-government co-ordinating unit. It would be of value to regularly undertake a review of the overall regulations and requirements that govern ICT acquisition and use. As a first step, identifying these areas would help indicate areas where redundant or overlapping regulations were in place: an agreed process of regular examination would provide an opportunity to get rid of requirements that have outlived their usefulness (Ndou, 2004)

Confusion about what exactly are the requirements on agencies implementing e-government is a related problem. Agencies may need clarification on what they should and should not do, particularly in the areas of data security and technical standards. Especially in the case of small agencies with few resources, the cost of re-developing an e-government project which has adopted the wrong standards is potentially prohibitive. A vicious circle may occur when ignorance of current regulations leads to incorrect development of e-government projects and to the waste of resources, and in turn, result in more regulation (Fors and Moreno, 2002).

Combining existing requirements with clear informal/regulatory guidance is a primary challenge to e-government co-coordinators. Government should address how existing regulations should be clarified and explained to e-governments implementers' and in turn impact the implementation of services.

E-government has the potential to improve collaboration across agencies and organisations, but there are a number of regulatory barriers to collaboration. For example accountability rules, designed to ensure responsible use of public resources by clearly identifying who does what, can impede collaboration as it may be unclear who is accountable for shared projects. Similarly, performance management follows clear distinctions of who did what, and there is little flexibility for evaluating shared projects. Finally, legislation enacted in order to protect the privacy and security of citizens' data can impede data sharing across government (Lam, 2005; Seifert et al., 2001; Seifert, 2003 and Basu, 2004)

### **2.3.6. Other factors affecting the implementation of e-government**

#### **2.3.6.1 Common Vision**

A common vision is essential to e-government as a means to engage and co-ordinate agencies. It also serves to engage political leaders and to impress upon them the importance of e-government. A common vision is not a goal in itself, but a means to achieve policy priorities. In developed countries, most advanced e-government organizations have a vision statement. Such a statement may be linked to political commitment at a higher level, or it may be dependent on a general manager or the head of an IT unit with sufficient determination and resources. Whether the vision is shared across the government or is limited to an individual organization, however, makes a significant difference. No matter how advanced they are in terms of the services that they provide, organizations dependent on their own vision and may not be aware of co-ordination problems that extend beyond their own services (Ndou 2004),

Lacking of collective thoughts and aims creates confusion among governmental agencies and also becomes a part of conflict in responsibilities. It is necessary to have a common

view between government agencies for E-government (Gilbert et al., 2004). According to Moon and Norris (2005), a government-wide vision helps to tie e-government initiatives with broader strategic and reform objectives. It can help promote inter-ministerial coordination, ensure balance and fairness and help to stay the course over a number of years. Having a clear vision of reforms helps to maintain consistency and a sense of purpose. Towards this end, political leaders are key supporters of an e-government vision.

Political leadership serves to diffuse the vision and to give it the added weight. While a vision statement is needed, it is however, not enough. The vision, the rationale and the validation for reform also needs to be communicated throughout the administration (Moon and Norris, 2005).

#### **2.3.6.2 Ownership and authority**

This is an issue regarding ownership and governance. Program management requires solving this matter. Formal project responsibility or the strength of accountability is the major reason for a lack of ownership and authority (Lam, 2005)

#### **2.3.6.3 Implementation guidance.**

Whereas central government sets up a vision of e-government, now agencies and other management require direction on how to transform that vision into reality. Without guidance it is difficult to establish good e-government. (Seifert, 2003)

#### **2.3.6.4 Data standards**

According to Kamar (2006), there are several aspects related to data or information requirements and they relate to the different phases of the e-government implementation process. In the first phase, internal automation of systems has proven to be a difficult task requiring substantial transformation. Over time, standards have evolved with regard to data collection, coding and processing within countries and government sectors. At present, in most countries, processing of quantitative data is being done using computer

technology. However, data collected may still be used for the purpose of a single sector or entity. Reporting to other entities in the system only occurs on an aggregated basis.

This practices lead to duplication and redundancy in the government system. Data standardization then becomes a huge issue, as it points to the main source of reduction of transaction costs, that is re-use of information across the system. E-government provides the opportunity to government agencies to have their individual systems talk to each other. The importance is not on the internal standard of the individual authority, but on an agreed standard across agencies and mandatory posting of agency owned data that can be used by others. This means that they will have to work on a common language to share data. At first, this may simply involve reaching agreement on some key identifiers, like geographic location or personal or institutional identifiers (Kaaya, 2005)

As the e-government system evolves, more and more information could be shared. The ideal is to be able to depend on as little repetition as possible in the data capturing and maintenance process and re-use the same data as often as possible among different agencies and other users, guaranteeing security and safety issues. This can also enhance the capacity of the private sector in many outsourcing activities to manage services for citizens and companies as well as government agencies (Lam, 2005).

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In this light, standards regarding data collection, coding and processing will have to be reviewed together with the roles and responsibilities of the individual institutions. This is not an easy task, just the issue of identical geographic coding can already pose major challenges, when, over time, different agencies have defined their administrative regions differently on the basis of different geographic, economic or social criteria.

E-government is not just about linking different agencies on a network; it is about transforming existing systems in order to benefit from the networked application. Coordinating this virtual organization composed of networked agencies requires trust among these agencies and demands strong leadership (Kaaya, 2005)



Other aspects related to data requirements refer more to the content provision of government information and become highly relevant in the publishing, interaction and transaction phases. This also refers to standards security, safety and standards on identification or authentication for example when issuing smart cards (Jaeger and Thompson, 2003)

It is not easy to issue new standards when many organizations already have their own and may feel that after long debate no single agency is completely satisfied with the final result. These aspects, data standardization, institutional coordination and merging of databases, information provision and the types of interaction and transaction that can take place, tend to be all highly contested by the same public administration, as it may redefine the role of institutions and affects the lives and positions of employees. Again, leadership is critical to push these issues through. Lessons learned by other institutions on setting data standards and coordination mechanisms for increased interaction will prove to be very useful for future e-government initiatives. Standardization in data formats and the adoption of a common data model is required to eliminate this issue (Lam, 2005).

#### **2.3.6.5 Organization motivation**

According to Chao and Tong (2005), leadership is not just about motivating people and creating incentives and opportunities for actions. E-government is also about change, and many e-government advances to date have been driven by the enthusiasm of individuals and individual agencies. But there can be considerable resistance to change particularly to the level of change required if some of the more significant efficiencies and service enhancements through seamless online services are to be realized. While the form and arrangements adopted are determined in the context of each country's political and administrative environment and will continue to evolve as lessons are learnt, leadership is an essential ingredient of e-government in order to motivate and break down barriers to change.

Sustained leadership is important at all levels of the e-government cycle. At the early stages, there is a need to gain acceptance of concepts and benefits, and to put in place

frameworks to sustain momentum and structure implementation in an efficient manner. As more complex transactional services are implemented, the need for leadership and support will continue, particularly as benefits may take time to emerge. Leadership is a catalyst for innovation. Broad reforms require perspectives and pioneers able to translate the vision into action. E-government leaders should learn how to put in place the right administrative mechanism to support agencies in the e-government implementation (Yildiz, 2007)

There are many styles of leadership. Different kinds of leadership may co-exist and be a key to success, depending on the stage of the e-government process. In a very early stage of e-government development the leader may obtain views on what needs to change, share a common vision with the personnel and evaluate new ideas. In a more mature stage, selling the benefits of a vision and creating personnel commitment to it are also required (Chao and Tong, 2005)

Leadership can be exercised at all levels of the organisation. Political leadership has an important role in shaping and backing e-government initiatives. Political leaders contribute to the establishment of the e-government vision, define priorities, filter citizens' needs, make the decisions and provide the will to carry them out. Strong political leadership can make a difference in forcing the momentum for change and easing the reform process. It can also increase management motivation and sense of responsibility (Yildiz, 2007). As Chao and Tong, (2005) state, leadership can also articulate a unifying theme that can propel the e-government initiative through all the necessary steps. It is important to understand that results are most likely when leaders elevate the public profile of their vision and press for its successful implementation by tying it to broader government policy agendas.

Many organizations are in a learning process about e-government and how it can be applied in their own organizations. They are not well prepared for initiative of e-government because they see it as a stressful exercise and hence they are not ready to accept this change. This factor can be overcome through the provision of leadership to

the entire organisation (Lam 2005).

Governments are increasingly asked to translate a general vision into effective public services while facing time constraints, lack of resources and political pressures. The cost of losing the reform momentum can be high. The role of communicating the need for reform therefore depends on e-government advocates and leaders throughout government (Backus, 2001)

#### **2.3.6.6 Government transformation.**

New work practices, new ways of processing and performing tasks are introduced in the organisation at a very high frequency. E-government not only save costs and improve service quality, it is also reinvents the processes and functions. Change management refers to the change management approach and resistance to change. Change management approach includes the procedures established within organizations. Culture is a key issue of organizational change and a big step towards a higher capacity to change (Ndou, 2004)

One of barrier in E-government implementation is the slow speed of government reform. Some of agencies have found it difficult to run with the speed of reform. It is necessary to change state of mind rather then governments focus to move towards more technology oriented environment. (Lam 2005)

Employee's resistance to change is a huge barrier to successful E-government. They believe that ICT would replace them therefore making them redundant. Furthermore, it is very difficult to switch from a traditional way of working by learning new techniques. To overcome these barriers the government can offer some incentives for employees if they are willing to learn and change and government should therefore embrace employees' involvement during all phase of change process. Agencies do not have trained and skilled people to execute E-government projects and also lack an IT training program. (Lam, 2005). The lack of ICT skills in public sector is a major challenge of an e-government program. This problem arises in developing countries, where unskilled staff and

insufficient resources have been a problem for years. (Ndou, 2004)

### **2.3.6.7 Privacy**

Government has a responsibility to provide leadership in developing a culture of privacy protection and security. It should provide this leadership through its roles in the development of public policy, as owner and operator of systems and networks, and as a user of such systems and networks. As a user of information systems and networks, government shares a role with businesses, other organizations and individuals for ensuring secure use of the system and network (Grabner and Kaluscha, 2003).

Citizens are unlikely to use e-government services without a guarantee of privacy and security. Governments also have a strong interest in maintaining citizens' trust (e.g. that information provided will not be misused). Ensuring that e-government initiatives are in step with society's expectations in this area is a crucial means of building trust. The challenge facing e-government coordinators and implementers is to respect accepted privacy principles while allowing the benefits of the Internet and other technologies to flow to citizens. This balance is of particular importance when considering seamless government services involving data sharing among agencies (Horst et al., 2007).

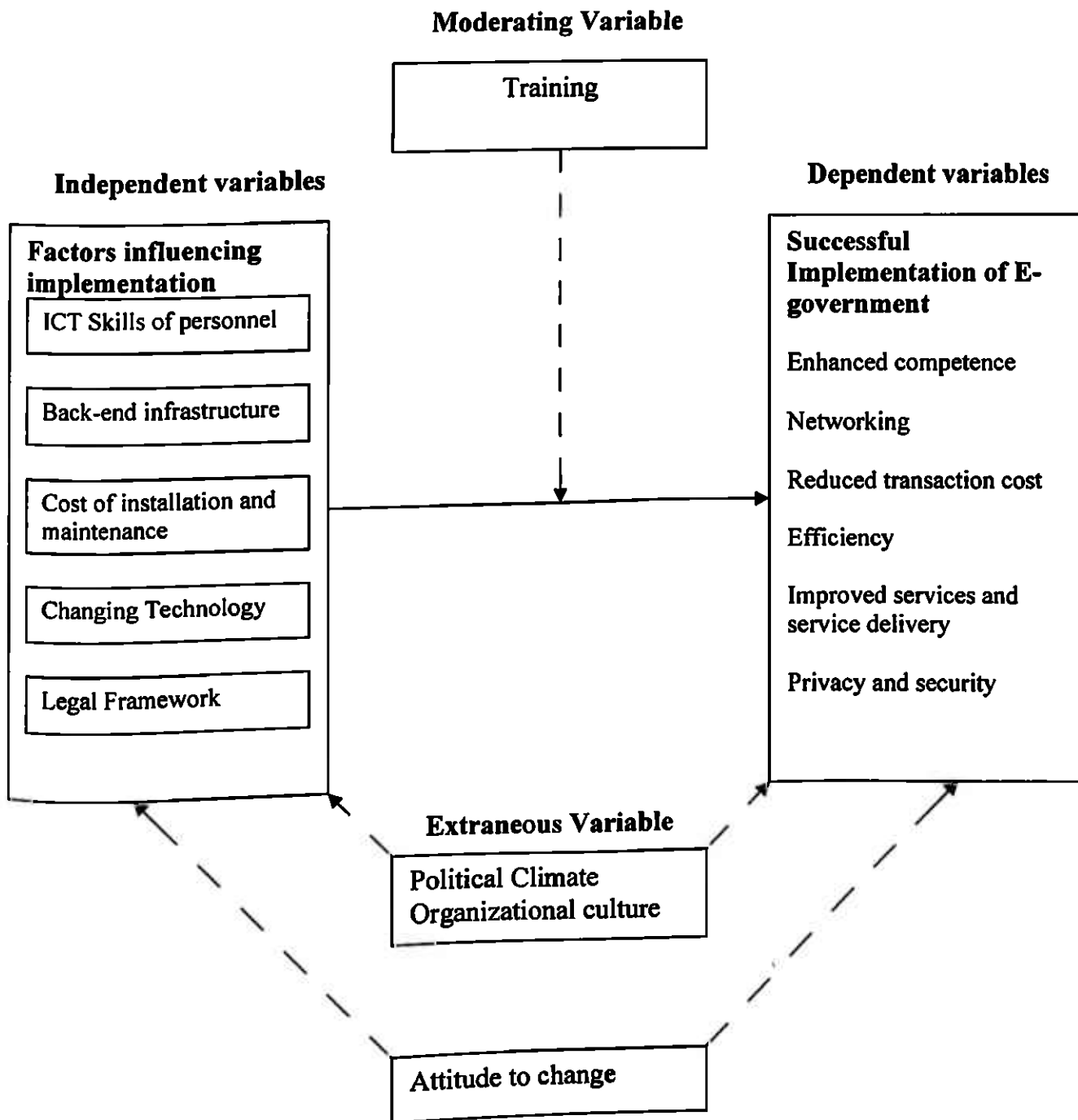
The OECD was the first intergovernmental organization to issue guidelines on international policy for the protection of privacy in computerized data processing. In 1980, the Guidelines on the Protection of Privacy and Transborder Flows of Personal Data (Privacy Guidelines) were adopted as a Recommendation of the OECD Council. They were followed by the 1985 Declaration on Transborder Data Flows, and more recently by the Ministerial Declaration on the Protection of Privacy on Global Networks, adopted by OECD Ministers at the 1998 Ottawa conference, "A Borderless World: Realizing the Potential of Global Electronic Commerce". At that conference, OECD Ministers reaffirmed "their commitment to the protection of privacy on global networks in order to ensure the respect of important rights, build confidence in global networks and to prevent unnecessary restrictions on transborder flows of personal data" (OECD, 2001).

The revised OECD Guidelines for the Security of Information Systems and Networks: Towards a Culture of Security that were adopted by the OECD Council in July 2002, respond to the ever-changing nature of the security environment by promoting the development of a culture of security – that is, a focus on security in the development of information systems and networks and the adoption of new ways of thinking and behaving by all participants when using information systems and communicating or transacting across networks (Grabner and Kaluscha, 2003).

## **2.4 Conceptual Framework**

Below is a diagram showing the conceptualization of the idea. The academic researcher will use conceptualization as a guide to make consistent and logical arguments throughout the research writing. The significant part of conceptualization is that, it guides people to move from the known to the unknown and most importantly helps clarify things that are unclear. Mind mapping and conceptualization will be used to guide and direct the academic researcher into making arguments and drawing conclusions.

Figure 2.2: Conceptual framework of factors influencing the successful implementation of e-government



### 2.4.1 E-Government

From the diagram above, it can be said that e-government is still facing many challenges as it is in the development process. Government must consider some elements of policy, economic matters and the right of users, innovation of technology and organizational idea

compounded with other barriers, before designing and executing E-government websites. Therefore the government and citizen face the big challenges to overcome these obstacles and maximize the benefits of using e-government.

#### **2.4.2 Factors influencing the successful implementation of e-government**

There are several factors that can be considered to influence the effective e-government implementation. The skills required for e-government are not simply technical, as general managers need broad skills to engage in e-government decision making. Necessary skills include basic technical understanding (IT literacy) but also an understanding of information management and the information society. Furthermore, traditional management skills need to be updated and strengthened to deal with the impacts of e-government. Additional competencies are needed in areas such as organizational change, cooperation and collaboration across departments, public-private partnerships, accountability frameworks and performance management.

Establishing common technical standards and infrastructure is among the greater challenges in the implementation of e-government. Government can help by providing a technological framework for delivering electronic services. A national approach may range from shared systems to common rules and/or standards governing separate, but connected systems. Harmonization is a particular important element as the current e-government context is in part due to past failures to harmonize systems and standards. Governments continue to make considerable ICT investments and at any point in time will have a wide range of ICT systems in place. However, legacy systems (systems that were designed for specific purposes) can be inflexible and incompatible systems which make it hard to deploy new applications that involve the need for data sharing or other interaction between disparate systems. Important economies can be gained through a whole-of-government approach, both in terms of reducing redundant systems and by lowering the legal and technological barriers for collaboration across organizations. For example, governments can benefit from scale economies for some common back office processes, such as human resources management and payroll. To be able to achieve

successful implementation of E government development of basic infrastructure is crucial so as to realize the advantages of new technologies (Ndou, 2004).

The lack of adequate financial resources is a major barrier to implement of E-government (Ndou, 2004). Governments operate within vertical funding structures, in accordance with the core public management principle of holding an agency accountable for achieving organizational objectives and giving it the resources to accomplish those objectives. However, such budgetary frameworks may not take into account the specific needs of certain e-government projects, particularly those involving long-term funding requirements and collaboration across agencies. In order to maximize the benefits of e-government financing issues must be addressed.

Technological advancements and the search by suppliers for new markets have resulted in a bewildering array of technical solutions in search of problems to fix. Governments face the challenge of fostering the development of e-government while there is still great uncertainty regarding fast moving technological change, and it is difficult to anticipate future policy impacts in detail. New technologies are tempting because they often promise better solutions and enticing possibilities for business change. More often, however, they promise solutions that purport to enable an organization to implement it without changing its business processes. It is therefore not surprising that public sector organizations keep trying to develop systems based on new technologies. Experience shows, however, that systems built on emerging and unknown technologies are very susceptible to failure. In some instances the potential benefits might warrant taking such huge risks; most often this is not the case. For the successful implementation of E-government, common definition of technology standards should be followed by all government agencies. Technology standardization not only covers platform and security issues but also provides regularity of data exchange when data is transferred between government agencies. Government must establish technology standards that will facilitate interoperability among government agencies. With the help of some form of controlled standardization, individual E- government may produce their own set of standards, which help them to take other initiatives. (Lam, 2005)



The success of e-government initiatives and processes are highly dependent on government's role in ensuring a proper legal framework for their operation. The introduction and uptake of e-government services and processes will remain minimal without a legal equivalence between digital and paper processes. Governments are aware of the need for a framework to provide for enforceable electronic transactions, both in the e-government sphere and for electronic commerce, and have taken action. Establishment of security and legal transformation is required to ensuring the privacy, security and legal acknowledgment of electronic signatures. For this reason, governments the world over need to design secure transactions between agencies and individuals (Ndou, 2004). In the development of e-government practices and principles over the years, privacy and security have become key factors to ensure success. Both of these are important issues due to the changing nature of technologies and the way people react and use these technologies. Beyond privacy there are the security issues on a broader scale, where we are seeing the rise in spam, spy ware, ad-aware, phishing, identity fraud and a host of other hacker activities (good or bad) that makes people uneasy when going online. Governments who have evolved e-government and digital strategies have put a lot of emphasis on the importance of security and on ensuring that secure networks are viable

To the greatest extent possible, citizens should be able to carry out maximum transaction on one point centre. This helps in the reduction of the total cost required to undertake transactions with the government. This is only possible when governments provide one stop centers and allow citizens to use e-government portals for multiple functions. (Fang, 2002).

Today the use of IT is increasing government competency by making its internal operations, infrastructure, connection and information flow more simple and convenient. Currently intranet helps to share general client's records, proficiency, and also gives power for problem solving with different governmental bodies. These facilities ensure quicker information flow, faster and cheaper good quality goods and service delivery, improved result oriented process.

We are networked in ways we did not fathom only a few years ago. Yet, this is just the beginning of the next stage of change in the ICT world. Although there are people who try to predict future technologies, there is no way one can do so with absolute certainty for as Austrian-English philosopher, Karl Popper (2002), points out in his evolutionary epistemology, we cannot predict future events with certainty. One thing we know of certain is that the Internet and new technologies have given people opportunities to communicate and exchange information globally and they want to interact with their governments using these technologies.

Today the use of IT is increasing government competency by making its internal operations, infrastructure, connection and information flow more simple and convenient. Currently intranet helps to share general client's records, proficiency, and also gives power for solving problem with different governmental bodies. These facilities ensure quicker information flow, faster and cheaper goods and service delivery, improved result oriented process. Different expert system may help to build an instant process and assures benefits for business and government itself by plummeting costs (Ndou, 2004).

## **2.5 Summary of literature review**

This chapter has extensively covered the factors influencing the successful implementation of e-government. To be able to achieve successful implementation of e-government development of basic infrastructure is crucial so as to achieve the advantages of new technologies (Ndou, 2004). There is also a need for common vision of e-government goals and directions as well as a national agenda or strategic framework for central government (Lam, 2005). It is also vital to understand that every e-government project needs to establish an appropriate strategy to be followed during its implementation (Ndou, 2004). E-government sites should be simplified so that one can easily find the required information (Fang, 2002). Establishing security and legal transformations are required to ensure the privacy, security and legal acknowledgment of electronic signatures. For this reason governments all over the world need to design secure transactions between agencies and individuals (Ndou, 2004). To the greatest

extent possible, citizens should be able to do maximum transaction from one central point. This is possible when governments provide one stop centers and allow citizens to use e-government portal for multiple purposes (Fang, 2002). The availability of appropriate skills is necessary for successful e-government implementation (OECD, 2001). Project leadership plays a great role to manage the entire process and support. Top leadership involvement will ensure the success of the implementation of e-government. (Silcock, 2001).

# **CHAPTER THREE**

## **RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter presents the methodology, which was used to carry out the study. It further describes the type and source of data, the target population and sampling methods and the techniques that were used to select the sample size. It also describes how data was collected and analysed. The suitable methodology in this study gave the guidelines for information gathering and processing.

### **3.2 Research Design**

The descriptive method of research was used for this study. To define the descriptive type of research, Creswell (1994) stated that the descriptive method of research is to gather information about the present existing condition. The emphasis is on describing rather than on judging or interpreting. The descriptive approach is quick and practical in terms of the financial aspect. Moreover, this method will allow a flexible approach, thus, when important new issues and questions arise during the duration of the study, further investigation will be conducted.

For this research, two types of data were gathered. These include the primary and secondary data types. The primary data was derived from the answers the participants give during the survey process. The secondary data on the other hand, was obtained from published documents and literatures that are relevant to the study. With the use of the survey questionnaire and published literatures, this study took on the combined quantitative and qualitative approach of research. By means of employing the combined approach, the researcher was able to obtain the advantages of both quantitative and qualitative approaches and overcome their limitations.

### **3.3 Target Population**

Target population as defined by Borg and Crall (1959) is a universal set of the study of all members of real or hypothetical set of people, events or objects to which an investigator wishes to generalize the result.

The target population is for this study was 560 ICT officers. These were ICT officers under the Directorate of e-government (DeG) working under the ministries within the government of Kenya. As discussed earlier in chapter one, DeG is in charge of all ICT related issues within the government of Kenya.

### **3.4 Sampling procedure**

For this study, simple random sampling technique was used to select the sample to be included in the study. The method was chosen because every element in the population (ICT officers) has an equal chance of being selected as the sample. According to Sekaran (2003), simple random sampling has the least bias and will offer the most generalization and hence for the study to be more representative, it is important that the right method is chosen.

Mugenda and Mugenda (2003) states that for descriptive studies 10% of the accessible population is a representative sample. This therefore means that out of the 560 officers the sample size will be 56 ICT officers.

### **3.5 Methods of Data collection**

The survey questionnaire was used as the main data-gathering instrument for this study (See Appendix 2). According to Saunders (2003), questionnaire can be used for both descriptive and explanatory research. Since this is a descriptive research it helps to identify and describe the variability in different phenomena through attitude, opinion and questionnaire of organizational practices

Self-administered questionnaires were distributed to the various respondents and later

collected after a period of one week. The questionnaire had both open and closed ended questions. For the open ended questions, space was provided for relevant explanation by the respondent, thus giving them freedom to express their feelings. This method was considered effective to the study in that; it created confidentiality. The presence of the researcher was also not required as the questionnaire was self-administered.

The quantitative section of the instrument utilized both a nominal and a Likert-type scale format. A 5 point Likert scale ranging from 1= strongly agree to 5= strongly disagree was used as answers to statement-like questions. The Likert-type format was selected because according to Kiess & Bloomquist (1985), the format yields equal-interval data, a fact that allows for the use of more powerful statistical statistics to be used to test hypotheses.

The questions were presented in two parts; part one were questions aimed at getting demographic information about the respondents while the second part was to establish the various factors that affect the implementation of e-government. Questions related to each objective were formulated to exhaustively address each issue.

### **3.6 Validity and reliability**

According to Sekaran (2000) reliability of a research work indicates the extent to which the research work is without bias (error free) and hence offers consistent measurement across time and across the various items in the instrument. In order to ensure the reliability of the instrument, a pilot study was conducted using a panel of five ICT experts. These experts were asked to review the instrument and to make recommendations for improvement. These recommendations were then incorporated into a second draft of the instrument which was then given to a small sample of ten respondents. These respondents were not included in the final study. The questionnaire was then corrected before the final distribution.

Validity is the ability of a chosen instrument to measure what it is intended to measure.

For example, when a set of questions is asked in hope to explore an idea or concept, there is no assurance that the concept that needs to be measured is actually considered and not something else. To ensure the validity of the study, data was collected from the reliable sources; that is ICT Officers who are directly involved with the implementation of e-government. The language used on the questionnaire was also kept simple to avoid any ambiguity and misunderstanding. The researcher obtained authority from relevant heads of sections/departments of the organization before distributing the questionnaires.

### **3.7 Methods of Data Analysis**

The responses to a single Likert items were treated as ordinal data, because, especially when using only five levels, one cannot assume that respondents perceive the difference between adjacent levels as equidistant.

Descriptive survey statistics such as frequency Distribution tables, mode, percentages and relative mean rank score for each category was used to systematically and meaningfully display data to provide adequate statistical support to the findings. For questions whose responses are interval; the mean, standard deviation and range (min/max) were calculated.

For the open ended questions which yielded qualitative data, content analysis was used. Analysis of qualitative data is not simple, and although it does not require complicated statistical techniques of quantitative analysis, it is nonetheless difficult to handle the usually large amounts of data in a thorough, systematic and relevant manner. All statistical tests will be conducted in the statistical program; Statistical Package for the Social Sciences, SPSS.

### **3.8 Operationalisation table**

For many fields, such as social science, which often use ordinal measurements, Operationalization is essential. It determines how the researcher will measure an emotion or concept

Below is a table showing the exact measuring method which was used or this study, and allows other scientists to follow exactly the same methodology. Operationalization also sets down exact definitions of each variable, increasing the quality of the results, and improving the robustness of the design.



Table 3.1: Operationalization of variables

Objectives	Variables	Indicators	Measurement	Measurement Scale	Study Design	Tools of Analysis
1. To establish the influence of ICT skills personnel on the successful implementation of e-government	<u>Independent Skills</u>	Level of IT training of personnel	Certificate Diploma Degree	Ordinal	Correlation	Measures of Central Tendency (Mean)
	<u>Dependent Implementation of e-government</u>					
	Enhanced Competence	Speed at which services are delivered	Less than 1 hour 1-24 hours More than 24 hours	Ordinal	Descriptive	Measures of Central Tendency (Median)
	Networking	Links to other organizations	Less than 5 5-10 More than 10	Ordinal	Descriptive	Measures of Central Tendency (Median)
	Reduced transaction Cost	Amount of money saved	Less than 1 Million 1-5 Million More than 5 Million			
	Efficiency	Consistency	More than 75% 50-75% Below 50%	Ordinal	Descriptive	Measures of Dispersion (Standard Deviation)
	Improved services and service delivery	Accessibility of Services	More than 75% 50-75% Below 50%	Ordinal	Descriptive	Measure of Dispersion (Standard Deviation)
	Privacy and security Government	Availability of data only for authorized users	More than 75% 50-75% Below 50%	Ordinal	Correlation	Measures of Central Tendency (Median)

2. To determine the impact of the platform of ICT infrastructure to the successful implementation of e-government	<u>Independent</u> Platform of ICT Infrastructure	Type of platform used	x86 x86-64 other	Nominal	Descriptive	Measures of Central Tendency (Mean)
3. To establish the influence of cost of installation and maintenance on the successful implementation of e-government.	<u>Independent</u> Cost of Implementation and Maintenance	Amount spent on installation and maintenance	More than 10million 5-10 million 0- 5 million	Ordinal	Descriptive	Measure of dispersion (Standard deviation)
4. To establish the impact of changing technology on the successful implementation of e-government	<u>Independent</u> Changing Technology	Frequency of change in technology	Less than 2 years 2-4 years More than 4 years	Ordinal	Descriptive	Measures of Central tendency (Mean)
5. To establish the influence of the legal framework on the successful implementation of e-government.	<u>Independent</u> Legal Framework	Type and Number of ICT laws/policies	Existing Laws None 1-5 More than 5	Ordinal	Descriptive	Measure of dispersion (Standard deviation)

# CHAPTER FOUR

## DATA PRESENTATION AND ANALYSIS

### 4.1 Introduction

This chapter deals with data analysis and interpretations of research findings. A descriptive survey research design was used and data findings were analyzed using SSPS and presented using frequency tables, mean, standard deviations, and for each category to systematically and meaningfully display data and to provide adequate statistical support to the findings. For questions whose responses are interval; the means and standard deviations were calculated to determine the statistical variations. The chapter is divided into two sections which include: demographics information of respondents and the information on factors influencing the successful implementation of e-government. The study realized a 100% response rate.

### 4.2 General Information of the respondents

The demographic factors used in this study included the position held by the respondent in the department, the respondents' level of education, the period of service and the level of IT training as indicated in the Table.

*Table 4.1: General Information of the Respondents*

DESCRIPTION		FREQUENCY	PERCENT	CUMULATIVE PERCENT
Position in Department	Others Specify	19	33.9	33.9
	Assistant Supervisor	11	19.6	53.6
	Supervisor	12	21.4	75.0
	Head of Department	14	25.0	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
Highest Level of Education	Certificate	5	8.9	8.9
	Diploma	24	42.9	51.8
	Undergraduate	20	35.7	87.5
	Post Graduate	7	12.5	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
Period of Service	4 Years and above	29	51.8	51.8
	2 - 4 Years	16	28.6	80.4
	Less than 2 Years	11	19.6	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
IT Training	Degree	5	8.9	8.9
	Diploma	24	42.9	51.8
	Certificate	27	48.2	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	

For positions in the department, in the table above it was observed that 25% of the respondents were holding the head of department positions, 21.4% were supervisors, 19.6% were assistant supervisors and 33.9% held other positions namely technicians and programmers.

On highest level of education completed 12.5% of the respondents had attained post graduate level education, 35.7% had undergraduate degrees, 42.9% had diplomas and 8.9% had achieved certificate level training. This implied that the respondents had no problem in answering the self administered questionnaires reflected literacy for successful implementation of e-government.

Analysis of the period of service in the organization revealed that 51.8% had worked at the organisation for more than 4 years, 28.6% had worked for between 2 to 4 years while 19.6% had been with in the organisation for less than two years.

On Information Technology Training, the survey observed that 8.9% of the respondents had attained degrees in IT, as 42.9% had attained diplomas in IT while only 48.2% had certificates in IT. This confirmed that a large number of the employees had relevant education in other fields and the IT training was just a supplementary for specialized skills building for capacity enhancement.

#### **4.3 Factors influencing the successful implementation of e-government**

The table below presents the factors that the study found to be influencing successful implementation of e-Government from the survey. These factors were rated on a Likert Scale of 1 to 5 where the ratings were as follows: 1 – To No Extent; 2 – To A Small Extent; 3 – Moderate Extent; 4 - To A Large Extent and 5 – To A Very Large Extent as tabulated below. There were five factors subjected ratings to determine the extent to which they influenced e-government. They included ICT skills of personnel, back end infrastructure, ICT cost of installation and maintenance, Change in ICT Technology and the ICT legal framework.

*Table 4.2: Factors Influencing Successful Implementation of E-Government*

DESCRIPTION		FREQUENCY	PERCENT	CUMULATIVE PERCENT
<b>ICT Skills of Personnel</b>	To a very large extent	43	76.8	76.8
	To a large extent	7	12.5	89.3
	Moderate Extent	3	5.4	94.7
	To a small extent	1	1.8	96.5
	To no extent	2	3.6	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<b>Back End Infrastructure</b>	To a very large extent	38	67.9	67.9
	To a large extent	7	12.5	80.4
	Moderate Extent	7	12.5	92.9
	To a small extent	1	1.8	94.6
	To no extent	3	5.4	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<b>Cost of Installation and Maintenance</b>	To a very large extent	40	71.4	71.4
	To a large extent	8	14.3	85.7
	Moderate Extent	6	10.7	96.4
	To a small extent	1	1.8	98.2
	To no extent	1	1.8	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<b>Change in Technology</b>	To a very large extent	38	67.9	67.9
	To a large extent	8	14.3	82.1
	Moderate Extent	6	10.7	92.9
	To a small extent	1	1.8	94.6
	To no extent	3	5.4	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<b>Legal Framework</b>	To a very large extent	40	71.4	71.4
	To a large extent	7	12.5	83.9
	Moderate Extent	5	8.9	92.9
	To a small extent	2	3.6	96.4
	To no extent	2	3.6	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	

The table above presents the ratings reflecting the extent to which the factors influence the success of e-government implementation in by the Directorate of e-Government. From the table it is evident that, 76% respondents agreed on the ICT skills of personnel influenced it to a very large extent, 67.9% on back end infrastructure, and 71.4% on ICT cost of implementation, 67.9% on change in technology, and 71.4% on legal framework with other ratings as shown in the Table.

#### 4.4 Features of e-government that have been Implemented

The table below highlights frequencies and percentage of responses to the features of e-government that have been implemented as was observed.

*Table 4.3: Features of E-Government*

DESCRIPTION		FREQUENCY	PERCENT	CUMULATIVE PERCENT
Existence of Website and Information	No	7	12.5	12.5
	Yes	49	87.5	100.0
	Total	56	100.0	
Electronic Signature Feature	No	53	94.6	94.6
	Yes	3	5.4	100.0
	Total	56	100.0	
Electronic Transactions	No	32	57.1	57.1
	Yes	24	42.9	100.0
	Total	56	100.0	
E-Mail Sign Up Option	No	26	46.4	46.4
	Yes	30	53.6	100.0
	Total	56	100.0	
Online Forms as well as downloadable/printable forms	No	6	10.7	10.7
	Yes	50	89.3	100.0
	Total	56	100.0	
Sources of Archival Information	No	15	26.8	26.8
	Yes	41	73.2	100.0
	Total	56	100.0	
Audio Visual Features	No	44	78.6	78.6
	Yes	12	21.4	100.0
	Total	56	100.0	
Electronic Participation Tools to obtain opinion	No	14	25.0	25.0
	Yes	42	75.0	100.0
	Total	56	100.0	
Security Link features available/indicated	No	46	82.1	82.1
	Yes	10	17.9	100.0
	Total	56	100.0	
Existence of Features to enable access for people with disabilities	No	54	96.4	96.4
	Yes	2	3.6	100.0
	Total	56	100.0	

The table above presents the features of e-government that had been implemented as observed. In to the table, Online forms as well as downloadable/printable forms was

highlighted as the most prominent feature of e-government by majority of respondents represented by 89.3%, this was followed by the existence of a website and information on usage on the website (with search features, “contact us” features) at 87.5% of the respondents. Other features implemented by the majority were e-participation tools to obtain public opinion (polls, surveys, bulletin boards, chat rooms, blogs, web casting and discussion forums etc) at 75%, Sources to archived information (laws, policy documents, priorities etc) at 73.2% and E-mail sign up option, either as a formal list-server or simply for news items at 53.6%. The table also indicated that there are features of e-government that have least been implemented and this was supported by 96.4% of the respondent interviewed, on existence of features to enable access for people with disabilities 94.6% of respondent supported it, on electronic signature feature 82.1% agreed, on security (secure link) feature available/indicated 78.6% on audio and video features and 57.1% on electronic transactions. This is an implication that e- government implementation is still at the early stages of implementation within the directorate of e-government.

#### **4.5 Descriptive presentation, analysis and interpretation of study findings**

The descriptive presentation, analysis and interpretation of study findings focused on the presentation of data gathered in the order of the objectives of the study. This involved reviewing the information, checking and crosschecking of information in order to establish the quality or trustworthiness of the findings, identifying the statistical variations through the relationships of the means and standard deviations and arranging the facts in order. The orders in which the results were presented are chronological, following the order in which the facts were obtained during the study.

The analysis and interpretation concentrated on successful implementation of e-government in terms of ICT skills of personnel, back end infrastructure, ICT cost of installation and maintenance, changing technology in ICT and the ICT legal frameworks as presented in the tables below. The Tables presents both statistical variations determined by the relationships of the means and standard deviations and descriptive statistics in frequencies and percentages of responses to research questions.

#### 4.5.1 ICT skills of personnel and E-government

Table 4.4 below present the statistical variations of the variables ICT of Personnel and E-Government based on the relationships of the means and standard deviations along with the table 4.5 which is the percentage analysis of the same.

*Table 4.4: Statistical Variations of ICT Skills of Personnel and E-Government*

		ICT skills are needed for the successful implementation of e-government	ICT officers in department have required basic skills	Staff are frequently trained to handle new ICT processes and activities	Capacity building efforts attend to both organizational capacity building and professional skills upgrade	The management conducts Organizational Capacity Assessment (O.C.A)	The results of the Organizational Capacity Assessment form the basis of training of personnel
N	Valid	56	56	56	56	56	56
	Missing	0	0	0	0	0	0
Mean		1.04	1.20	3.71	3.46	1.64	3.95
Standard. Error of Mean		.025	.054	.170	.157	.126	.162
Mode		1	1	5	4	1	5
Standard. Deviation		.187	.401	1.275	1.175	.943	1.212
Variance		.035	.161	1.626	1.381	.888	1.470
Range		1	1	4	4	4	3
Minimum		1	1	1	1	1	2
Maximum		2	2	5	5	5	5
Sum		58	67	208	194	92	221

In the table 4.4 above, ICT skills of personnel are needed for the successful implementation of e-government had a mean of 1.04 with a standard deviation of 0.187; ICT officers in department had required basic skills had a mean of 1.20 and standard deviation of 0.401; Staff are frequently trained to handle new ICT processes and activities mean was 3.71 and Standard. Deviation was 1.275; Capacity building efforts attend to both organizational capacity building and professional skills upgrade had a mean of 3.46 and standard deviation of 1.175; The management conducts organizational capacity assessment (O.C.A) mean had a of 1.64 and a standard deviation of 0.943; The results of the organizational capacity assessment form the basis of training of personnel had a mean of 3.95 and standard deviation of 1.212.



*Table 4.5: Percentage Analysis of ICT Skills of Personnel and E-Government*

DESCRIPTION		FREQUENCY	PERCENT	CUMULATIVE PERCENT
<i>ICT skills are needed for the successful implementation of e-government</i>	Agree	2	3.6	3.6
	Strongly Agree	54	96.4	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>ICT officers in department have required basic skills</i>	Agree	11	19.6	19.6
	Strongly Agree	45	80.4	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>Staff are frequently trained to handle new ICT processes and activities</i>	Strongly Disagree	20	35.7	35.7
	Disagree	16	28.6	64.3
	Neutral	7	12.5	76.8
	Agree	10	17.9	94.6
	Strongly Agree	3	5.4	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>Capacity building efforts attend to both organizational capacity building and professional skills upgrade</i>	Strongly Disagree	7	12.5	12.5
	Disagree	29	51.8	64.3
	Neutral	10	17.9	82.1
	Agree	3	5.4	87.5
	Strongly Agree	7	12.5	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>The management conducts Organizational Capacity Assessment (O.C.A)</i>	Strongly Disagree	1	1.8	1.8
	Disagree	4	7.1	8.9
	Agree	20	35.7	44.6
	Strongly Agree	31	55.4	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>the results of the Organizational Capacity Assessment form the basis of training of personnel</i>	Strongly Disagree	26	46.4	46.4
	Disagree	14	25.0	71.4
	Neutral	3	5.4	76.8
	Agree	13	23.2	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	

The table above gives the percentage analyses of the ICT skills of personnel and successful implementation of e-government, where it was observed that 96.4% of respondents strongly agreed that ICT skills are needed for the successful implementation of e-government, 80.4% strongly agreed that ICT officers in department had the required skills to perform their duties, 55.4% strongly agreed while 35.7% agreed that the management conducts Organizational Capacity Assessment (O.C.A). However, on whether the results of the Organizational Capacity Assessment formed the basis of training of personnel 46.4% strongly disagreed while 25% disagreed. Similarly, 35.7%

strongly disagreed as 28.6% disagreed that staff were frequently trained to handle new ICT processes and activities. Additionally, 12.5% strongly disagreed and 51.8% disagreed that capacity building efforts were attended to both for organizational capacity building and professional skills upgrade.

#### 4.5.2 Back end ICT infrastructure and E-Government

The Tables present the statistical variations of the variables Back End ICT Infrastructure and E-Government based on the relationships of the means and standard deviations and the second Table is for the percentage analysis of the same.

*Table 4.6: Statistical Variations of Back end ICT infrastructure and E-Government*

		Well structured ICT infrastructure support e-government communication with citizenry	Infrastructural development in government ICT sector facilitated successful implementation of e-government	The role of ICT infrastructure for successful implementations of e-government is the benefit of new technology	Communication development in government ICT sector helps in implementation of e-government
N	Valid	56	56	56	56
	Missing	0	0	0	0
Mean		1.45	1.91	1.39	1.29
Standard. Error of Mean		.111	.038	.127	.110
Mode		1	2	1	1
Standard. Deviation		.829	.288	.947	.825
Variance		.688	.083	.897	.681
Range		3	1	3	3
Minimum		1	1	1	1
Maximum		4	2	4	4
Sum		81	107	78	72

From table 4.6 above well structured ICT infrastructure support e-government communication with citizenry had a mean of 1.45 and a standard deviation of 0.829; Infrastructural development in government ICT sector facilitated successful implementation of e-government had a mean of 1.91 and a standard deviation of 0.288; The role of ICT infrastructure for successful implementation of e-government is the benefit of new technology had a mean of 1.39 and standard deviation of 0.947 while

communication development in government ICT sector helps in implementation of e-government had a mean of 1.29 and a standard deviation of 0.825.

*Table 4.7: Percentage Analysis of Back End ICT Infrastructure and E-Government*

DESCRIPTION		FREQUENCY	PERCENT	CUMULATIVE PERCENT
<i>Well structured ICT infrastructure support to e-government communication with citizenry</i>	Disagree	3	5.4	5.4
	Neutral	3	5.4	10.7
	Agree	10	17.9	28.6
	Strongly Agree	40	71.4	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>Infrastructural development in government ICT sector facilitate the successful implementation of e-government</i>	Agree	51	91.1	91.1
	Strongly Agree	5	8.9	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>The role of ICT Infrastructure for Successful implementation of e-government is the benefit of new technology</i>	Disagree	6	10.7	10.7
	Agree	4	7.1	17.9
	Strongly Agree	46	82.1	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>Communication development in government ICT sector helps in implementation of e-government</i>	Disagree	4	7.1	7.1
	Neutral	1	1.8	8.9
	Agree	2	3.6	12.5
	Strongly Agree	49	87.5	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	

This implies that infrastructural as well as communication development is pivotal to the successful implementation of e-government as it facilitates communication with citizenry.

#### **4.5.3 Cost of Installation and Maintenance and E-Government**

The table 4.8 below presents the statistical variations of the variables ICT cost of installation and maintenance and e-government based on the relationships of the means and standard deviations along with table 4.9 which shows the percentage analysis of the same data.

**Table 4.8: Statistical Variations of Cost of installation and maintenance of ICT tools and e-government**

		<b>Cost of ICT installation and maintenance too high</b>	<b>Pooling of resources between different government agencies occurs due to cross-cutting nature of e-government</b>	<b>The government partners with private sector to share costs of ICT installation and maintenance</b>	<b>Many e-government projects are multi-year in nature and well beyond annual budget</b>
N	Valid	56	56	56	56
	Missing	0	0	0	0
Mean		1.34	3.41	2.25	1.21
Standard. Error of Mean		.118	.167	.142	.083
Mode		1	4	2	1
Standard. Deviation		.880	1.247	1.066	.624
Variance		.774	1.556	1.136	.390
Range		3	4	4	3
Minimum		1	1	1	1
Maximum		4	5	5	4
Sum		75	191	126	68

The table above shows that the cost of ICT installation and maintenance too high supported by a mean of 1.34 and a standard deviation of 0.880; Pooling of resources between different governments agencies occurs due to cross-cutting nature of e-government had a mean of 3.41 and standard deviation of 1.247; The government partners with private sector to share costs of ICT installation and maintenance had a mean of 2.25 and standard deviation of 1.066; Many e-government projects are multi-year in nature and well beyond annual budget had a mean of 1.21 and standard deviation of 0.390. This implies that the government is engaging in collaboration within its agencies and with private sector to deal with the high costs of installation and maintenance of ICT tools.

The table 4.9 below shows a percentage analysis of the same information above.

**Table 4.9: Percentage Analysis of Cost of installation and maintenance of ICT tools and e-government**

DESCRIPTION		FREQUENCY	PERCENT	CUMULATIVE PERCENT
<i>Cost of ICT installation and maintenance too high</i>	Disagree	5	8.9	8.9
	Agree	4	7.1	16.1
	Strongly Agree	47	83.9	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>Pooling of resources between different government agencies occurs due to cross-cutting nature of e-government</i>	Strongly Disagree	3	5.4	5.4
	Disagree	40	71.4	76.8
	Agree	3	5.4	82.1
	Strongly Agree	10	17.9	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>The government partners with private sector to share costs of ICT installation and maintenance</i>	Strongly Disagree	3	5.4	5.4
	Disagree	7	12.5	17.9
	Neutral	1	1.8	19.6
	Agree	35	62.5	82.1
	Strongly Agree	10	17.9	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>Many e-government projects are multi-year in nature and well beyond annual budget</i>	Disagree	1	1.8	1.8
	Neutral	3	5.4	7.1
	Agree	3	5.4	12.5
	Strongly Agree	49	87.5	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	

#### 4.5.4 Changing technology and E-Government

Table 4.10 presents the statistical variations of the variables changing technology in ICT and E-Government based on the relationships of the means and standard deviations while the table 4.11 shows the percentage analysis of the same data.

Table 4.10 below shows that the aspect that the government department is using the latest ICT technology available had a mean of 2.36 and a standard deviation of 1.327; Change in ICT technology affected successful implementation of e-government had a mean of 1.61 and a standard deviation of 0.705; The public sector organization keep trying to develop the systems based on emerging technologies had a mean of 1.73 and a standard deviation of 0.963; The risks of technology failure were reduced by using well tested and proven approaches and standard software's had a mean of 1.54 and a standard deviation of 1.008.

*Table 4.10: Statistical Variations of Changing Technology in ICT and E-Government*

		<b>The government department is using the latest ICT technology available</b>	<b>Change in ICT technology affected successful implementation of e-government</b>	<b>The public sector organization kept trying to develop the systems based on emerging technologies</b>	<b>The risks of technology failure was reduced using well tested and proven approaches and standard software</b>
N	Valid	56	56	56	56
	Missing	0	0	0	0
Mean		2.36	1.61	1.73	1.54
Standard. Error of Mean		.177	.094	.131	.135
Mode		1	1	1	1
Standard. Deviation		1.327	.705	.981	1.008
Variance		1.761	.497	.963	1.017
Range		4	2	4	3
Minimum		1	1	1	1
Maximum		5	3	5	4
Sum		132	90	97	86

Table 4.10 above shows the statistical variations of the variables changing technology in ICT and E-Government based on the relationships of the means and standard deviations while the table 4.11 below shows the percentage analysis of the same data.

*Table 4.11: Percentage Analysis of changing technology in ICT and E-Government*

DESCRIPTION		FREQUENCY	PERCENT	CUMULATIVE PERCENT
<i>The government department is Using the Latest ICT Technology Available</i>	Strongly Disagree	6	10.7	10.7
	Disagree	5	8.9	19.6
	Neutral	11	19.6	39.3
	Agree	15	26.8	66.1
	Strongly Agree	19	33.9	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>Change in ICT technology affected successful implementation of e-government</i>	Neutral	7	12.5	12.5
	Agree	20	35.7	48.2
	Strongly Agree	29	51.8	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>The public sector organization kept trying to develop the systems based on emerging technologies</i>	Strongly Disagree	2	3.6	3.6
	Disagree	3	5.4	8.9
	Agree	24	42.9	51.8
	Strongly Agree	27	48.2	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>The risks of technology failure was reduced using well tested and proven approaches and standard software</i>	Disagree	7	12.5	12.5
	Agree	9	16.1	28.6
	Strongly Agree	40	71.4	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	

The tables 4.10 and 4.11 above imply that as much as the government is using the latest technology available, changing technology affects the implementation process of e-government. As a result of this the government keeps trying to develop systems based on emerging technologies, which have a risk of failure. However this risk is reduced by the use of well tested and proven approaches and standard software.

#### 4.5.5 Legal framework and E-Government

Table 4.12 below presents the statistical variations of the variables ICT legal framework and E-Government based on the relationships of the means and standard deviations while Table 4.13 is percentage analysis of the same.

*Table 4.12: Statistical Variations of ICT Legal Framework and E-Government*

		<b>The Success Of E-Government Initiatives And Processes Were Highly Dependent On Governments' Role In Ensuring Existence Of Proper ICT Legal Framework</b>	<b>There Were Proper Legal Frameworks To Govern The Implementation Of E-Government Especially In Safeguarding Privacy And Security Issues</b>	<b>There Existed Legal And Regulatory Measures Aimed At Integrating And Sharing Data Systems Within And Among Administrations</b>
N	Valid	56	56	56
	Missing	0	0	0
Mean		1.34	4.25	4.14
Standard. Error of Mean		.089	.188	.112
Mode		1	5	4
Standard. Deviation		.668	1.405	.841
Variance		.446	1.973	.706
Range		2	4	3
Minimum		1	1	2
Maximum		3	5	5
Sum		75	238	232

The table above indicate that the success of e-government initiatives and processes are highly dependent on governments' role in ensuring existence of proper ICT legal framework as supported by a mean of 1.34 and a standard deviation is 0.668; There were proper legal frameworks to govern the implementation of e-government especially in safeguarding privacy and security issues had a mean of 4.25 and a standard deviation of 1.405; There exists legal

and regulatory measures aimed at integrating and sharing data systems within and among administrations mean had a mean of 4.14 and a standard deviation of 0.706.

Table 16 below is the percentage analysis of the data presented above.

*Table 4.13: Percentage Analysis of ICT Legal Framework and E-Government*

DESCRIPTION		FREQUENCY	PERCENT	CUMULATIVE PERCENT
<i>The Success of E-Government initiatives and processes were highly dependent on Governments' Role in ensuring existence of proper ICT legal framework</i>	Neutral	6	10.7	10.7
	Agree	7	12.5	23.2
	Strongly Agree	43	76.8	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>There were proper legal frameworks to govern the implementation of E-Government especially in safeguarding privacy and security issues</i>	Strongly Disagree	40	71.4	71.4
	Disagree	6	10.7	82.1
	Neutral	1	1.8	83.9
	Agree	2	3.6	87.5
	Strongly Agree	7	12.5	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	
<i>There Existed legal and regulatory measures aimed at integrating and sharing data systems within and among administrations</i>	Strongly Disagree	21	37.5	37.5
	Disagree	25	44.6	82.1
	Neutral	7	12.5	94.6
	Agree	3	5.4	100.0
	<b>Total</b>	<b>56</b>	<b>100.0</b>	

Table 4.12 and 4.13 above imply that even though the success of e-government implementation depended on the government ensuring the existence of proper legal framework, it (the government) is yet to put in place legal framework to govern the same.

#### **4.5.6 Other factors influencing the successful implementation of e-government**

From the study, using content analysis there are other factors that were found to influence the successful implementation of e-government. The factors are: Vision and strategy; Government support; External pressure and donor support; Rising consumer expectations; modernization, and globalization; Effective project, coordination and change management; e-government awareness among leaders, end users, and e-project team and lastly stakeholders and government agencies positive contribution or collaboration is important to a successful e-project implementation.



#### **4.5.7 Benefits of successful implementation of e-government**

The survey also covered the benefits accrued from the implementation of e-government. Thirty four of the 56 respondents surveyed agreed that they are achieving cost reductions through a combination of collaboration with other government agencies, direct savings, lower cost of delivery, and improved internal or business processes. Participants had experienced reductions in costs of between Kshs. 5- 10 million from e-government programs. Over 90 per cent of citizen respondents indicated an improvement in overall service delivery as a result of using e-government; almost 75 per cent indicated improvement in service quality. The study found that at least 65 per cent of respondents estimated the speed at which services are delivered to be between 1 and 24 hours. The findings show that there exists a 24-hour service delivery where people are able to seek information outside of business hours. For example, many people are taking advantage of the ability to lodge taxation returns out-of-hours. 82 per cent of respondents surveyed believed that data was available to authorized users more than 75% of the time. Fifty of the 56 participants surveyed indicated that online availability of government information is to a level of more than 75%.

# **CHAPTER FIVE**

## **SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

Chapter five presents the final information on detailed summary of findings, conclusions, recommendations and suggested areas of further research. The recommendations are the actions researcher put forward to policy makers, planners, researchers and other development stakeholders based upon the data findings.

### **5.2 Summary of the research findings**

The study sort to identify the factors affecting successful implementation of e-government in the case of the Directorate of e-Government in Kenya. From the study it was observed that 96.4% of respondents strongly agreed that ICT skills are needed for the successful implementation of e-government. Similarly, majority of the respondents were positive that ICT officers in department had the required skills to perform their duties. Additionally 91.1% were of the view that the management conducts Organizational Capacity Assessment (O.C.A). However, on whether the results of the Organizational Capacity Assessment formed the basis of training of personnel, a majority of the respondents (71.4%) had negative view. Similarly, a majority of the respondents disapproved the view that staff were frequently trained to handle new ICT processes and activities. Furthermore, 64.3% were negative on the view that capacity building efforts were attended to both for organizational capacity building and professional skills upgrade.

It was observed that 89.3% of the respondents were positive that well structured ICT infrastructure support to e-government communication with citizenry and this was supported by a mean of 1.45 and standard deviation of 0.829. It was also observed that infrastructural development in government ICT sector facilitates successful implementation of e-government as supported by a mean of 1.91 and standard deviation of 0.288. 89.2% of the respondents were of the view that the role of ICT infrastructure for

successful in e-government is the benefit of new technology. The aspect of communication development in government ICT sector helping in implementation of e-government was supported by 91.1% of the respondents with a mean of 1.29 and standard deviation of 0.825.

Majority of the respondents were of the view that the cost of ICT installation and maintenance was too high and this was evident by the mean of 1.34 and standard deviation of 0.880. However 76.8% of the respondents negated the detail that pooling of resources between different governments agencies occurs due to cross-cutting nature of e-government. A greater part of the respondents (80.4%) were of the opinion that the government partners with private sector to share costs of ICT installation and maintenance and 92.9% agreed that many e-government projects are multi-year in nature and well beyond annual budget as evident by a mean of 1.21 and standard deviation of 0.390.

60.7% of the respondents were positive that the government department is using the latest ICT technology available as 87.5 % agreed that change in ICT technology affected successful implementation of e-government as marked by a mean of 1.61 and standard deviation of 0.705. 91.1% of the respondents were of the opinion that the public sector organizations keep trying to develop the systems based on emerging technologies as evident by a mean of 1.73 and standard deviation of 0.963. The opinion that risks of technology failure was reduced by using well tested and proven approaches and standard software's was supported by a mean of 1.54 and standard deviation of 1.008.

The success of e-government initiatives and processes was highly dependent on governments' role in ensuring existence of proper ICT legal framework was supported by 89.3% of the respondents. However, 82.1% of the respondents disagreed that there were proper legal frameworks to govern the implementation of e-government especially in safeguarding privacy and security issues as supported by a mean of 4.25 and standard deviation of 1.405. Similarly, 82.1% of the respondents disagree that there exists legal and regulatory measures aimed at integrating and sharing data systems within and among administrations.

As a result of successful implementation of e-government, over 90 per cent of citizen respondents indicated an improvement in overall service delivery as a result of using e-government; almost 75 per cent indicated improvement in service quality. 82 per cent of respondents surveyed believed that data was available to authorized users more than 75% of the time. Fifty of the 56 participants surveyed indicated that online availability of government information is to a level of more than 75%. The study also found that at least 65 per cent of respondents estimated the speed at which services are delivered to be between 1 and 24 hours. As a majority (82%) of respondents surveyed believed that data was available to authorized users more than 75% of the time.

### **5.3 Discussion of the findings**

The discussion presents the reasons for what was found out on successful implementation of e-government in Kenya and explanations on to what extent they influenced implementation. Wider issues concerning the understanding of the variations in successful implementation of E-Government are examined and the findings of the study are discussed below.

The findings show that ICT skills of personnel is very vital for the implementation of e-government and that ICT officers under DeG possess the required skills to perform their duties. However, it was established that staff are not frequently trained to handle new ICT processes and activities. Signore et al., (2005) states that staff must be trained to handle new process and activities but not only staff training is required, some basic training also important to society members, in general, to be able to use new services for accessing e-information. The findings are also consistent with Chao and Tong, (2005) findings that capacity building efforts must attend to both the organizational capacity building as also the professional and skills up-gradation of individuals associated with the implementation of e-governance projects. Evidence suggests that management conducts organizational capacity assessment however, the results of the assessment is not the basis of training personnel. Each government organization must conduct a capacity assessment which should form the basis for training their personnel. (Basu, 2004)

It was established that well structured ICT infrastructure supports e-government communication with citizenry and that infrastructural development in government ICT sector facilitates the successful Implementation of e-government. As Chen et al., (2006) states that infrastructure development is necessary before government can consider any project related to E-government. A lack of back-end infrastructure will cause governments and their employees to face the problem of being unable to perform transactional or other basic IT activity and further stages of E-government will be delayed. Similarly communication development in government ICT sector helps in the E-government implementation process. However an ICT infrastructure does not only consist of telecommunication and equipment. It also requires E-readiness and ICT literacy (Ndou, 2004).

Many e-government projects are multi year in nature and well beyond the annual budget. This means that the cost of installation and maintenance of ICT tools is too high. As Bhatnagar, (2002) states, governments operate within vertical funding structures, in accordance with the core public management principle of holding an agency accountable for achieving organizational objectives and giving it the resources to accomplish those objectives. However, such budgetary frameworks may not take into account the specific needs of certain e-government projects, particularly those involving long-term funding requirements and collaboration across agencies. The government is yet to fully exploit the strategy involving the pooling of resources between different government agencies. As explained by Belanger and Hiller, (2006) the linked nature of many e-government projects across traditional programme and organizational lines means that shared budgetary arrangements are essential. On the basis that the bulk of funds for e-government will (and should) be provided through agency budgets, the budget process can be used to promote collaboration of e-government initiatives. Additionally, the government partners with the private sector under different modalities, especially when it comes to infrastructure development and maintenance.

Findings on changing technology are consistent with other studies, which indicated that change in technology affects the successful implementation of e-government. For example, Carter and Belanger, (2005) state that the government face the challenge of fostering the development of e-government while there is still great uncertainty regarding fast moving technological change, and it is difficult to anticipate future policy impacts in detail. The public sector organisations keep trying to develop the systems based on emerging technologies. Experience shows, however, that systems built on emerging and unknown technologies are very susceptible to failure. In some instances the potential benefits might warrant taking such huge risks; most often this is not the case (Gilbert and Littleboy, 2004). Risk of failure can be reduced by using well-proven approaches or even better, standard software; although this will often imply that business processes have to be adapted to the possibilities offered by the IT system. The application of common commercial practice, rather than custom software, has proven time and again to be the most successful solution.

The study has established that the success of e-government initiatives and processes are highly dependent on government's role in ensuring a proper legal framework for their operation. However in Kenya, there are no proper legal frameworks to govern the implementation of e-government especially in safeguarding privacy and security and integrating and sharing data systems within and among administrations. According to Lam, (2005) despite the existence of national e-government policy, many governments are trying to make their own definite policies for e- government. Lack of comprehensive course of action and inappropriate step of development may delay the process of e-government program. The government should participate more actively in the formulation of national laws, policies and strategies to promote the ICT. It should ensure the establishment of a range of suitable legal and regulatory measures that are aimed at: Integrating and sharing data systems within and among administrations; the use of this public information by third parties, especially the private sector, safeguarding privacy and security issues; enabling digital exchange of information and transactions between government agencies, citizens and businesses. (Fors and Moreno, 2002)

The findings show that there are other factors that influence the successful implementation of e-government. This is consistent to findings from other studies. Ndou, (2004) states a common vision is essential to e-government as a means to engage and coordinate agencies. It also serves to engage political leaders and to impress upon them the importance of e-government. Political leadership serves to diffuse the vision and to give it the added weight. It was found that new work practices, new ways of processing and performing tasks are introduced in the organisation at a very high frequency for this reason change management is needed to establish within organizations to deal with resistance to change. A culture with shared values and common aims is conducive to success. Organizations should therefore have a strong corporate identity that is open to change. Additionally, management of communication, education and expectations are critical throughout the organization as echoed by Wee, (2000). Complex e-Governance projects should be planned and implemented like any major project having components for which Project Management capability should be developed in-house.

#### **5.4 Conclusions of the study**

In conclusion, the researcher is of the view that there are several factors influencing the successful implementation of e-government. However, these factors should be value-driven and not technology-driven. The Government of Kenya is beginning to understand better that real value can be obtained through successful implementation of e-government, but that the need for basic assessments of benefits and costs, risks and opportunities remains.

ICT skills of personnel is a major factor that affects the successful implementation of e-government in Kenya. As a result, capacity building efforts must attend to both the organizational capacity building as also the professional and skills up-gradation of individuals associated with the implementation of e-governance projects. Each government organization must conduct a capacity assessment which should form the basis for training their personnel. The government should operationalise the Capacity Building Roadmap, under the overall guidance and support of the DeG. It is also vital

that lessons learnt from previous successful e-government initiatives should be incorporated in training programmes.

Infrastructural development is pivotal to the successful implementation of e-government as it facilitates communication with citizenry. This development is a benefit of the new technology being extend worldwide. The challenge it hence to understand how to use new ICT tools to leverage a transformation in the culture and structure of government in order to provide better services to citizens. A national approach to addressing the infrastructural issue may range from shared systems to common rules and/or standards governing separate, but connected systems. Establishing common technical standards and infrastructure can pave the way for greater efficiency within government. Important economies can be gained through a whole-of-government approach, both in terms of reducing redundant systems and by lowering the legal and technological barriers for collaboration across organisations.

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Government agencies themselves indulged in collaboration in terms of pooling resources (both human and financial) to ensure the successful implementation of e-government. This is as a result of the high cost of installation and maintenance of ICT tools necessary to support e-government initiatives. Additionally, engagement with private-sector suppliers has been an integral feature of government use of ICT. Public-private relationships have broadened from the acquisition of products and services such as mainframe computers which governments themselves could not provide, to services such as the operation of computing facilities and direct provision to end users of government services. In practice, all private supplier relationships are likely to involve elements of partnership, and it is therefore useful to see partnerships as part of a continuum. The partnership management issues they raise need to be addressed as part of the implementation of any e-government project or strategy. Several components of e-government projects lend themselves to the Public-Private Partnership mode. In all such cases Public-Private Partnership should be the preferred mode. The private partner has to be selected through a transparent process. The roles and responsibilities of government as



well as the private partner have to be clearly laid down in the initial stage itself, leaving no room for any ambiguity.

Kenya depends almost exclusively on the importation of relatively expensive technological inputs for the successful implementation of e-government as the locally developed systems have a higher risk of failure. Technical assistance may be required to provide the government agencies with access to international best practices on addressing the technological constraints, as well as to support the preparation of a national ICT policy and strategic advisory services on alternative ways of attracting private sector support in resolving problems relating to ICT infrastructure.

The government is using the latest technology available to ensure the successful implementation of e-government in Kenya. At the same time the government keeps trying to develop new systems; however, systems built on emerging and unknown technologies are very susceptible to failure. Risk of failure can be reduced by using well-proven approaches or even better, standard software; although this will often imply that business processes have to be adapted to the possibilities offered by the IT system. The application of common commercial practice, rather than custom software, has proven time and again to be the most successful solution.

The success of e-government initiatives and processes are highly dependent on government's role in ensuring a proper legal framework for their operation. The introduction and uptake of e-government services and processes will remain minimal without a legal equivalence between digital and paper processes. Given the pervasive nature of ICT use in government, the legal requirements should cover acquisition and financing, network operations and security, staffing and skills issues, service design, monitoring and reporting. It would be of value to regularly undertake a review of the overall regulations and requirements that govern ICT acquisition and use.

## **5.5 Recommendations of the study**

This section presents the researcher's recommendations for action to be taken on the basis of the analysis, interpretation, discussion and conclusion of the study findings. The recommendations highlights the implications of the findings for this particular research project; for other projects that may be interested to learn from these findings; for national development; and for any other interested parties, such as researchers, policy makers, planners and make practical and feasible suggestions on what should be done.

First and foremost, the government should define e-government priorities within the framework of their national policy goals, e-government vision and strategic objectives outlined in the Kenya Vision 2030 by evaluating the way different applications draw on scarce available resources and add different value to and impact on the governance process so as to effectively manage the cost of e-government implementation.

Secondly, due to the cross-cutting nature of e-government and its high cost of installation and maintenance, pooling of resources needs to be strengthened within and between government agencies. Individual institutions should look at the possibility of merging funds from different agencies to have a common product, i.e. a GIS platform or integrated management information service rather than focusing on their own budget. Alternatively, the government could partner with the private sector under different modalities, especially when it comes to infrastructure development and maintenance.

The researcher recommends the government's active participation in the formulation of national laws, policies and strategies to promote the ICT and continuous legal and legislative ICT reforms to keep pace with the dynamic nature of technological development and changes as a way of ensuring sustainable development.

Lastly, the researcher recommends intensive and extensive training and refresher courses on ICT to government staff to handle new process and activities. Some basic training is also important to society members, in general, to be able to use new services for accessing e-information.

## **5.6 Recommendations for further research**

After conducting this study several issues for further research were found that should be investigated to generate knowledge and information as they were beyond the scope of this research but featured prominently during data collection. They include research on:

1. The main challenges of e-government implementation in a Kenya;
2. The development of local technologies and ICT infrastructures;
3. How the use of ICT can reduce digital differences in Kenya.
4. Further research can also be conducted on the current status of application of e-government in Kenya and the future prospects;
5. The demographic factors associated with the implementation of e-government.
6. The research to identify the possible models of mainstreaming of the e-government in the society to enhance service delivery, transparency and accountability of the scarce resources.

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## **APPENDICES**

### **Appendix 1: Request for information**

Techlah Achieng'Odanga  
P.O.Box 67857 – 00200,  
Nairobi.

Dear Sir/Madam,

#### **REQUEST FOR INFORMATION**

I am a student in the University of Nairobi studying a Masters Arts Degree in Project Planning and Management. I am conducting a qualitative research study on the theme “Factors influencing the successful implementation of e-government in Kenya”. The study is part of a research study presented in partial Fulfillment, for the degree. Confidentiality of the questionnaire would be kept and your response is purely for research purposes. It is voluntary and you have the right to withdraw at any stage of the study. I would be happy to provide you with further information regarding your decision to participate in the research study.

Thanks in anticipation for your response and participation.

Sincerely,

Techlah Achieng' Odanga.  
L50/72208/08

## Appendix 2: Questionnaire

Please tick the appropriate box or write your answer for the questions below on the spaces provided.

### PART ONE:

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1. What position do you hold in the Department?

- Manager
- Head of section/unit
- Supervisor
- Other (please specify).....

2. What is your highest level of education?

- Post graduate
- Undergraduate
- Diploma
- Certificate

3. How long have you worked in the organisation?

- 1 to 2 years
- 2 to 4 years
- 4 years and above

5. What is your level of IT training

- Certificate
- Diploma
- Degree

## PART TWO

6. Indicate the extent to which factors listed below influence the successful implementation of e-government at the organisation. On a scale of 1 to 5 where: 5 –very large extent, 4- large extent, 3- moderate extent, 2- small extent, 1- to no extent.

	1	2	3	4	5
ICT skills of personnel					
Back end Infrastructure					
Cost of Installation and Maintenance					
Changing technology					
Legal framework					

7. Which of the following features of e-government have been implemented by your organisation (tick where appropriate)

Features	Yes	No
Existence of a website and information on usage on the website (search feature, "contact us" feature)		
Electronic signature feature		
Electronic transactions		
Email sign up option, either as a formal list-serv or simply for news items		
Online forms as well as downloadable/printable forms		
Sources to archived information (laws, policy documents, priorities etc)		
Audio and video features		
E participation tools to obtain public opinion (polls, surveys, bulletin boards, chat rooms, blogs, web casting and discussion forums etc)		
Security (secure link) feature available/indicated		
Existence of features to enable access for people with disabilities		

8. To what extent would you agree with the following statements:  
 (Please place a tick in the spaces provided on the right hand side of the statements)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
ICT skills are needed for the successful implementation of E-government.					
ICT officers in your department have the required basic skills to perform their duties.					
Staff are frequently trained to handle new processes and ICT activities					
Capacity Building Efforts attend to both organizational capacity building and professional skills upgrade					
The Management Conducts Organizational Capacity Assessment (O.C.A)					
The Results of the Organizational Capacity Assessment form the basis of Training of Personnel					
Well Structured ICT Infrastructure Support to E-Government Communication with Citizenry					
Infrastructural Development in Government ICT Sector Facilitated Successful Implementation of E-Government					
The Role of ICT Infrastructure for Successful in E-Government is the Benefit of New Technology					
Communication Development in Government ICT Sector helped in Implementation of E-Government					
Cost of ICT Installation and Maintenance Too High					
Pooling of resources between different Government agencies occurs due to cross-cutting nature of E-Government					
The Government Partners with Private Sector to Share Costs of ICT Installation and Maintenance					

Many E-Government Projects are Multi-Year in Nature and Well Beyond Annual Budget					
The Government Department is Using the Latest ICT Technology Available					
Change in ICT Technology Affected Successful Implementation of E-Government					
The Public Sector Organization kept trying to develop the systems based on emerging technologies					
The Risks of Technology Failure was reduced using well tested and proven approaches and standard software					
The Success of E-Government initiatives and processes were highly dependent on Governments' Role in ensuring existence of proper ICT legal framework					
There are proper legal frameworks to govern the implementation of e-government in Kenya					
There Exists legal and regulatory measures aimed at integrating and sharing data systems within and among administrations					

9. How would you rate the following? (Please tick where appropriate)

	More than 75%	50– 75%	Less than 50%
How consistently are online services available to the public?			
How accessible are the online services to citizens?			
To what percentage is data available to authorized users?			

10. How much do you spend annually on installation and maintenance of e-government?

- More than 10M     
 5-10 Million     
 0-5 Million

11. What is the frequency of change of ICT tools within your Department?

- More than 4years       2- 4 years       Less than 2 years

12. What ICT infrastructural platform do you use in your department?

- X86       X86-64       Other

13. From your experience, what is the speed at which services are delivered to citizens?

- Less than 1hour       1-24 hours       More than 24 hours

14. How many organizations do you have linked to your website?

- Less than 5       5-10       More than 10

15. How much money is saved annually as a result of ICT collaboration with other organizations?

- Less than 1Million       1-5 Million       More than 5 Million

16. How many ICT laws and policies in Kenya are you aware of?

- None       1-5       More than 5

17. In your opinion, what are the other factors that influence the successfully implement e-government?

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Thank you for your time and cooperation.