FACTORS INFLUENCING THE IMPLEMENTATION OF E- GOVERNMENT POLICIES IN NAKURU COUNTY, KENYA

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DECLARATION

This research paper is my original work and has not been presented for a degree award in any other university.

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DEDICATION

I dedicate this research proposal to my Dad and Mum who have sacrificed a lot to ensure I got the best academic opportunities. My brothers Stig and Brian. Thanks for your support.

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The writing of this study has been one of the most significant milestones I have achieved. I owe a debt to many for it. I thank the Almighty God and Saviour for his blessings, love and guidance in my life. My sincere gratitude goes to Dr. Nelson Wawire and Dr. Patrick Machyo for their guidance and patience in the research paper. As my supervisors for this project, despite their many other academic and professional commitments, they have given me their time and experiences. Without their support, patience and guidance in the numerous discussions we had, this study would not have been completed.

To my family who has had to sacrifice their time and resources to ensure that I managed to get through the course. You always urged me to go on even when the going became too rough. Thank you so much your love is indeed boundless and may God reward you and bless your every effort. My sincere appreciation goes to my classmates and to those who in one way or another assisted or supported me at any time during my entire study. However, I accept full responsibility for any flaws in the writing of this study.

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ABBREVIATIONS AND ACRONYMS

CCK	Communication Commission of Kenya
CRM	Customer Relation Management
LAN	Local Area Network
ICT	Information Communication Technology
SMS	Short Message Service
OECD	Organization for Economic Co-operation and Development
UN	United Nations
UNDP	United Nation Development Programme
WAN	Wide Area Network

OPERATIONAL DEFINATIONS OF TERMS

Caching: The process of storing information of a user who accesses a web page, if it is stored by the client's computer is called client caching and if stored by network server is called proxy caching.

Cookies: These are small text files placed on a user's computer by a website so that it can track the user's movement through a website.

County: this is an area in Kenya's constitution to be represented in the senate by one senator.

E-government: This is the process of providing government services to all stakeholders; to the citizens, government employees, the business sector and other government departments in a transparent and efficient manner and also receiving feedback from the stakeholders.

Implementation: This refers to the process of operationalization of e-government program.

Stakeholders: The people involved in the process of implementing the e-government program.

ABSTRACT

The study was an assessment of the factors influencing the implementation of e-government policies in Nakuru County, Kenya. Government services are being transformed using information and communication technologies by many governments in developed and developing countries through developing, implementing and improving their strategies. The study employed a descriptive research design in the form of survey. The study population was all government employees in four government sectors; education sector, agricultural sector, financial sector and public administration sector. A sample of 80 public officers working in the four sectors and in Nakuru County was targeted. The instruments of data collection were questionnaires. Regression results indicate that there is a positive relationship between supporting infrastructure, perceived ease of use, risk and privacy, perceived usefulness and e-government use. The study recommends that the government should invest in training and awareness for e-government users. This would ensure that the users find government applications easy to use. In addition, the government should invest in support infrastructure such as investing in fast internet connections. The government may also review taxes on the acquisition of personal computers. The government should also address privacy and risk concerns. For instance, the government should put in place security mechanisms such as firewalls and passwords.

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Government services are being transformed using information and communication technologies by many governments in developed and developing countries through developing, implementing and improving their strategies. This transformation of services is referred to as e-government, digital government, on-line government, or transformational government (Gupta *et al.* 2008). Public administration since last decade has greatly been reshaped with the arrival of new information and communication technologies (ICT) with e-government being one of the important innovations. This is caused by the belief that ICT can significantly improve the efficiency and effectiveness of public services.

E-government has been classified in terms of activities and delivering models in five categories: The Government-to-Business (G2B) which involve automating procurement procedures, the major motivating factor being from the business side which has automated virtually everything; Government-to-Employees (G2E); Government-to-Government (G2G) which include intra and inter government connectivity and sharing of information to ensure efficiency and increased speed of service delivery to citizens; Government to Citizens or Government to Customer (G2C) with the major initiative towards ensuring that transactions are less time consuming and this is driven by demand from the citizens and especially young people; and Citizen-to-Citizen (C2C) (Lee *et al.*2005); Carter and Belanger (2003).

Kenya has more than 100 licensed Internet service providers and over 3 million internet users which has lead to an increase in the population of Kenyans accessing the internet. The approval of the first national ICT policy in 2006 has its objective aimed at making the government focus more on the citizens and be result oriented. Kenya's constitution and the economic blue print vision 2030 (Republic of Kenya, 2007) redefines the relationship between the government and its citizens and empowers the citizens to access better government services.

In Kenya, websites from all government ministries provide links to other government ministries and parastatals and also provide general information on the mandates of the government ministries. Downloadable forms are provided by most of these websites which

citizens can use to access government services without having to travel long distances to access the services or even queue in government offices which saves time and money to the citizens. Transparency has also been enhanced by the government through improving its internal capacity and fighting corruption activities in the delivery of services. Support to pension administration, driver license registration, land information and land registration system, high court registrar, public servant wealth declaration, company registration and improvement in procurement process are the major areas targeted by e-government program application.

Technical assistance is being provided to the Ministry of Information and Communications, the Communication Commission of Kenya, the e-Government directorate in the Office of the President, the Kenya Education Network Trust and the Public Procurement Oversight authority to pursue sector reforms. There is an effort aimed at accelerating the establishment of the necessary legal and regulatory framework to ensure that issues of data protection, privacy and security of the transaction and intellectual property rights are safeguarded through the public private partnership. Smooth intra-government communications and sharing of data and information over the network as opposed to paper format will be achieved when all online e-government applications will be linked through establishment of government information portal. Local Area Networks (LAN's) are present in most of government offices in the country and others can access Wide Area Network and email services. All civil servants are assigned email addresses in their respective ministries. E-government directorate at the office of the president has been mandated with the monitoring and evaluation of the e-government system which will ensure that the systems in place are operating at peak efficiency and policies on ICT are spread to all government departments.

In 2010, the Kenyan Judiciary launched a telepresence system which allows justice system to conduct and run its business without the need of traveling long distances. The project will enable the court of appeal to sit in Nairobi and dispense justice in Mombasa. The Judiciary has also begun the Judiciary Case management information system which is a short message service (SMS) platform. The project has begun with digitization of over 30 million records in the registries. The company registry digitization has been completed, this will ensure that customers will have speedier searches and the process of registering companies and name search will be shortened.

Nakuru County is located 160 km North West of Nairobi and is the fourth largest urban centre in Kenya after Nairobi, Mombassa and Kisumu and also hosts the Rift Valley Province Administration Headquarters. Nakuru County is one of the main agricultural centres of Kenya with a strong manufacturing and service industry focused on the agriculture sector which the economy of the county depends on. Nakuru County has a tourist potential due to the presence of natural features such as Lake Nakuru, Menengai Crater and archaeological sites such as Sirikwa holes and Hyrax hill. Municipality has four locations, five sub-locations and 80,000 households. The estimated population density of Nakuru County is 974/km2 with rural-urban migration and boundary extensions influencing its rapid growth.

1.2 Statement of the problem

E-government has led to interaction between the government and its citizens, government and its employees, government and business and government and other government agencies. There have been various developments through which the government communicates and receives information from all stakeholders. This is through obtaining services from the government offices such as National examinations results for Kenya Certificate of Primary Education (K.C.P.E) and Kenya Certificate of Secondary Education (K.C.S.E), checking the status of national identity card, passport, filling tax returns and business registration. Despite the many efforts to provide electronic services, there are a number of challenges which include the connectivity and the ability of a large population to utilize these services and the capacity of the government departments to meet the demand and provide quality, timely services.

The main challenges of any e-government program in a country are; improving services to citizens, improving the productivity and efficiency of government agencies, promoting priority economic sectors, improving the quality of life for disadvantaged communities and strengthening good governance and broadening public participation. These multiple challenges need to be addressed with a view to coming up with logical solutions that can guarantee effective and efficient public service delivery. This study is therefore assessing the factors influencing the implementation of e-government program in Nakuru County.

1.3 Objectives of the study

The main aim of this study is to investigate the factors influencing the implementation of e-government use in Nakuru County, Kenya. The specific objectives of the study are:

i. To assess the extent to which support infrastructure influences the implementation of e-government.
ii. To assess the extent to which perceived ease of use influences the implementation of e-government use in Nakuru County.
iii. To assess how the perceived risk and privacy influence the implementation of e-government.
iv. To assess how the perceived usefulness influence the implementation of e-government use.
v. To make policy suggestion for the improvement of implementation of e-government use.

1.4 Research Questions

To fulfill the research objectives, the research was guided by the following questions:

i. To what extent does support infrastructure influence the implementation of e-government?
ii. To what extent does perceived ease of use influence the implementation of e-government use in Nakuru County?
iii. How does the perceived risk and privacy influence the implementation of e-government?
iv. How perceived usefulness concerns influence the implementation of e-government?
v. What are the policy suggestions for the improvement of implementation of e-government use?

1.5 Significance of the Study

The study provides useful information on factors that influence the implementation of e-government policies in Kenya and identifies government employees' perception and highlight the management and organization of the factors that are currently influencing the development and implementation of e-government policies in Nakuru County. The findings of this study shed light on various issues affecting the implementation of e-government and hence provide direction to the government when planning and formulating policies regarding e-government. This study

will be beneficial to the policy makers in analyzing the best ways in which to develop a system of governance that promote, supports and sustains human development.

1.6 Scope of the Study

The study covers Nakuru County, Kenya. The study heavily relies on data collected from the government employees' through a questionnaire designed to capture the factors that influence the implementation of e-government policies. The study focused on support infrastructure, ease of use of e-government services, perceived usefulness, perceived risk and privacy concerns in implementation of e-government policies. The County was chosen because it is a main educational center in Kenya. It has many Universities and training institutes that serve all people of Kenya. A previous survey put Nakuru's growth rate at 13 per cent the fastest in Africa and it is bracing itself for emerging challenges that have come with its rapid expansion, which led to it being thrust in the international limelight.

1.7 Organization of the Study

The study is organized in five chapters, chapter one focuses on background of the study, statement of the problem, the objectives of the study, research questions, scope of the study and organization of the Study. Chapter two covers the literature review of the study. It begins by covering the concept of e-government in Kenya and the literature on the study objectives. Chapter three covers the research methodology, in this chapter, the research design is described, theoretical framework, model specification, definition and measurement of variables, study area profile, the target population, sample size and the sampling procedure to be followed, research instrument, data collection, data coding, cleaning and refinement and data analysis procedures. Chapter four covers the analysis of the data and chapter five covers summary, conclusion, policy implications, limitation of the study and suggested areas of further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals with literature review from various sources in the area of e-government. It deals with the various studies that have been carried out by different researchers on the area. The review is grouped into the following categories. An overview on the concept of e-government, ease of use of e-government programs and trust in the government, security of data and privacy in e-government.

2.2 E-government

Daren and Al-Hasha (2004) view e-government as a tool of attaining reform by ensuring transparency and empowering people to participate in daily life processes and not automation of procedures or providing technological solutions to government operations. According to Sakowicz (2003) there are many factors which facilitate successful e-government program such as the desire for change and the need to bring benefits to the citizens and also a good relationship between the government and the citizens while delivering quality services rather than only the introduction of web based technologies. It also includes better and successful e-services, e-management, e-democracy and e-commerce.

Monga (2008) noted that, transparency saves time, leads to better office and records management, reduced corruption, improved attitudes and concludes that e-government has ushered; transparency in governing process, saves time and costs involved in providing services to the citizens, better decision making, simplified office procedures, checking corruption and enhanced better office and record management. Most government agencies use ICT as a means of maximizing their revenue through improving their internal efficiency thus ensuring speedier and efficient delivery of public services and also exchange information with its stakeholders.

According to Steifert (2003) the government, citizens, employees and business are the three actors in e-government which have goals aimed towards improving efficiency of service delivery and attaining quality and reliable services. Citizen participation in the issues of governance and the cost cut is the greatest opportunity in e-government thus leading to the

attainment of an efficient procurement system. Africa consist of poor infrastructure, lack of human capacity and insufficient legal and regulation framework which are the main challenges of implementing ICT programs and e-government successfully (Cogbum and Adeya, 1999).

Basu (2004) stated that upgrading citizens living standards, faster service delivery, development of human resource capital especially creation of jobs to the youth in the sector and ensuring decentralized governance is what ICT policies aims at achieving. There are challenges in policy regulation, government agencies coordination between themselves and less responsibility by government officials through using e-government as a scapegoat for not efficiently delivering services and in a timely manner.

2.3 E-government in Kenya

An institutional framework and structure has been put in place to oversee and coordinate the implementation of the e-Government Strategy. The Cabinet Committee on ICT oversees the implementation of the Strategy; the Permanent Secretaries ICT Committee coordinates the implementation of the e-government initiative; and e-Government Committees in the Ministries review the various ICT projects in the Ministries, undertake an audit of the IT capacity, establish support to the ministry's policy mandate, identify gaps and inadequacies both technical and institutional and make appropriate recommendations on the way forward. The following table shows e-government development in East Africa.

Table 2.1: E-government development in East Africa

Country	E-government development index value	World e-government development ranking
Mauritius	0.46	77
Kenya	0.33	124
Madagascar	0.26	139
Ethiopia	0.2	172

Source: UN (2010) e-government report.

UN (2010) e-government report stated that Kenya's national portal received the second highest score in the region, with an e-government world ranking of 124 following Mauritius with a world ranking of 77 and Madagascar with a world ranking of 139. Ethiopia registered the lowest online service score in the region with a world ranking of 172 as shown in the table 2.1 above.

2.4 Phases of e-government

There are five phases of e-government. The first phase is classified by a simple web site of a passive nature with static internet sites which are only meant to provide general information. The second phase of e-government development is characterized by Internet sites that provide search capabilities such as downloadable forms and provide links to other relevant sites which enable the public to access critical information online, but requires a visit to a government office in order to complete the task. The third phase of e-government development is characterized by empowering the public to conduct and complete all tasks online. The fourth and fifth phase of e-government development relies on robust customer relationship management (CRM) tools, wireless access devices and new methods of alternative service delivery capabilities that reshape relationships between citizens, businesses, employees and governments.

2.5 Flexibility of government officials to embrace technology

According to Margetts and Dunleavy (2002), Staff and management who don't accept innovation and technological changes pose a big barrier to e-government implementation as they won't be able to provide the required leadership in e-government restructuring hence end up being a big challenge in the operationalization of e-government policies. Resistance to change and lack of ICT skills by some staff proves to be the biggest challenge in the implementation of e-government policies. All staff need to be trained to be able to embrace technology in all their aspects of work. This can be done by launching an e-government challenge for all government employees to access their degree of ICT knowledge on several aspects such as knowledge on IT systems security, data protection, e-mail and internet navigation and offer e-government training through online courses such as the one which was done by the Hungarian government in 2006 and had a success rate of more than 90% (Margetts and Dunleavy, 2002).

2.6 Ease of use of e-government

Ease of use of e-government is a major problem in the implementation of e-government policies because many people have limited education in IT and the internet use. These people with limitations in terms of education and disabilities should not be denied crucial services from government offices because of e-government transformation. The elderly and the poor don't have the capacity to access these services and hence excluded in the e-government projects. The less educated and language limited people are also locked out in the e-government implementation because they lack the necessary skills. There are those who require costly hardware and software's such as the blind and the physically impaired so as to access e-government services. There should be internet access, websites and special programmes and software's which are sensitive to the disabled with more information so that all the citizens can access information from the physical offices of the government agencies and avoid some of the people being fully excluded from the e-government process.

Jeffery (2003) stated that not all citizens have equal access to computers and internet due to disparities in terms of finances and skills with some people being financially able to afford the costs of computers and internet installation and having the necessary skills to be able to fully enjoy the benefits of e-government while others cannot afford the cost of buying computers and having internet installed to access the services.

There is also the issue of the wealthy and poor households whereby those with high income levels have access to e-government services than those with low income levels. Also the issue of the young people versus the old whereby the young people will use e-government services with ease than the aged and also the population in the urban areas having a greater access to e-government services compared to the larger population in the rural areas.

Carter and Belanger (2004) found out that governments should adopt a proactive approach in e-government through publicizing the advantages the citizens get when using e-government services. They also found out that by motivating citizens through incentives such as faster refunds for claims done through the internet or reduced fees for online transactions will lead to a faster adoption to the e-government system thus leading to speedier delivery of services and enhanced efficiency. There is the issue of social inequality where some people are able to

access the internet while others cannot due to the digital divide. Digital divide is intensified by social problems such as poverty because the poor households find it costly to buy computer hardware and have internet connections due to constrains in their income. The big digital divide can hinder the successful implementation of e-government policies.

2.7 Risks and privacy concerns in e-government

Jeffrey (2001) stated that computer security has six areas of weakness which include; security, program, access controls, software development, change controls, segregation of duties, operating system controls and service continuity. Privacy concerns majorly deal with use of cookies whereby there is disclosure or mishandling of private information and also sharing of private information between agencies. There is the issue of cyber crime which is a real threat and programs have to be protected from any risks by putting measures to ensure authentication of documents such as those used in procurement processes like purchase orders in the government transactions.

Guerra (2003) noted that citizens should have a high control over the data held by the government agencies such as those concerning health records, voter registration so as to enable them view the data held by government agencies, what government agencies are accessing their data, for what purpose they are accessing the data and they be able to update the data. This leads to low trust option because authentication requirements are minimized as many citizens are willing to transact in transactions requiring fewer authentications as opposed to high authentication transactions.

Belanger *et al.* (2003) asserted that there is fear by the citizens of a country over personal information over the internet being misused by other people and government agencies thus leading to no privacy. The government agencies have to build trust and individual perceptions on the issues of privacy of personal information by providing a favorable environment to determine the success of the e-government program. The newly promulgated constitution in Kenya recognizes that privacy is a fundamental right in any democratic society and the government should prove leadership on privacy issues and internet security through effective public policy planning and ensure citizens have control on how information is used. Legislation should protect and have guidelines on the collection and use of all data collected.

Privacy should be addressed in the planning stages of e-government project to ensure that there exists a balance on the legitimate need to collect information and the need to protect privacy of citizens.

2.8 Overview of Literature

Most, if not all, e-government strategies and implementation plans in developing countries have been based on theories and experiences of developed countries. Many developing countries have no choice but to hastily jump into the e-government implementation due to the pressure and demand from citizens to provide e-government services online, thus leading them to follow e-government development strategies proposed and carried out by developed countries. These e-government development strategies and experiences in developed countries have many substantial differences in technological and social conditions and may not be directly applicable to developing countries.

The literature has revealed that there are many factors which affect the implementation of e-government policies. These studies also revealed that the determinants of successful e-governments vary depending on unique environment of each country. Environmental factors such as political stability, population size and economy have an impact on the success factors of these e-government programs (Caroline *et al.* 2008). In particular, for developing countries, there are insufficient resource allocation factors like technologies, financial resource and skilled personnel which are important than other factors compared to industrialized countries. On the other hand, there is lack of coordination among stakeholders in developing countries leading to a shortage of skilled manpower or computer applications which can be corrected through organizational changes (Gichoya, 2005). From the literature above it is evident that implementation studies are diverse but mainly concentrate on success factors of e-government. Therefore e-government policies to be successful like those of some of the developed countries should achieve innovation in their organization, accountability, effectiveness in provision of public services, efficiency in administration, empowerment and participation by the citizens, integrity and transparency.

From the literature review there are only few empirical studies that have been carried out in Kenya and have been mostly on organizational changes, resource allocation, values and

cultural changes, and legal and regulatory changes. Additionally these studies were carried long time ago and there have been new developments that have occurred such as liberalization and changes in the government budgetary allocation to the sector. There are also a number of short comings of the previous studies and this necessitates improved studies. There a few studies done in the country on the factors affecting implementation of e-government policies and little work has been done on support infrastructure, ease of use, perceived usefulness, perceived risk, privacy concerns and to make policy suggestion for the improvement of implementation of e-government policy.

2.9 Conceptual Framework

The conceptual framework shows the relationship between the dependent and the independent variables. It also shows any other factor that may have an effect on the two variables. In this study the conceptual framework shows that the effective implementation of e-government depends on factors such as support infrastructure, the ease of use of e-government services, perceived usefulness, perceived risks and privacy concerns about e-government. Moderating variable in this framework is Government regulation.

The model proposed in this study aimed to make an extension of the conceptual model proposed by Kumar *et al.* (2007). In the study, the model was premised on the belief that e-government adoption is largely shaped by the extent to which government can provide a rich, engaging, and hassle-free experience that is reliable and can provide higher levels of satisfaction. The model mentioned that for effective e-government adoption, the different attributes to be satisfied were: user characteristics (perceived risk, perceived control), website design (perceived usefulness, perceived ease of use (usability), service quality and client satisfaction.

From the conceptual framework below, the independent variables are support infrastructure influence on e-government implementation, the ease of use of e-government services, perceived usefulness, perceived risks and privacy concerns. The dependent variable is the effective implementation of e-government policies.

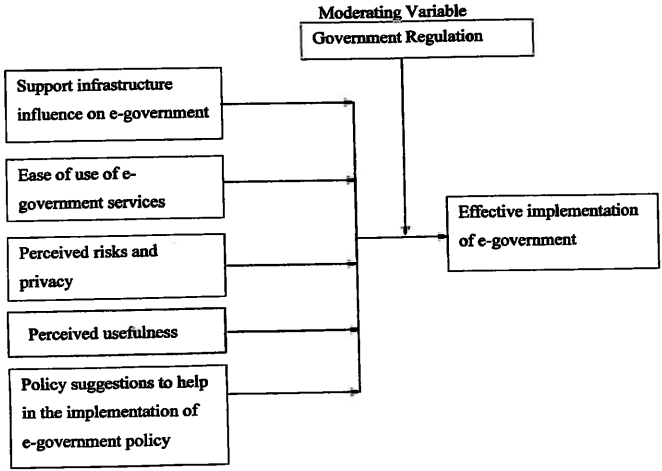

Figure 2.1 Conceptual Framework

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology that was applied to carry out the study. The chapter begins by giving a general description of the study area, the research design, target population, sample size, sampling procedure and the research instruments. This was followed by validity and reliability of the sampling and research instruments and the data analysis procedures.

3.2 Research Design

The study employed descriptive research design in the form of survey. The survey provided an opportunity to know more about the sustainability of e-government policies and help in structuring the research interviews and questionnaires and also provided the researcher with both qualitative and quantitative data and gave an overall picture of the strategic performance of e-government policies. Observation and comparison of the case studies helped the researcher in evaluating the positive and negative impacts of implementing e-government policies and its strategies in Nakuru County and Kenya as a whole.

3.3 Theoretical framework

Government stakeholders decide whether it is worthwhile to implement these e-government policies in their day to day work. They associate e-government with benefits and losses that come as costs either directly such as costs of buying computers and internet access installation or indirectly as an opportunity cost associated with lower resources available for a stakeholder satisfaction. The choice may also be made based on the level of literacy in ICT by their workers, quality of the services offered, poor infrastructure and insufficient legal and regulation framework.

The stakeholders' choice of implementation was put in terms of utility functions. It was assumed that each stakeholder has a utility function defined over b and c where b denotes the benefits associated with implementation of e-government policies and c is the stockholder's satisfaction (Gichoya, 2005). Accordingly, stockholder's utility conditional on e-government implementation (denoted by subscript 1) is given as;

$$\mu_1 = \mu\ (b, c_1) \qquad (3.1)$$

The associated budget constraint is;

$$Y = C_1 + P \qquad (3.2)$$

Where **Y** is the stockholder's income and **P** represents the total cost associated with e-government implementation. In a similar way, the utility associated with not implementing e-government policies may be defined by;

$$\mu_O = \mu\ (C_o) \qquad (3.3)$$

The budget constraint is;

$$Y = C_o$$

Given the utility associated with both options, stakeholders choose the option that yield the highest return. The solution to the problem of maximizing unconditional utility is;

$$\mu^* = \text{Max}\ (\mu_1, \mu_2) \qquad (3.4)$$

Where U^* is the maximum utility μ_1 and μ_O in (3.1) and (3.3) are the conditional utility given the constraint in (3.2).

Alternatively, e-government implementation may be defined in terms of dichotomous variable, where **a=1** if e-government policies are implemented and 0 if the e-government policies are not implemented; that is **a=1** if $\mu_1 > \mu_O$. The assumption so far is that there is no choice of quality of e-government policies. Thus all e-government provide same quality of ICT services.

Adoption theory is best fitted to explain the theoretical relationships between the rate of adoption of innovations and the factors that influence the adoption of innovations. In particular, various adoption theories have been advanced; Rogers Diffusion of Innovation Theory, Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology Model.

Rogers (1995) Diffusion of Innovation theory is a popular model used in information systems research to explain user adoption of new technologies. Rogers defines diffusion as the process by which an innovation is communicated through certain channels over time among the members of a social society. An innovation is an idea or object that is perceived to be new

(Rogers, 1995). According to diffusion of innovation theory, the rate of diffusion is affected by an innovation's relative advantage, complexity, compatibility, trialability and observability. Rogers (1995) defines relative advantage as the degree to which an innovation is seen as being superior to its predecessor. Complexity, which is comparable to technology acceptance model perceived ease of use construct, is the degree to which an innovation is seen by the potential adopter as being relatively difficult to use and understand.

Davis (1989) technology acceptance model is widely used to study user acceptance of technology. The measures presented in the study target employee acceptance of organizational software, but these measures have been tested and validated for various users, experienced and inexperienced, types of systems, word processing, spreadsheet, email, voicemail and gender. Studies have also used technology acceptance model to evaluate user adoption of e-commerce. Technology acceptance model is based on the theory of reasoned action, which states that beliefs influence intentions, and intentions influence one's actions (Ajzen and Fishbein, 1972). According to technology acceptance model, perceived usefulness and perceived ease of use influence one's attitude towards system usage, which influences one's behavioral intention to use a system, which, in turn, determines actual system usage.

Venkatesh *et al.* (2003) created an integrated model called Unified Theory of Acceptance and Use of Technology, in which eight models previously used in the information technology literature were merged. Unified theory of acceptance and use of technology helps managers assess the likelihood of success for new technologies as well as understand the drivers of technology acceptance. The unified theory of acceptance and use of technology model identifies the determinants of user acceptance and usage behavior. Accordingly, there are four core determinants of intention to use and usage of a technology. Three are direct determinants of intention to use the technology namely performance expectancy, effort expectancy and social influence while intention to use and facilitating conditions are two direct determinants of usage behavior. They also identified four moderators of these key relationships namely gender, age, experience and voluntariness of use.

3.4 Model Specification

The study used an Ordinary Least Squares regression to estimate the factors influencing the implementation of e-government policies. The final model adapted two factors (Perceived Usefulness and Perceived Ease of Use) from Technology Acceptance Model, and adapted one factor (facilitating conditions/support infrastructure) from Unified Theory of Acceptance and Use of Technology Model. An additional factor (Risk and Privacy concerns) was introduced and the final equation was given as follows;

E-government use = F (SI, PU, PEU, RP) (3.4)

Where

F Represents the standard normal cumulative distribution function.

SI Represents presence or absence of support infrastructure.

PU Represents perceived usefulness.

PEU Represents the perceived ease of use.

RP Represents risk and privacy.

Equation (3.4) was estimated using the Ordinary Least Squares framework. The results of which provided the basis for analysis.

3.5 Definition and Measurement of variables

Support infrastructure: Support infrastructure is the necessary consideration in the development or expansion of e-government services for clear recognition of the intended purpose and desired outcomes to ensure successful implementation. This was measured by the respondent's responses on whether they had a ministry email, personal computer, internet access and workplace computer.

Perceived ease of use: This refers to the way people can access and use internet. The variable was measured by the respondents' responses toward statements measuring how easy it was to

download the online forms, general skills and IT experience, easy to fill and application forms online, difficulty in receiving and sending emails and ease of surfing the internet.

Perceived usefulness: Perceived usefulness is related to the benefits of using e-government according to the citizens' beliefs. It is defined as the degree to which a person believes that using a particular system would enhance his or her job performance. The variable was measured using responses to statements that demonstrated the benefits of e-government programs. Such perceived benefits include improvement of public services delivery, provision of relevant information, greater flexibility in transacting online, time saving, increasing customer satisfaction and increasing feedback mechanisms.

Perceived risks and privacy concerns: Perceived risk is the citizen's subjective expectation of suffering a loss in pursuit of a desired outcome. Privacy is the protection of personally identifiable or business identifiable information that is collected from respondents through information collection activities or from other sources. Mainly deal with use of cookies, sharing of information between agencies, the disclosure or mishandling of private information. Perceived risks and privacy concerns were measured by the government employee's responses by use of a likert scale.

E-government use: E-government use was the dependent variable. It was measured through a set of questions derived from a Level of Acceptance and Use Model advanced by Hall, Loucks, Rutherford and Newlove (1975) and modified by Hall and Hord, (2001). Six questions relating to the levels of use were formulated and respondents requested to use a five point likert scale to answer the questions. The mean scores of these questions represented the level of use. The particular questions were;

1. I have adequate knowledge and awareness about the e-government applications.
2. My Effort focuses on the day to day use of the e-government applications.
3. I am consistently using the e-government applications.
4. I vary the use of the e-government applications to increase impact on my work.

5. I have combined efforts to use the e-government applications with related colleagues.
6. I reevaluate the quality of use of e-government applications and notify project staff of desired changes.

3.6 Study area profile

Nakuru County is one of the 47 counties in Kenya. The county borders eight other counties namely, Kericho and Bomet to the West, Koibatek and Laikipia to the North, Nyandarua to the East, Narok to the South West and Kajiado and Kiambu to the South. The County covers an area of 7,235.3 Sq Km. The County population has been growing at the rate of 5.6% per annum. From a population of 38,181 in 1962, the population reached 163,927 in 1989. Nowadays, Nakuru is the fourth largest town in Kenya after Nairobi, Mombasa and Kisumu, with a 1999 population of 289,385 (Government of Kenya, 2000). By the year 2015, the population is projected to rise to 760,000, which is approximately 50% above the present levels. The study was confined to the year 2011.

3.7 Target Population

The study was carried out in Nakuru County in Kenya. The study targeted four government sectors namely; Education sector, agricultural sector, financial sector and public administration sector. The basis for selecting the four main sectors was due to their level of involvement and influences in the e-government policies initiatives and development. 80 public officers working in the County were targeted.

3.8 Sample Size and Sampling Procedures

Best and Khan (1999) warned that there is no fixed number of percentages of subjects that determine the size of an adequate sample. To them, the ideal sample is large enough to serve as an adequate representation of that population about which the study wishes to generalize and small enough to be selected economically in terms of subject availability, expenses in terms of time and money and complexity of data analysis.

Table 3.1: Strata totals and sample size

GOVERNMENT SECTORS	NUMBER OF GOVERNMENT PUBLIC OFFICERS
1	20
2	20
3	20
4	20
TOTALS	80

The study adopted stratified random sampling approach to collect unbiased data from the target population. The public officers were stratified by their respective sectors they work in yielding 4 stratum; sectors 1 to 4. A simple random sample of 20 public officers was selected from each stratum as shown in table 3.1 above. The total number of respondents added up to 80.

3.9 Research Instruments

Various instruments were used for this study to ensure validity of the data collected. The instruments were questionnaires and document analysis. Primary data was collected by using a self-administered questionnaire which was issued to the respondents directly. The document analysis involved analysis of reports on ICT and e-governance in the last one year.

3.10 Pilot Study

A pilot study of the questionnaire was done on a sample of 10 public officers and any necessary modifications to the questionnaire were made in order to determine its appropriateness before it was given to the entire population. The instrument was also discussed by experts to ensure validity. A self administered questionnaire was considered an appropriate instrument in this study.

3.11 Data Collection

The data set relied primarily on data that was collected using a self administered questionnaire to public officers in Nakuru County. The questionnaire had open ended questions and some structured responses. The secondary data was gathered through a review of the published academic literature and other relevant Kenyan government and United Nations publications. A copy of the permit to undertake the study was presented to the District Commissioners office in Nakuru County. The respondents were informed in advance and the questionnaires were administered with the help of research assistants.

3.12 Data Coding, Cleaning and Refinement

The beginning of the data analysis stage involved checking the responses and assigning a unique identification number to each response. The second stage consisted of using statistical applications to obtain actual values and better understanding of each factor considered in this survey. Descriptive analysis was done on the quantitative data and the results presented in percentages and frequency tables. This study estimated ordinary least squares model that related the dependent variable to a set of independent variables.

3.13 Data Analysis

The process of data analysis involved several stages namely; data clean up, data reduction, data differentiation and explanation. Data clean up involved editing, coding and tabulation in order to detect any anomalies in the responses and assign specific numerical value to responses for further analysis. Completed questionnaires were edited for completeness and consistency. The data was coded and checked for any errors and omissions. The coding of categorized data was done according to various guiding statements stipulated by the question items. Frequency tables, percentages and means were used to present the findings. Responses in the questionnaire were tabulated, coded and processed.

CHAPTER FOUR

EMPIRICAL RESULTS AND INTERPRETATION

4.1 Introduction

This chapter dealt with the analysis of the data. Specifically, the data analysis was in line with specific objectives where patterns were investigated, interpreted and implications drawn on them.

4.2 Demographic Information

4.2.1 Gender of the Respondents

The study sought to establish the gender distribution of the respondents. The findings are presented in figure 4.1.

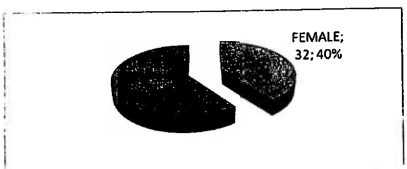

Figure 4.1: Gender of the Respondents

From the study findings, majority 60% of the respondents were male while only 40% of the respondents were female.

4.2.2 Age of the Respondents

The study sought to establish the age bracket of the respondents. The findings are presented in figure 4.2.

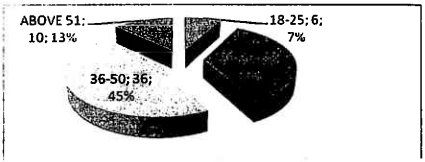

Figure 4.2: Age of the Respondents

From the study findings, majority of the respondents (45%) were between 36 to 50 years old while 35% were aged between 26 to 35 years. Thirteen percent (13%) of the respondent were aged above 51 years old and finally 7% of the respondents were aged between 18 to 25 years old.

4.2.3 Sector in which the respondents belongs

The study sought to establish the sector of the respondents. The findings are presented in figure 4.3.

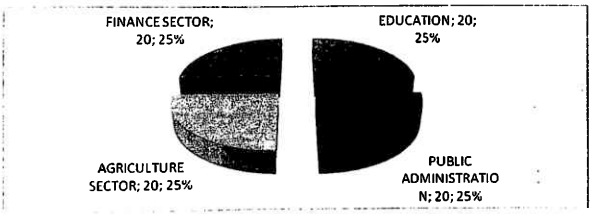

Figure 4.3: Sector of the Respondents

From the study findings, there was an equal share of 25% among finance, education, public administration and agriculture sectors respectively.

4.2.4 Level of Education

The study sought to establish the level of education of the respondents. The findings are presented in figure 4.4.

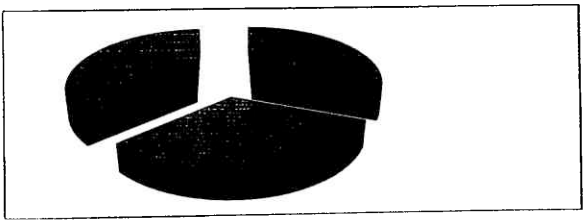

Figure 4.4: Level of Education

From the study findings, majority of the respondents (36%) were university graduates while 33% of the respondents had gone up to tertiary level and finally 31% of the respondents had gone up to secondary level.

4.2.5 Area of Residence

The study sought to establish the residence area of the respondents. The findings are presented in figure 4.5.

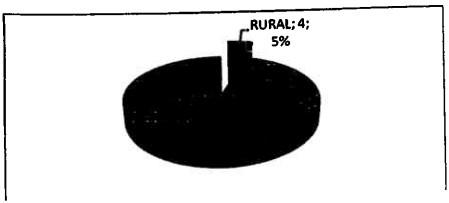

Figure 4.5: Area of Residence

From the study findings, a very large majority of 95% of the respondents lived in the urban while only 5% of the respondents lived in the rural area.

4.2.6 Training on Computer Packages

The study sought to establish whether the respondents possess training on computer packages. The findings are presented in figure 4.6.

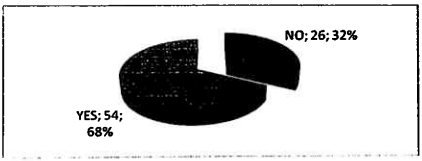

Figure 4.6: Training on Computer Packages

From the study findings, majority 68% of the respondents indicated that they possess training on computer packages while 32% of the respondents indicated that they do not have any computer training.

4.2.7 Knowledge on Various Computer Packages

The study sought to establish the knowledge of the respondents on various computer packages. The findings are presented in figure 4.7.

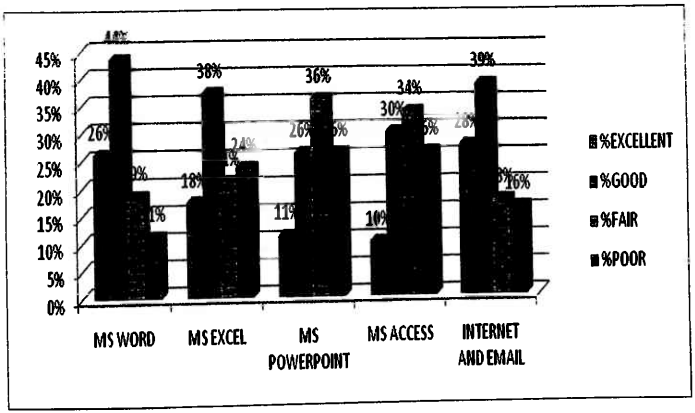

Figure 4. 7: Knowledge of Various Computer Packages

From the study findings, majority (44%) of the respondents indicated that they possess a good knowledge of MS Word. A majority of 38% of the respondents indicated that they possess a good knowledge of MS Excel. Majority of 36% of the respondents indicated that they fairly understand MS PowerPoint. Thirty four percent (34%) of the respondents indicated that they possess a fair knowledge of MS Access. Finally a majority of 39% of the respondents indicated that they possess a good knowledge of internet and email. The findings seem to indicate low computer knowledge.

4.3 Implementation of e-government policies

4.3.1 Use of e-government services

The respondents were asked whether they had ever used e-government services. The findings are presented in figure 4.8.

Figure 4. 8: Use of e government services

A majority 57% indicated that they had not while 43% indicated that they had.

4.3.2 Services Accessed Online from the Government

The study sought to establish services accessed online from the government by the respondents. The findings were presented in figure 4.9.

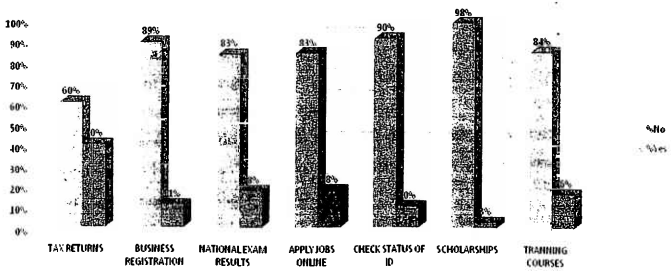

Figure 4.9: Services Accessed Online from the Government

The respondents were asked if they were using online services/e-government to submit their tax returns. 60% of the respondents indicated that they had not while 40% indicated that they had submitted tax returns online. 11% indicated that they registered their businesses using the online services offered by the government/e-government. A majority of 83% of the respondents indicated that they did not use online services from the government/e-government to check their national examination results while 17% indicated that they used the online services offered by the government to check their national examination results. Another eighty three percent (83%)

of the respondents indicated that they were not using online services from the government while applying jobs. However, 17% indicated that they were using online services from the government while applying for jobs. Ninety percent (90%) of the respondents indicated that they did not use online services from the government to check status of their Identity cards. However, 10% of the respondents indicated that they used online services/e-government to check the status of their identity cards. A very large majority of 98% of the respondents indicated that they were not using online services from the government to get updates on scholarships. However, 2% of the respondents indicated that they were using online services from the government to get updates on scholarships. A majority of 84% of the respondents indicated that they were not using online services from the government/e-government to take training courses online while 16% indicated that they were using online services to receive training courses online.

4.3.3: Level of E-Government Use

The respondents were asked to indicate the extent to which they agreed with the statements representing the level of use of e government applications. The results were presented in table 4.1. Results indicate that the mean score of the statement that the respondent has adequate knowledge and awareness about the e-government applications was 2.5125, that of the statement that the respondents effort focuses on the day to day use of the e-government applications was 2.075, that of the statement that the respondents consistently uses the e-government applications was 2.025, that of the statement that the respondents varies the use of the e-government applications to increase impact on their work was 1.95, that of the statement that the respondents combined efforts to use the e-government applications with related colleague was 2.15 and that of the statement that the respondents reevaluate the quality of use of e-government applications and notify project staff of desired changes was 2.025. The results imply that the respondents generally disagreed with the statements on the use of e-government services and applications. This is because all the statements had a means score of between 1.95 and 2.51 which falls between the likert scale of 2 (disagree) to 3 (neither agree nor disagree).

Table 4. 1: E-Government Use

	N	Minimum	Maximum	Mean	Std. Deviation
I have adequate knowledge and awareness about the e-government applications	80	1.00	5.00	2.5125	1.31201
My Effort focuses on the day to day use of the e-government applications	80	1.00	5.00	2.0750	1.31952
I am consistently using the e-government applications	80	1.00	4.00	2.0250	.79516
I vary the use of the e-government applications to increase impact on my work	80	1.00	5.00	1.9500	1.25183
I have combined efforts to use the e-government applications with related colleagues	80	1.00	4.00	2.1500	.76473
I reevaluate the quality of use of e-government applications and notify project staff of desired changes	80	1.00	5.00	2.0250	1.04306

4.4 The extent to which availability of support infrastructure influence the implementation of e-government program in Nakuru County.

The study sought to establish the availability of support infrastructure among the respondents. The findings are presented in figure 4.10.

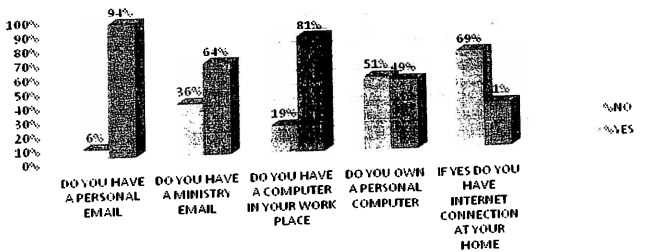

Figure 4.10: Availability of Support Infrastructure

Majority 94% of the respondents indicated that they own a personal email however, 6% of the respondents indicated that they do not have a personal email. A majority of 64% of the respondents indicated that they own a ministry email while 36% indicated that they do not have such an email. Eighty one percent 81% of the respondents indicated that they do have a computer in their work place however, 19% indicated that they have no computers in their work place. Fifty one percent 51% of the respondents indicated that they do not own any personal computer while 49% of the respondents indicated that they do own personal computers. A majority of 69% of those who indicated that they own personal computers indicated that they do not have internet connections at their homes while 31% indicated that they do have internet connection at their homes.

4.5 The extent to which perceived ease of use of E-government applications influence the implementation of e-government

4.5.1 Opinion on Skills and IT Experience

The study sought to establish the respondents' opinion on their skills and IT experience. The findings are presented in figure 4.11.

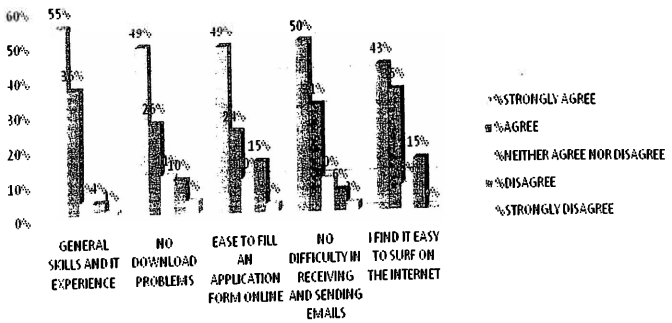

Figure 4. 11: Opinion on Skills and IT Experience

From the study findings, majority (55%) of the respondents strongly agreed that they possess general skills and IT experience while 36% simply agreed with the statement. However, an equal share of 4% neither agreed nor disagreed with the statement while the other disagreed respectively. One percent 1% of the respondents strongly disagreed that they possess general skills and IT experience. Forty nine percent 49% of the respondents strongly agreed that they have no download problems while 26% simply agreed with the statement. However 11% neither agreed nor disagreed with the statement while 10% disagreed. Four percent (4%) of the respondents strongly disagreed with the statement that they have no download problems. Forty nine percent (49%) of the respondents strongly agreed that they can fill an application form online with ease while 24% simply agreed with the statement. However, 15% disagreed with the statement while 10% neither agreed nor disagreed with the statement. Three percent 3% of the respondents strongly disagreed with the statement. Fifty percent 50% of the respondents strongly agreed that they have no difficulty in receiving and sending emails while 31% simply agreed with the statement. However, 10% neither agreed nor disagreed with the statement while 6% disagreed. Three percent (3%) of the respondents strongly disagreed with the statement. Forty three percent (43%) of the respondents strongly agreed that they find it easy to surf on the internet while 35% simply agreed with the statement. However, 15% disagreed with the statement while 8% neither agreed nor disagreed.

These finding are not surprising as they are similar to those reported by Carter and Belanger (2004), who found that ease of use was not significant in the intention to use e-government services. However, Carter and Belanger (2005) and (Phang *et al.* 2005) found that ease of use is apparently a significant determinant of the intentions of people with limited internet experience.

4.5.2 Challenges to the Smooth Implementation of E-Government

The study sought to establish the challenges to the smooth implementation of e-government. The findings are presented in figure 4.12.

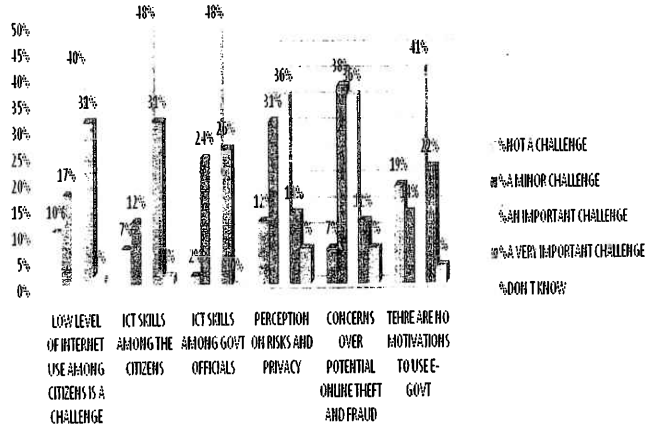

Figure 4. 12: challenges to the Smooth Implementation of e-government

From the study findings, majority of the respondents indicated that they found low level of internet use among citizens as an important challenge to the smooth implementation of e-government. Respondents too found both ICT skills among the citizens and ICT skill among government officials to be an important challenge to the smooth implementation of e-government whereby an equal percentage of 48% of the respondents indicated that both are important challenges. However, 31% found ICT skills among the citizens as a very important challenge, 12% found it to be a minor challenge and 7% found it as not being a challenge at all. On the other hand, 26% of the respondents found ICT skills among the government officials as a very important challenge while 24% found it to be a minor challenge and 2% found it not to be a challenge at all. Majority of the respondents also found both perception on risk and privacy and lack of motivation to use e-government as important challenges.

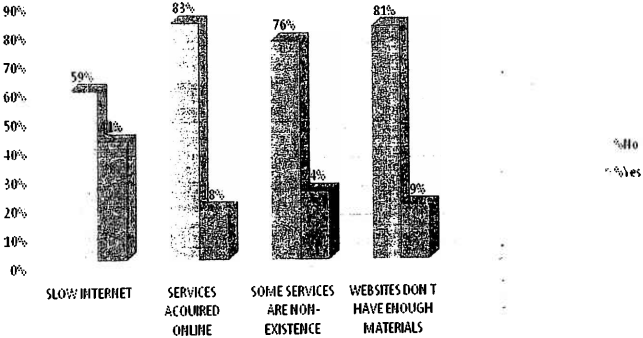

Figure 4.13: Challenges Experienced in accessing government services online

The other challenge was that online services were not acted upon fast enough. The response that attracted the least mention was slow internet. These findings are similar to those reported by AlShihi (2005), Baker and Bellordre (2004) and Beynon, D. (2005).

4.6 The perceived risk and privacy influence on the implementation of e-government programs.

The study sought to establish opinion on risk and privacy concerns. The findings are presented in figure 4.14.

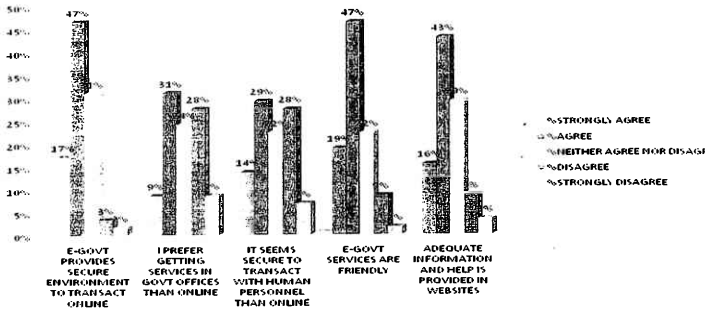

Figure 4. 14: Opinion on the Risk and Privacy Concerns

From the study findings, 47% of the respondents agreed with the statement that e-government provides secure environment to transact online while 31% neither agreed nor disagreed with the statement. However, 17% strongly agreed with the statement while 3% disagreed and 2% of the respondents strongly disagreed with the statement. 31% of the respondents agreed that they prefer getting services in government offices than online while 28% disagreed with the statement. However, 24% neither agreed nor disagreed with the statement while an equal share of 9% strongly agreed and strongly disagreed with the statement respectively. Twenty nine percent 29% of the respondents agreed that they find it secure to transact with human personnel than online, while 28% disagreed with the statement. However, 22% neither agreed nor disagreed with the statement while 14% strongly agreed with the statement and 7% strongly disagreed with the statement. Forty seven percent 47% of the respondents agreed that they find e-government services friendly while 22% neither agreed nor disagreed with the statement.

However, 19% strongly agreed with the statement while 9% disagreed with the statement and 2% strongly disagreed with the statement. Forty three percent (43%) of the respondents agreed with the statement that adequate information and help is provided in websites while 29% neither agreed nor disagreed with the statement. However 16% strongly agreed with the statement while 9% disagreed with the statement and 3% strongly disagreed with the statement. These findings are consistent with the findings of Jaruwachirathanakul and Fink (2005) and Deakins and Dillon (2002), who believed that users' trust of e-government services is associated with security and privacy assurances provided to users.

4.7 The extent to which perceived usefulness of E-government applications influence the implementation of e-government.

The study sought to establish opinion on the usefulness of e-government. The findings are presented in figure 4.15.

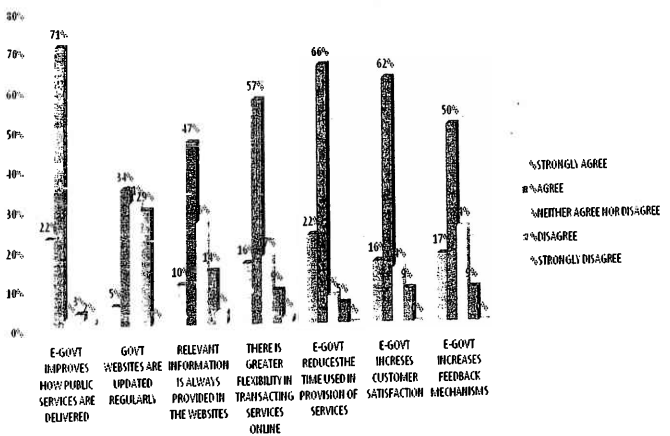

Figure 4. 15: Opinion on the Usefulness of e-government

From the study findings, majority 71% of the respondents agreed with the statement that e-government improves how public services are delivered; 22% strongly agreed with the same statement. However, 3% of the respondents strongly disagreed with the statement while an equal share of 2% each neither agreed nor disagreed and strongly disagreed respectively. A majority of 34% of the respondents agreed with the statement that government website are updated regularly while 31% neither agreed nor disagreed with the statement. However, 29% disagreed with the statement while 5% strongly agreed with the statement. Fifty seven percent (57%) of the respondents agreed with the statement that there is greater flexibility in transacting services online while 17% neither agreed nor disagreed with the statement. However 16% strongly agreed with the statement while 9% disagreed with statement and 2% strongly disagreed with the statement. Sixty six percent (66%) of the respondents agreed with the statement that e-government reduces the time used in provision of services online; 22% strongly agreed with the statement. However, 7% of the respondents neither agreed nor disagreed with the statement while 5% disagreed with the statement. A majority of 62% of the respondents agreed with the statement that e-government increases customer satisfaction while 16% strongly agreed with the statement. However, 14% neither agreed nor disagreed with the statement while 9% disagreed with the statement. Majority 50% of the respondents agreed with the statement that e-government increases feedback mechanisms while 16% strongly agreed with the statement. However, 14% neither agreed nor disagreed with the statement while 9% disagreed with the statement. These findings confirm the results that the intention to use e-government services is likely to increase if citizens perceive the services to be useful. These results are in accordance with those reported in a number of studies, for example, (Carter and Belanger, 2004) and (Dimitrova and Chen, 2006).

4.9 Regression Results

The study sought to establish the effect of various factors on the use of e-government services. The adjusted R-squared is 0.6748, implying that 68% of the variances in e-government use are explained by support infrastructure, perceived ease of use, risk and privacy and perceived usefulness. The results further imply that 32% of the variations are explained by other factors not included in the model. The reported f statistic of 41.98 was significant at a p value of 0.000.

This implied that the null hypothesis of "the overall model is not significant" is rejected at 0.05 critical value.

The following table shows the results.

Table 4. 2: Summary of estimated results

E-government	Coef.	t	P>| t |
Support infrastructure	0.8506931*	3.65	0.000
Perceived ease of use	0.1657354*	2.54	0.013
Risk and privacy	0.0586149*	2.07	0.042
Perceived usefulness	0.0659931*	2.05	0.044
Constant	-0.5887108*	-6.66	0.000

***Means coefficient is significant at 5%.**

Regression results in table 4.2 indicate that there is a positive relationship between supporting infrastructure and e-government use. The coefficient of 0.850 indicates that an increase in supporting infrastructure by 1 unit leads to an increase in e-government use by 0.850 units. This implies that the government should put in place support infrastructure such as fast and secure internet, laptops, investment in training and awareness. The presence of support infrastructure has a positive effect on the e-government use. The finding agrees with those reported by Venkatesh *et al.* (2003), who noted that the presence of supporting infrastructure has a positive influence on the intention to use e-government services.

Regression results indicate that there is a positive relationship between perceived ease of use and e-government use. A coefficient of 0.165 indicates that an increase in perceived ease of use by 1 unit leads to an increase in e-government use by 0.165 units. The results agree with those of Davis (1989), who noted that perceived ease of use is predicted to influence the intention to use. These constructs reflect users' subjective assessments of a system, which may or may not be representative of objective reality. A system acceptance will suffer if users do not

perceive a system as easy to use. The findings agree with Carter and Belanger (2005) and (Phang *et al.* 2005) who found that ease of use is apparently a significant determinant of the intentions of people with limited internet experience. These finding disagree with those reported by Carter and Belanger (2004), who found that ease of use was not significant in the intention to use e-government services

Regression results indicate that there is a positive relationship between risk and privacy and e-government use. A coefficient of 0.058 indicates that an improvement in risk and privacy by 1 unit leads to an increase in e-government use by 0.058 units. The government should ensure that it puts in place robust security measures to prevent its websites from hackers and also put in place data bases security controls as well as a strict ICT security covering all hardware, software and data. These findings are consistent with the findings of Jaruwachirathanakul and Fink (2005) and Deakins and Dillon (2002), who believed that users' trust of e-government services is associated with security and privacy assurances provided to users. This by extension leads to adoption.

There is a positive relationship between perceived usefulness and e-government use. A coefficient of 0.065 indicates that an increase in perceived usefulness by 1 unit leads to an increase in e-government use by 0.065 Units. For e-government application to be accepted, they must serve the purpose for which they were intended. These findings confirm the results that the intention to use e-government services is likely to increase if citizens perceive the services to be useful. These results are in accordance with those reported in a number of studies, for example, (Carter and Belanger, 2004) and (Dimitrova and Chen, 2006) which noted that a positive relationship exists between perceived usefulness and adoption of e-government services. The findings also agree with those reported by Rogers (1995), Davis (1989) and (Venkatesh *et al.* 2003), who noted that relative advantage of an innovation, the perceived usefulness of an innovation and the performance expectancy of an innovation positively affects e-government use.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Summary

The study was an assessment of the factors influencing the implementation of e-government policies in Nakuru County, Kenya. Government services are being transformed using information and communication technologies by many governments in developed and developing countries through developing, implementing and improving their strategies. The objectives of the study were; to assess the extent to which support infrastructure influences the implementation of e-government; to assess the extent to which perceived ease of use influences the implementation of e-government use in Nakuru County; to assess how the perceived risk and privacy influences the implementation of e-government; to assess how the perceived usefulness influences the implementation of e-government use.

Descriptive research design in the form of survey was employed. The study population was all government employees in four government sectors; education sector, agricultural sector, financial sector and public administration sector. The basis for selecting the four main sectors was due to their level of involvement and influences in the e-government policies initiatives and development. Stratified random sampling approach was adopted to collect unbiased data from the target population. The public officers were stratified by their respective sectors they work in yielding 4 stratum and a simple random sample of 20 public officers selected from each stratum. A sample of 80 public officers working in the four sectors in Nakuru County were targeted. The instruments of data collection were questionnaires. Primary data was collected by using a self-administered questionnaire which was issued to the respondents directly. The variances in e-government use were explained by support infrastructure, perceived ease of use, risk and privacy and perceived usefulness. There is a positive relationship between supporting infrastructure, perceived ease of use, risk and privacy, perceived usefulness and e-government use. The study recommends that the government should invest in training and awareness for e-government users. This would ensure that the users find government applications easy to use and enable the government to show the users the benefits they would attain from using e-government services. In addition, the government should invest in support infrastructure such as investing in fast

internet connections and increasing the availability of necessary hardware and software for e-government use. Privacy and risk concerns should also be addressed. For instance, security mechanisms such as firewalls and passwords should be put in place to safeguard the security and privacy of data submitted by online users.

5.2 Conclusion

The study concludes that the use of e-government applications was low. Specifically, services such as submission of online tax returns, business registration, online checking of national examination results, online application of jobs, online checking of identity card status, online application of scholarships and online training courses. Based on the responses that emerged from this study, government officers found it easy to use e-government services and support infrastructure such as work computers and ministry email were adequate and available. However, the officers did not have personal computers at home. Furthermore, government officers found e-government applications as not being risky and providing adequate privacy with high perceived benefits.

The study concludes that there is a positive relationship between e-government use and support infrastructure. In addition, there was a positive relationship between perceived ease of use and e-government use. The study concludes that the relationship between perceived risk and privacy was positively related to e-government use. There is a positive relationship between perceived usefulness and e-government use. The findings of this study show that low level of internet use, low ICT skills among the citizens and low ICT skill among government officials is an important challenge to the smooth implementation of e-government programs. Government officers' perception on risk and privacy and lack of motivation to use e-government are important challenges of e-government programs implementation.

5.3 Policy Implications

The study recommends that the government should invest in training and awareness through extensively advertising the e-government programs to potential e-government users especially the citizens as well as government officials This is justified by the results which show that 32% of the respondents indicated that they do not have any computer training. Also on the services

accessed online from the government 60% of the respondents indicated that they had not submitted their tax returns online, 11% indicated that they registered their businesses using the online services, 83% of the respondents indicated that they did not use online services to check national examination results, 83% of the respondents indicated that they were not using online services while applying jobs and 90% of the respondents indicated that they did not use online services to check status of their identity cards. Finally, only 39% of the respondents indicated that they possess a good knowledge of internet and email. The findings seem to indicate low computer knowledge.

Policy makers should emphasize the advertising of users' successful experience to attract non-users. This would ensure that the users find e-government applications easy to use and enable the government to show the users the benefits they would attain from using e-government services. As the results indicate, 57% of the government officials had never used e-government services. The need to advertise and create awareness is justified by the low score on e-government use. Results indicate that the mean score of the statement that the respondent has adequate knowledge and awareness about the e-government applications was 2.5125, that of the statement that the respondents effort focuses on the day to day use of the e-government applications was 2.075, that of the statement that the respondents consistently uses the e-government applications was 2.025, that of the statement that the respondents varies the use of the e-government applications to increase impact on their work was 1.95, that of the statement that the respondents combined efforts to use the e-government applications with related colleague was 2.15 and that of the statement that the respondents reevaluate the quality of use of e-government applications and notify project staff of desired changes was 2.025. The results imply that the respondents generally disagreed with the statements on the use of e-government services and applications. This is because all the statements had a means score of between 1.95 and 2.51 which falls between the likert scale of 2 (disagree) to 3 (neither agree nor disagree).

The government should invest in support infrastructure such as investing in fast internet connections and increasing the availability of necessary hardware and software for e-government use. This is shown by the results which indicate that 36% of the respondents do not have personal email addresses provided by the ministry and 19% indicated that they have no

computers in their work place while 51% of the respondents indicated that they do not own any personal computer with 69% of those who indicated that they own personal computers do not have internet connections at their homes.

There is need to address privacy and risk concerns by the government. For instance, the government should put in place security mechanisms such as firewalls and passwords to safeguard the security and privacy of data submitted by online users. It is evident from the results that 29% of the respondents agreed that they find it secure to transact with human personnel than online due to perceived risk and privacy concerns.

5.4 Limitation of the study

The accuracy of the results was limited as far as honesty of the respondents was concerned. In any research, there is always a possibility of respondents answering questions in a certain way either to conceal some important confidential details or to express their own personal bias. However, this limitation was addressed by assuring the respondents that they will not be victimized and are free to answer the questions without any fear of repercussion. This implies that honesty was safeguarded.

5.5 Suggested areas of further study

The findings of this study provide an insight on the areas that require further research in future. This study was limited to factors influencing the implementation of e-government policies in Nakuru County. Firstly, the study suggests that further areas of study should be to establish the factors affecting the use of e-government services from a citizen point of view. Such a study would seek to investigate the perceived ease of use, perceived usefulness, supporting infrastructure and risk and privacy concerns of the citizens. Secondly, the study suggests there is need for further research in the areas such as a countrywide study on the factors influencing the implementation of e-government policies and then making a follow up on this sample over time to ascertain the results. By doing so the researchers can make use of a panel data instead of cross sectional data that does not take into account changes over time. This will help in utilizing both time series and cross sectional data. Finally, there is need for further study on user composition of e-government services and the types of e-government services they require.

REFERENCES

Abanumy, A., Albadi A. and Mayhew, P. (2005), e-Government Website Accessibility: In-Depth Evaluation of Saudi Arabia and Oman, *The Electronic Journal of e-Government,* 3 (3), 99-106.

AlShihi, H. (2005) E-government development and adoption dilemma. *6th International We-B (Working for e-Business) Conference,* Victoria University, Melbourne, Australia.

Awan, M. (2003). E-Government: Assessment of GCC (Gulf Co-operating Council) Countries and Services Provided, Lecture Notes in Computer Science, 2739, 500-503.

Baker, P and Bellordre, C. (2004) Adoption of information and communication technologies: key policy issues, barriers and opportunities for people with disabilities. *37th Hawaii International Conference on System Sciences.* 14 (32), 771-771.

Bannister, F. and Remenyi, D. (2000). Acts of faith: instinct, value and IT investments. *Journal of Information Technology,* 15(3), 231-241.

Basu, S. (2004). E-government and Developing countries. An overview. International Review of Law Computers and Technology, 18(18), 109-132.

Beynon, P. (2002). Information systems: An introduction to informatics in organisations. Basingstoke: Palgrave.

Beynon, P. (2005). Constructing electronic government: the case of the UK inland revenue. *International Journal of Information Management,* 25, 3-20.

Caroline, *et al.* 2008. "The Effects of E-Government on Trust and Confidence" in *Public Administration Review* 66(3), 354-369.

Carter, L. and Belanger, F. (2003), 'Diffusion of Innovation and Citizen Adoption of E-Government Services' *The Proceedings of the First International E-Services Workshop.*

Carter, L. and Belanger, F. (2004), Citizen Adoption of Electronic Government Initiatives, Proceedings of the 37th Hawaii International Conference on Systems Sciences.

Cogburn, D. L., and Adeya, C. N. (1999) *Globalization and the Information Economy: Challenges and Opportunities for Africa*, Report from the United Nations Economic Commission for Africa.

Daren, *et al.*, 2004. Towards a framework for e-government development in Nigeria. *Electronic Journal of e-Government*, 8, 148-161.

Davis, F. (1989) Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS quarterly*, 13 (3), 319-340.

Deakins, E. and Dillon, S. (2002). E-government in New Zealand: the local authority perspective. *International Journal of Public Sector Management*, 15(5), 375-398.

Dunleavy, Patrick and Margetts, Helen and Bastow, Simon and Tinkler, Jane (2008) *Australian e-Government in comparative perspective. Australian journal of political science*, 43 (1). 13-26. ISSN 1036-1146.

Farelo, M and Morris, C. (2006). The status of e-government in South Africa. Research paper, ST Africa Conference, Pretoria, South Africa.

France, B. and Janine, S. (2006). "A framework for e-government: privacy implications", *Business Process Management Journal*, 12 (1), 48 – 60.

Government online (2011) the official website of Kenya e-government, http://www.e-government.go.ke

Gichoya, D. (2005). Factors affecting the successful implementation of ICT projects in government. *The Electronic Journal of e-Government*, 3(4), 175-184.

Guerra, G. A., (2003), Economics of Trust: Trust and the Information Economy, DSTI/ICCP/IE/REG (2002)2, OECD, Paris.

Gupta, B., Dasgupta, S., and Gupta, A. (2008) Adoption of ICT in government organization in a developing country: An empirical study, *Journal of Strategic Information Systems*, 17, (2) 140-154.

Huang, W. D'Ambra, J. and Bhalla, V. (2002). An empirical investigation of the adoption of e-government in Australian citizens: Some unexpected research findings. *Journal of Computer Information Systems*, *43*(1), 15-22.

Jaruwachirathanakul, B. and Fink, D. (2005). Internet banking adoption strategies for a developing country: the case of Thailand. *Internet Research: Electronic Networking Applications and Policy*, 15 (3), 295-311.

Jeffrey, W. Steifert (2001). Government Information Technology Management. Past and Future Issues. CRS Report RL 30661.

Jeffrey, W. Steifert (2003). The transformational potential of e-government: The role of political leadership, 13 (15) 363-386.

Jorgenson, D. and Cable, S. (2002). Facing the challenges of e-government: A case study of the the city of Corpus Christi, Texas. *SAM Advanced Management Journal*. 67,(3), 15-21.

Lee, S. M., Tan, X., Timi, S. (2005). Current practices of leading e-Government countries, Communications of the Association for Information Systems, 48, 99-104.

Margetts H and Dunleavy P, (2002) Cultural Barriers to E-government, Published by the National Audit Office HC 704-III

Monga, A. (2008). E-government in India: Opportunities and challenges, *journal of administration and governance*, 3 (2), 84-101.

Phang *et al*, (2005). Senior citizens adoption of e-government: in quest of the antecedents of perceived usefulness. *38th Hawaii International Conference on System Sciences*, 4 (9), 14-34.

Steifert, J. (2003). A Primer on E-Government: Sectors, Stages, Opportunities and Challenges of Online Governance: An evolving concept, a developing practice. *Journal of E-Government*, 1(1), 7-15.

APPENDICES

APPENDIX 1

QUESTIONNAIRE

I am Joel M. Mutuku, a student in School of Economics, University of Nairobi. In the course of fulfilling my research project requirement for my Masters Degree, I am conducting this survey for a research study. The title of the study is **factors influencing the implementation of e-government policies in Nakuru County, Kenya.** In order to improve the effective implementation of e-government policy we would like to know from you the factors that influence the effective implementation of e-government policy. All the information you give will be treated confidentially and the results will be generalized for all respondents

Questionnaire Number.....

Name of the District: .....

SECTION A: Personal Details

TICK [X] APPROPRIATELY

1. Please indicate your sex.

   a) Male b) Female

2. Please indicate your age bracket.

   a) 18 – 25 years b) 26 – 35 years c) 36 – 50 years d) Above 51 years

3. Which is your sector?

   a) Agriculture and Rural Development b) Physical Infrastructure

   c) Tourism, Trade and Industry d) Human Resource Development

   e) Information Communication Technology f) Public Administration, Safety, Law and Order

4. Indicate your highest level of education.

   a) None b) Primary c) Secondary d) Tertiary e) University

5. State your place of residence

   a) Urban b) Rural

SECTION B: Respondents information on ICT.

6. Do you have any training on computer packages?

a) Yes b) No

7. How would you rate your knowledge on the following packages?

	Excellent	Good	Fair	Poor
Ms Word				
Ms Excel				
Ms PowerPoint				
Ms Access				
Internet and Email				

8. Indicate your opinion on your skills and IT experience

	Strongly Agree	Agree	Neither Agree/Disagree	Disagree	Strongly Disagree
I am familiar with a mouse, keyboard and computer hardware	1	2	3	4	5
I have no problem downloading a document from the internet	1	2	3	4	5
I can easily fill an application form online	1	2	3	4	5
I have no difficulty in receiving and sending emails	1	2	3	4	5
I find it easy to surf on the internet	1	2	3	4	5

9. Do you have a personal email?

a) Yes b) No

10. Do you have a ministry email?

a) Yes b) No

11. Do you have a computer in your workplace?

a) Yes b) No

12. Do you own a personal computer?

a) Yes b) No

13. If yes, do you have internet connection at your home?

a) Yes b) No

14. How often do you access internet?

a) Several times a day b) Once daily c) Once in a week d) Rarely

15. For how long have you used internet?

a) Less than 2 years b) 2 – 5 years c) 6 – 10 years d) More than 10 years

16. How do you get official communications from Ministry Headquarters?

a) Government Circulars b) Letters c) Email d) Verbal communication

17. How do you submit progress reports and returns to Ministry Headquarters?

a) Post office b) Couriers c) Email d) Hand delivery

18. Which internet connection is in your office?

a) Wired internet connection b) Internet Modems c) Wireless Internet d) None

19. Have you ever used any e-government service?

a)Yes b) No

20. If yes which services do you access online from the government?

a) Tax returns b) Business registration c) National examination results

d) Apply jobs online e) Check status of Identity card f) Scholarships g) Training courses

SECTION C: Respondent information on benefits, risks, privacy, ease of use and access concerns.

21. Indicate your opinion on the risk and privacy concerns

	Strongly Agree	Agree	Neither Agree/Disagr	Disagree	Strongly Disagree

			ee		
E-government provides secure environment to transact online	1	2	3	4	5
I prefer getting services in government offices than online	1	2	3	4	5
It seems secure to transact with human personnel than online	1	2	3	4	5
E-government services are friendly	1	2	3	4	5
Adequate information and help is provided in the websites	1	2	3	4	5

22. Please indicate your opinion on the usefulness of the e-government

	Strongly Agree	Agree	Neither Agree/Disagree	Disagree	Strongly Disagree
E-government improves how public services are delivered	1	2	3	4	5
Government websites are updated regulary	1	2	3	4	5
Relevant information to meet citizens needs is always provided in the websites	1	2	3	4	5
There is greater flexibility in transacting services online	1	2	3	4	5
E-government reduces the time used in provision of services	1	2	3	4	5
E-government increases customer satisfaction	1	2	3	4	5
E-government increases feedback mechanisms	1	2	3	4	5

23. E-government has brought with it some advantages please indicate the benefits you feel accrue from e-government.

	Strongly Agree	Agree	Neither Agree/Disagree	Disagree	Strongly Disagree

E-government increases transparency	1	2	3	4	5
The quality of services provided by e-government increases	1	2	3	4	5
E-government has reduced the paperwork in office operation	1	2	3	4	5
E-government empowers citizens to access government services	1	2	3	4	5
E-government reduces the workload	1	2	3	4	5

24. E-government has faced challenges, in your opinion which factors do you think are a challenge to the smooth implementation of e-government?

	Not a challenge	A minor challenge	An important challenge	A very important challenge	Don't know
Low level of internet use among citizens	1	2	3	4	5
ICT skills among citizens	1	2	3	4	5
ICT skills among government officials	1	2	3	4	5
Perception on risks and privacy	1	2	3	4	5
Concerns over potential online theft and fraud	1	2	3	4	5
There are no motivations to use e-government	1	2	3	4	5

25. What are the challenges you experience in accessing government services online?

a) Slow internet connection.

b) Services acquired online are not acted upon fast enough as they would have were they done personally.

c) Some services are non-existence.

d) Websites don't have enough materials for access.

THANK YOU