UNIVERSITY OF KWAZULU-NATAL

Challenges in implementing an e-Government website in Guinea-Bissau

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DECLARATION

I, Amediano Gomes Cá, declare that

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Abstract

This research assesses the challenges involved in the implementation of an e-Government website in Guinea-Bissau. Special attention is given to Government ministries and their role in implementing the e-Government website. The goal has been to establish the extent to which the Government of Guinea-Bissau has responded to the challenges involved in establishing e-Government and the progress that has been made with regard to the priority initiatives pertaining to e-Government in the country. The study has made use of the survey research strategy. The study's population consisted of twenty-three Government ministries. The study examines the challenges and prospects connected with the implementation of e-Government in GB and it also investigates the reasons for the failure of the country's first IT implementation attempt. This study argues that e-Government in Guinea-Bissau (GB) has the potential to change the Government administration's processes and also facilitate the delivery of Government information to the public. Realising this potential may be assisted if the ICT recommendations are taken into account by the relevant stakeholders. The development of an e-Government policy, an e-Government strategy and an e-Government programme were identified by respondents as matters of priority, as is the need to attend to GB's broadband issues.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABREVIATIONS	MEANING
ASPA	– American Society for Public Administration
E-Government	– Electronic Government.
G2B	– Government to Business
G2C	– Government to Citizen
G2E	– Government to Employees
G2G	– Government to Government
GB	– Guinea-Bissau.
ICT	– Information and Communications Technology
IDs	– Identification documents
IDT	– Innovation Diffusion Theory
IP	– Internet Protocol
IT	– Information Technology
LAN	– Local Area Network
MAN	– Metropolitan Area Network
MM	– Motivational Model
MMS	– Multimedia Message Services
MPCU	– Model of Personal Computer Utilization
MTN	– Mobile Telephone Network
NGO	– Non-Government Organisation
PSMP	– Public Sector Management Programme
SA	– South Africa
SMS	– Short Message Services
TAM	– Technology Acceptance Model
TPB	– Theory of Planned Behaviour
TRA	– Theory of Reasoned Action
UK	– United Kingdom
UKZN	– University of KwaZulu-Natal
UN	– United Nations
URL	– Universal Resources Locator
USDA	– United States Department of Agriculture

USA	– United States of America
UTAUT	– Unified Theory of Acceptance and Use of Technology
W3C	– World Wide Web Consortium
WACs	– West African Countries
WAI	– Web Accessibility Initiative
WAN	– Wide Area Network
WWW	– World Wide Web

1 CHAPTER ONE: INTRODUCTION TO THE STUDY

1.1 Introduction

This chapter provides background information on the role of Information and Communications Technology (ICT) in e-Government, with particular focus on Guinea-Bissau (GB). It contains the research objectives, the scope of the study and the main questions for the research. This chapter also discusses the use of ICT in developing countries and concludes with an overview of the study.

The rapid developments in Information and Communications Technology (ICT) have enabled the subsequent advancement of electronic services (e-services) and electronic Government (e-Government). As far back as 2001, Adesida reported that ICT is positively transforming the lives of people all around the world by changing various aspects of public life such as economic and public services. The United Nations Online Network in Public Administration and Finance (UNPAN, 2008) has observed that the widespread adoption of ICT affords countries the opportunity to adopt successful working modalities across Government agencies. According to the United Nations (2002), ICTs are required for countries to develop and enable inter-Governmental linkages as well as coordinate e-Government. As such, ICT should be observed as a key instrument for bringing about a modification in delivery service methods. Although the implementation of e-Government programmes requires the use of numerous ICT applications, it is the Internet that is the primary, most widely known component driving e-Government. Ngulube (2007) suggests that e-Government is frequently defined as ‘Government online’ or ‘Internet Government’. Various non-Internet e-Government technologies such as Short Message Services (SMS), the telephone, Multimedia Message Services (MMS), the fax, wireless networks, Bluetooth, the television and radio can also be used in the context of e-Government. These technologies are rapidly converging with network and Internet technologies, providing a more integrated platform for ICT, in particular e-Government, development.

In 2005, Lam reported that much of the literature supports the claim that most of the world’s Governments are far from having implemented mature e-Government systems. Although progress has been made in numerous countries in terms of implementing e-Government, the evidence suggests that many of the e-Governments that have been implemented remain at an

informational or early transactional stage. Ngulube (2007) indicates that efforts in sub-Saharan Africa to reach a more mature stage of e-Government are hindered by many challenges including the development of infrastructure, public policy and law, the digital divide, accountability, trust, privacy, security, transparency, education and marketing, public and private sector partnerships, workforce issues, cost structures and benchmarking. These challenges need to be taken into account in order for all of a country's citizens (regardless of their geographical location) to benefit from e-Government; this study focuses particularly on Guinea-Bissau.

UNPAN (2008) has observed that while Governments share many common challenges, they also begin from different stages in relation to their implementation of e-Government and their development of administrative processes appropriate to requirements and within the parameters of their own stated developmental objectives. It is important that the policy makers of developing countries like Guinea-Bissau, which are still in the beginning stages in relation to ICT services, adopt "a multiple channel service delivery approach to Government services" UNPAN (2008: 10) as large numbers of people may be without access to e-services. However, opportunities to leapfrog into current technologies, without having to pass through intermediate stages, clearly exist for late adopters (UNPAN, 2010).

Lam (2005) suggests that e-Government has numerous benefits and these benefits include greater transparency, the reduction of corruption, empowerment of citizens, reform in Government services, and the improved use of digital technologies by Government agencies. Digital technologies serve as a key instrument of innovation in societies and economies around the world. The vast and rapid expansion of the Internet has provided ample opportunities for the growth of the electronic community and many people all over the world are using online services to obtain as well as transmit information. This is less costly and less time-consuming than traditional methods, such as hardcopy distribution. Programmes or projects related to e-Government are developing worldwide, and Guinea-Bissau is no exception (Golubeva *et al.,* 2002).

E-Government has been introduced as a new way of communicating for the public and private sectors in both developed and developing countries. It helps increase the rate of a country's development and it has been shown to drive economic progress in developing countries. Countries like GB would benefit from this technology as it can help improve the

delivery of governance solutions to the public sector and achieve better public administration control (Dada, 2006).

E-Government is associated with the implementation of administrative processes. It can be the means for conducting online transactions, which will in turn transform the relationships between citizens, businesses, and other Government institutions. It helps the Government to improve its delivery of services to citizens and it improves the Government's interactions with businesses and industries and it also empowers citizens (Horan and Abhichandani, 2006a). The administrative sector of GB is currently very weak and has little control over the country, and there is much corruption in the public sector (eStandardsForum, 2010). The Government does not maintain a healthy flow of information between Government departments and the country's citizens (WorldBank, 2009a). Good governance is a requirement for twenty-first-century Governments and good governance demands that there be democratic, responsive, participative and transparent policy-making. E-Government will enable citizens to have potentially easier access to Government information (Brewer *et al.*, 2006).

This research investigates the challenges faced by the Government of GB with regard to implementing an e-Government website. It is vital to assess the existing state of readiness of Government for implementing an e-Government website as well as identify challenges that will need to be addressed (Golubeva *et al.*, 2002). In GB, there is currently no e-Government website. GB's authorities experience with information technologies need to be documented and analysed. In addition, the researcher's insider knowledge as a Government employee in the Ministry of Finance confirms that there is no strategic plan for e-Government website development in GB although informal discussions have occurred. This study will explore the range of challenges of implementing an e-Government website in GB.

1.2 Background and context

The Republic of Guinea-Bissau is a country in Western Africa. "It is one of the smallest nations on the continent of Africa. It is bordered by Senegal to the north and Guinea-Conakry to the south and east. To the west is the Atlantic Ocean. It was formerly a Portuguese colony" (NationsEncyclopedia, 2009: Guinea-Bissau) but it gained its independence in 1974. The

name of its capital has, however, always been Bissau. GB covers an area of 32.125 km^2, and has a population of 1,600,000 (NationsEncyclopedia, 2009: Guinea-Bissau).

The researcher has been engaged by the Ministry of Finance in the Public Marketing Department to design the layout of a programme to administer the network of support systems in the Finance Ministry. That network provides information to five ministries. It was first implemented between 2002 and 2004 on the inter-ministerial network service and database. However, that system failed for a variety of reasons. GB has electricity problems and it was impossible to maintain the system. Also, IT technicians were not provided with sufficient training.

In the future, the Government of GB has the opportunity to make use of e-Government websites, which will provide an Information Systems for use by citizens and will transform the Government by making it more accessible, effective and accountable (Golubeva *et al.*, 2002). This dissertation relates indirectly to the use of ICT by the Government of GB and how it could enrich the public problem-solving process. It will directly investigate the challenges involved in implementing an e-Government website in GB.

1.3 Problem statement

E-Government websites use Information Technology (IT) (i.e. computerisation) to provide citizens and organisations with convenient access to Government information and services. Some of the resulting benefits are: less corruption, increased transparency, greater convenience, revenue growth, and cost reductions (Brewer *et al.*, 2006). Since the first Government IT implementation between 2002 and 2004, investment by the GB Government in the use of ICT has increased dramatically. However, the Government is still using traditional methods (e.g. hardcopies) to deliver information; not only are these time-consuming and costly, but information sometimes gets lost. E-Government is not a complete solution to the reform of the public sector but it should be part of the country's broader commitment to reforming the public sector (UNPAN, 2008). This study aims to address some of the problems currently being faced by the Government, such as the inefficient use of traditional communication methods. However, the implementation of a technological solution introduces a host of challenges that need to be addressed if the Government is to succeed in

these ventures. These challenges have not been clarified and are as yet unknown (Dada, 2006).

1.3.1 Sub-problems

1. One of the major requirements for the envisaged governance Information System (IS) was that the system be implemented within all the ministries relating to administrative information. Simple applications that focused on creating improved management processes in the IS were installed in five ministries. They were used between 2002 and 2004 and were assessed as failures (Jardim, 2007), as Government staff did not take to the new implementation. The underlying reasons for this failure are unknown, although insufficient training has been suggested as one of the reasons.

2. According to Jardim (2007), GB does not currently have an IT infrastructure in place that allows for effective interaction between Government officials and citizens. At present, GB has a weak computer network infrastructure, which is incapable of supporting major IT projects. There are only a few institutions and companies within GB that have the electronic IS that are needed to supply the information needs of different categories of users throughout the country. There is consequently a very limited exchange of information between institutions, information providers and potential consumers. Awareness of the existence of electronic information is thus very limited in GB. Also, there are no cross-linkages between the country's IS systems since most of them are not available in electronic form. This results in limited transparency between citizens and the Government, a limited free-flow of information (which in turn leads to processes, institutions and information not being directly accessible to the concerned parties), little information being provided to help people understand and monitor the problems, and limited resource utilisation due to the absence of a computerised Management Information Systems (Barros, 2002). The present research will investigate the reasons for the lack of IS in the Government, particularly the perceptions of officials regarding this. It will subsequently make recommendations with regard to the attitudes of Government officials towards the proposed technological initiatives.

3. There are a number of other challenges that need to be identified. According to Jardim (2007), training in Information Technology from 2002 – 2004 has apparently not

solved any of the problems. The Government's first experiment with a network was not successful and officials seem to have had difficulty using the system provided. In addition, the political environment has also not helped with the implementation of ICT because there have been many changes in political office bearers over the years.

1.4 Research objectives

The problems discussed above are addressed by the following research objectives:

1. To determine the reasons for the failure of previous IT projects in the Government of GB.
2. To investigate the reaction of Government officials to the proposed Government website.
3. To identify any other challenges that may exist in relation to the implementation of an e-Government website.

1.5 Literature survey protocol

Most of the resources needed for the literature survey of this research were accessed from the online library at the University of KwaZulu-Natal (UKZN). The university's resources that were used included the following:

- The UKZN library database, which provided information about the books available within UKZN libraries.
- The *Nexus* database, which was consulted to determine what other dissertations on this topic have been completed.
- Sabinet, which has information on South Africa (SA) e-Publications and all legal products.
- Google Scholar was used to obtain journal articles and e-books relating to ICTs, their use and implementation, and their impact on the sub-Saharan region of Africa.
- ScienceDirect, Emerald Insight, EbscoHost research databases, and Proquest database sources were used, particularly in sourcing full-text articles.
- The UN website also provided valuable information on rankings for countries with an online presence.

The implementation of e-Government implies that there will be many changes to those administrative processes that are within the domain of e-administration. Broadly defined, electronic Government includes any and all ICTs that supports Government operations, engages the country's citizens, and provides Government services (Sakowicz, 2005).

Currently, Governments around the world are using the tool of e-Government sites to deliver goods and services to their citizens and conduct a variety of transactions. For example, an end-user need only make one stop at an e-Government site to download a visa form, complete and upload the form, and, at the same time, request that a passport be issued by making just a few clicks on the keyboard. Analysing the cost-to-benefit ratio of e-Government may lead to cost-saving as well as paperwork reductions. Not only can a Government provide services to citizens through an e-Government site, but it can also conduct business with other Governments, and with private entities (West, 2008).

E-Government can also be used to contribute towards the construction of a more just society and it can also help bridge the social gap between the developed and the developing world (Mosse and Whitley, 2008). The next section deals with the primary theoretical frameworks that informed this study.

1.6 Theoretical framework

Building Government and private sector knowledge about the architectural framework of e-Government is an important strategic phase that leads to a dependable and successful e-Government implementation. Scholars have come up with various frameworks as to how a successful e-Government can be adopted (Ngulube, 2007). The following theoretical and conceptual frameworks have indirectly influenced this study.

1.6.1 Model of e-Government

This study is focused on the challenges in implementing an electronic Government website in Guinea-Bissau. West (2004) states that e-Government is an important tool when it comes to innovating Government development and successfully introducing new technologies to a country. ICT policy construction for developing countries has been observed by UNESCO

(2005) to indicate that e-Government is related particularly to e-readiness. This framework can support policy makers and Government senior officers in their development of the nation by offering them comprehensive strategies for preparing an ICT policy that will guarantee that e-Government is not only positively implemented but also reaches a stage of maturity (UNESCO, 2005).

Employee participation in implementing e-Government involves the reorganisation of the potential strategy of a Government and involvement by Government agencies in the successful application of ICT. Heeks and Bailur (2007) state that e-Government research can either be informed by theory-based work, framework-based work, model-based work, scheme-based work, concept-based work, category-based work, or non-framed work. According to West (2004), e-Government is a key tool when it comes to initiating Government development.

The e-Government delivery services model starts with the segmentation of the market and, based on the literature on electronic Government, there are four main target market segments, namely Government-to-Government (G2G), Government-to-employees (G2E), Government-to-business (G2B) and Government-to-citizen (G2C). Heeks and Bailur (2007) argue that the model-based paradigm is the dominant theoretical framework used in implementing e-Government research. Affisco and Soliman (2006) assert that this model has proved to be very beneficial in terms of establishing the Government website at national level. Yildiz (2007) claims that the model of electronic Government was first introduced in a study by the United Nations and ASPA and that it produced excellent results.

1.6.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT has provided managers with a framework for successfully adopting new technology. It helps guide them in their planning and efforts to ready themselves for the adoption of new systems. The UTAUT incorporates eight models, namely the "Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model (MM), the Theory of Planned Behaviour (TPB), a Model Combining the Technology Acceptance Model and the Theory of Planned Behaviour, the Model of PC Utilisation (MPCU), the Innovation Diffusion Theory (IDT), and Social Cognitive Theory" Venkatesh *et al.* (2003: 445). Venkatesh *et al.* (2003) argue that UTAUT provides a useful instrument for

managers to assess the probability of success for new technology introductions and can help them understand the drivers of acceptance in order to proactively create interventions involving technology and training targeted at citizens that may be reluctant to accept and use new technology. According to Venkatesh *et al.* (2003), UTAUT is fundamentally a theoretical framework for investigating users' acceptance of e-Government. The researcher of the present study was influenced by three of these models, namely TAM, IDT and MPCU. In summary, this study has been influenced by UNESCO's e-Government model and specific aspects of UTAUT. The nature of this influence is further discussed in Section 2.9 of Chapter Two.

1.6.3 E-Government systems from other countries

The researcher investigated e-Government systems of various other countries. For example, the researcher studied how the different regions of Brazil have solved the problems they encountered with regard to ICT, and the establishing of a functional database for their Government. The experiences of other countries were of help when it came to suggesting how the Government of GB could go about implementing its own e-Government site; the researcher may be able to avoid the pitfalls experienced by other nations when implementing e-Government.

1.7 Research questions

These are the research questions that have been derived from the initial problem statement for this study.

1. What are the reasons for the failure of previous IT projects in GB?
2. How would GB Government officials react to a Government website in GB?
3. What are other possible challenges to implementing an e-Government website in GB?

1.8 Defining the scope of the study

The long term idea to implement an e-Government website is aimed at improving the delivery of information and technology in GB. The e-Government site would be used by Government administrators as well as by the private sector.

According to the UNPAN (2008), GB did not have an online presence in 2005. It was ranked number 170 in the 2008 survey. In addition, GB was at the bottom of the ranking of Western African countries regarding the use of Information Technology. It has been noted that in GB, IT is not used substantially and the Government still uses hardcopies to disseminate information (UNPAN, 2008).

The question is how the utilisation of IS and technology can be included in Government policy. The literature suggests that IT policy needs to develop a competency framework to support Government administration. It is claimed that if the Government were to use technology correctly, the administration sector would be greatly improved (West, 2008). This dissertation will focus on understanding the challenges in implementing what appears to be an obvious IT e-Government solution – actual implementation and design issues will not be directly addressed.

1.9 Definitions of important terms relevant to the study

- E-Government

Heeks (2003) defines electronic Government as the utilisation of ICT to enhance the activities of the public sector establishment. E-Government provides Government agencies with an Internet connection for incorporating their services and improving the Government's relationship with citizens. The term is often confused with electronic governance (e-governance), yet e-governance refers to the use of IT to improve the quality of the Government's service delivery to businesses and citizens. Misuraca (2006) says that e-governance refers in general to a broader concept than does e-Government and it can make a change in how people relate to the Government and to each other. E-governance is also about moving beyond the passive giving of information to dynamic citizen participation in decision-making processes.

- E-Government programme

According to the United States Department of Agriculture (USDA, 2004), an e-Government programme is a detailed, step-by-step guide for an agency to follow in order to understand and make prudent decisions about how best to implement a secure architecture for online applications. Such a programme usually covers authentication, permissions of application,

authorisation, and incorporates electronic application, hosting and registration procedures that will protect confidential information being transmitted via the e-Government website.

- E-administration

Electronic administration is the use of ICT to improve Government administration, from restructuring business processes to conserving electronic records, increasing their flow and integrating information (Sakowicz, 2005).

- E-democracy

The Internet can change democratic processes and institutions by overcoming physical distance, by allowing for the virtualisation of organisations and political networks, and by facilitating in general the horizontal diffusion of power and innovation (Moreira *et al.*, 2009). E-democracy offers new ways for Governments to cope with the need for responsiveness and inclusion. However, this means that the Government and its elected representatives must not be outsiders to e-democratic initiatives. E-democracy should create opportunities for citizens' interests to be voiced and should also give all citizens the chance to take part in the political process. E-democracy can empower citizens. It forces politicians to be more accountable for their actions and it facilitates communication between political representatives and citizens, thus making the representatives more responsive (Moreira *et al.*, 2009).

- E-services

The term e-services refers to any Internet-based electronic information delivery from the Government through services and programmes. An e-service is software that is part of the Government website and whose aim is to automate or partly automate one particular administrative process. This process can be triggered by a request from a citizen (Adesida, 2001).

- E-society

E-Society can be defined as the continuously increasing availability of digital data and citizens' continuously improving ability to have easy access to them, whether from fixed stations or from mobile appliances. An e-Society can be described as a reality that emerged through new ICTs that has the potential to change the interaction and interrelation between different actors within and between communities (Moreira *et al.*, 2009).

- E-information

UNPAN (2008) describes electronic information as the information contained on a Government website about elected officials, the structures of Government, its policies and programmes, the budget, the country's laws and regulations, and any other information of interest to citizens. The information is disseminated through a number of online tools such as community networks, blogs, website discussion forums, text messages, newsgroups, and email lists.

- Digital Divide

According to Mutula (2005), the digital divide refers to the different levels of access by citizens to Information Technology (i.e. Internet services and ICTs). Lau (2003) claims that the digital divide is one of the main barriers to implementing e-Government in developing countries since most citizens – especially those in rural areas – do not have access to the Internet and will not be able to benefit from e-Government online services.

1.10 Research design and methodology

The purpose of this dissertation is to investigate the challenges involved in implementing an e-Government website in GB. The researcher also aims to suggest possible ways to ensure that an e-Government website implementation takes these challenges into account.
The sequence of research employed by the researcher was:

1. Questionnaires
2. Follow-up interviews with key officials

The questionnaires/interviews were with Government employees and IT technicians. They were conducted in a structured manner and focused on the reasons for the failure of the first IT implementation between 2002 and 2004, the use of technology and perceptions of readiness of implementing e-Government in GB. The researcher investigated the challenges facing officials in order to know how best to obviate these challenges in the future. The researcher also used questionnaires to help clarify the perceived importance of the e-Government site. The questionnaires helped give an indication of the past behaviour of those professionals frustrated with existing systems. The questionnaires also examined employees'

IT knowledge and Information Systems use whether employees how many employees really understand and use IS optimally.

1.11 Representative sampling

The population frame for the study was Government officials and employees, including IT staff. A sample of one hundred respondents was used. Each of the twenty-three ministries had four respondents (one IT professional, one employee, and two general directors). The questionnaires/interviews helped the researcher to detect the IT challenges that are the real issues facing the Government. The ten interviews with general directors, IT professionals and employees were used as follow-up: they provided the researcher with more detailed information and helped discern the causes of the failure of the technology in previous years.

1.12 Ethical requirements

The present dissertation is part of a current work-related issue and ethical clearance was obtained from the Government of GB in order to stimulate broad involvement in the project. Any information about Government strategies is confidential. It is critical that all governance strategies be kept private. The staff of ICT, should it wish to publish official documents from the Government on its e-Government website, first needs authorisation from the head of the Department of Media. All existing procedures of the UKZN Ethical Clearance policy were followed.

1.13 Limitations of the study

The findings of this study are specific to GB and will not be generalisable to other countries. However, it is hoped that the methodology used and findings from this study may contribute indirectly to other similar studies in developing countries.

1.14 Overview of the study

This dissertation is organised into six chapters. Chapter One describes the background to the study, and provides an outline of the research problem, gives definitions for the key terms relevant to the study, discusses the study's theoretical framework, outlines the framework that

is used, and provides the researcher's justification for the study, the problem statement as well as the research questions asked in the study, and the delimitation of the study.

Chapter Two discusses each of the following topics as they relate to the implementation of an e-Government: the definition of e-Government, the importance of technology for e-Government, the failure of the IT project globally, the required skills for implementing e-Government, challenges in e-Government-related IT development, the measures of e-Government, and the model of e-Government. This chapter also offers a summary of the literature relating to e-Government across the world, e-Government within Africa, the situation in Western Africa in terms of e-Government, the readiness of GB for an e-Government website, and GB's national ICT policy.

Chapter Three describes the research approach of the present study and its data collection method. It also describes the instruments used in this study and how the questionnaire was formulated. Chapter Four presents figures and tables that represent the results of the survey. Chapter Five offers a discussion and interpretation of the results. This chapter also integrates the study's results (as presented in Chapter Four) with the information presented in Chapter One and Chapter Two. Chapter Six concludes the study and offers the researcher's recommendations with regard to the implementation of e-Government in GB as well as further research. This chapter demonstrates that the study has fulfilled its objective. Finally, a list of the references that are used in this study is provided.

Appendix A and Appendix B contain the questionnaire and interview questions used in this study.

1.15 Conclusion

This dissertation investigates the challenges in implementing an e-Government web electronic system within the public sector of GB. GB is a third-world country that has many basic problems that have not yet been resolved (WorldBank, 2009b). The purpose of the present research is therefore to help point the way towards the effective implementation of e-Government communication as compared with the traditional methods of communicating governance information. Further research is needed, however, before the use of an e-Government website can be recommended for all IT professionals in all Government

departments (Jansen and Olines, 2004). Online Government initiatives could dramatically improve relations between public agencies and citizens and could also facilitate universal access to ICTs with other countries (Dada, 2006). The design of modern IS for GB would promote and facilitate democratic processes and the country would be able to better root out corruption and increase transparency within Government administration. Chapter two discusses the topics as they relate to implementing e-Government in the form of a review of available literature.

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2 CHAPTER TWO: LITERATURE SURVEY

2.1 Introduction

In this chapter, previous studies of e-Government implementation will be reviewed and possible ways of introducing new IT in Government departments will be described. The use of electronic methods usually encourages Government to be more transparent in public services and reduces corruption.

The utilization of new technologies, such as the Internet, has enabled e-Governments to connect with their users and has delivered solutions to Government problems. IT technologies have afforded Government with opportunities to better serve citizens. Electronic Government (e-Government) is one component of the way the public sector uses technology in the application of public administration and to conduct the business of Government. E-Government can provide people with information and services in a cheap, efficient and effective manner (Brewer *et al.,* 2006).

Developing an e-Government website involves posting information such as Government office location, Government functions, and policy documents details (UNPAN, 2004). E-Government sites can be a one-way communication channel; that is, Government officials communicate through the website, to citizens accessing this information. These sites can also be a two-way communication channel where citizens can send feedback information to a Government department, for example information on an application form (West, 2008).

2.2 Adopted definition of e-Government refocused

According to West (2008), the aim of an e-Government strategy is to support and simplify governance for citizens, businesses, and Government. E-Government is the use of Information and Communication Technology by Governments and their agents to deliver public information and services, engage with citizens, ensure public participation, and ensure the very process of governance. E-Government also refers to the online delivery of information and services, which can be achieved through the Internet or by way of other

digital means. It is a global phenomenon whereby Government can provide online services to employees, citizens, and businesses, both in the country and internationally (Wong *et al.*, 2006).

An active e-Government site needs to have real-time information of Government services and always be connected to the Internet. Governments of developing countries have to facilitate the penetration of the Internet in Government departments and provide opportunities involving Information and Communication Technology (ICT) to build the online relationship between Government, citizens, and businesses, locally and internationally (Parent *et al.*, 2005).

2.2.1 Objectives of e-Government

Wong *et al.* (2006) indicate the strategic objective of e-Government is to support and simplify governance for Government agencies, citizens, and businesses. Good governance is the effective, honest, equitable, transparent, and accountable exercise of responsibility at various Government levels. According to UNPAN (2004), "good governance involves a multifaceted approach", including the application of Information and Communications Technology. The use of ICT can connect and support all systems in the processes and activities of the Government. West (2008) argues that e-Government is not merely putting Government forms online, creating a static tourism website, or posting simple tariff schedules online, but is the integration of Government operations to deliver services to citizens and businesses. E-Government can enhance e-democracy (electronic democracy is a participation of citizens in the full Government processes of democratization in country) by giving citizens access to information and knowledge about political processes and offering services. The transition from passive information provision to active citizen participation provided by an interactive electronic website to inform, represent, encourage, and involve participants in Government services is made possible.

2.2.2 Successful e-Government initiatives

According to UNPAN (2008), e-Government involves changing the way citizens interact with Government through new information and communications technologies. For e-Government to be successful, Governments should engage with citizens in democratic

participation to meet their expectations and address their concerns. This interaction should build greater trust and confidence between citizens and their Government, creating an enabling environment allowing citizens to voice opinions on political and social issues. Thus, all participant perspectives can be considered with regard to policy implementation and a strong high-speed website infrastructure can benefit Government agencies, employees, citizens and businesses (Abanumy *et al.,* 2005). Torres *et al.* (2005) suggest that effectively implemented e-Government provides automated, accurate Government service delivery, accountability, and reduced administrative costs and time spent on repetitive tasks.

UNPAN (2004) observes that ICT is fundamental to e-Government initiatives to improve citizen access to Government information, services, databases, and archive documents. Corradini *et al.* (2007) argue that ICT and e-Government are one of the most important projects for modern Governments because in the twenty-first century globalisation and world economies predominantly operate using ICT. The researcher believes that the most important e-Government initiative is an e-Government site because the initial face of e-Government is the website. UNPAN (2008) comments that Government websites supply information on policies, budget, laws, taxes, and other public interest matters. Many developing countries are developing e-Government initiatives and ICT to improve access to Government information and thus move away from traditional methods in the public services (Abanumy *et al.,* 2005). Developing countries have started to establish e-Government service structures for successful ICT implementation (UNPAN, 2004).

Electronic Government can facilitate greater transparency in Government administration and greater access to services due to 24/7 Internet connectivity. E-Government services can also be enhanced by creating new interactions, such as e-mail, online meetings and opinion forums, online transactions, and voting (Abanumy *et al.,* 2005).

2.2.3 Public access to information and e-Government

Public access to electronic facilities and services is essential for the success of e-Government. Without public access, there would be no e-Government. Differential opportunities of access will only serve to increase the “digital divide” (Wong *et al.*, 2006). According to UNPAN (2008), citizens’ expectations of Governments have been raised by information and communication technologies, and citizens now expect to be directly involved in designing

Government programmes and services. At various stages of policy processes (from elections to policy planning and implementation), citizens are becoming increasingly involved in Government participation through their online access to information.

E-Government is a tool enabling Governments to communicate with citizens and vice-versa. The Governments of many developing countries around the world are starting to take advantage of Web 2.0 tools to interact with citizens (UNPAN, 2008). This is a cost-effective way to directly communicate with and involve citizens. This foundation is established for the sake of a greater distribution of electronic information to citizens. As citizens become accustomed to receiving e-mails, text messages and other electronic information, they are able to adapt to the new communication methods. Governments in developing countries are making explicit efforts to train citizens in accessing Government information from Governmental websites.

2.2.4 Links and interrelationships in e-Government

According to Ndou (2004), e-Government interrelationships include four main groups: Government, employees, citizens, and business. E-Government interrelationships are presented by Abdel-Fattah and Galal-Edeen (2008) as being electronic information interaction between Government and each component group that constitutes the e-Government website relationships. The respective four main relationships are the following: Government to Government (G2G), Government to employees (G2E), Government to citizens (G2C), and Government to business (G2B).

2.2.4.1 Government to Government (G2G)

Ndou (2004) reports that Government to Government communication refers to the connection between Government ministries and departments, local Government institutes, provincial, regional, and other foreign Government organizations. Abdel-Fattah and Galal-Edeen (2008) note that Governments depend on other levels of Government to successfully deliver services and allocate responsibilities. Backus (2001) states that online communication can allow Government ministries and departments to share official information and databases, pool skills and competences, and improve the effectiveness and usefulness of the process. E-Government will help Government to increase the flow of information and improve

communication involving the different Government ministries/departments. E-Government offers the following advantages: enhanced organisation of public sector resources, improved analytical tools and decision support to increase the efficiency and effectiveness of community policy.

2.2.4.2 Government to employees (G2E)

According to Seifert (2003), Government to employee communication is the relationship between Government and its employees in ministries/department. A range of G2E connections enhances employees' opportunities in Government agencies to find an effective way to engage in e-learning and to support knowledge sharing between them. It provides employees opportunities of accessing applicable information about compensation, training and learning prospects, and public rights regulation. Employees' understanding of e-Government is helpful for encouraging the implementation of Government electronic goals and programmes such as accounting, budgeting and human resource management (Ndou, 2004). The full development and implementation of these websites and other digital means involve three main areas of e-Government:

- **E-administration** refers to using computerization in Government for establishing strategic connections between ministerial internal processes and the good functioning of departments;
- **E-citizens and e-services** deal with connections and interrelationships between Government and citizens to distribute services automatically;
- **E-society** involves relationships and interactions beyond boundaries, among Government agencies, the private sector, and general civil society.

E-Government should be able to establish itself in the overlapping areas of these three application domains.

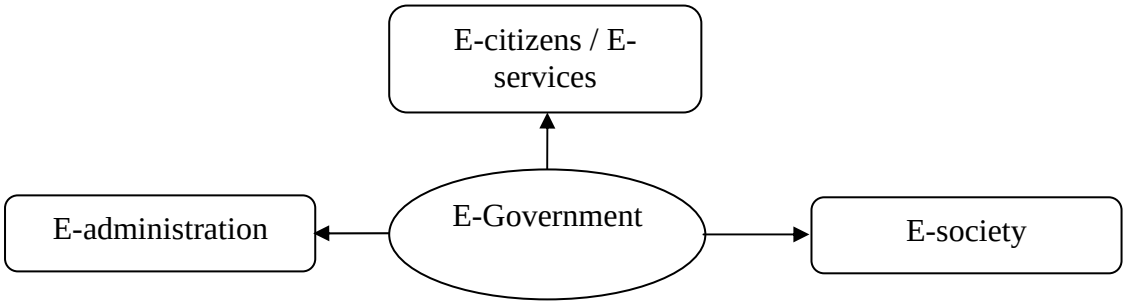

Figure 2.1: E-Government domains.

2.2.4.3 Government to citizens (G2C)

Accoring to Ndou (2004), e-Government permits Government agencies to talk, listen, relate, and continuously communicate with citizens, thereby encouraging responsibility, democracy, and enhancements to public services. An expansion of communications can be developed, ranging from the delivery of services to health benefits and regulatory and compliance-oriented licensing. Seifert (2003) notes that G2C communication permits customers to have access to Government information and services directly, conveniently, from anywhere, by using multiple channels like a website, computer, mobile phone, and wireless network. G2C also enhances Government participation in local communities.

2.2.4.4 Government to business (G2B)

According to Seifert (2003), electronic transactions can reduce the use of paper documents and can accelerate the process of electronic information for officials' documents. Ndou (2004) suggests that electronic transactions promote electronic procurement and support electronic marketing for Government. Business companies everywhere conduct business via e-commerce in order to cut down on costs and improve inventory control. Abdel-Fattah and Galal-Edeen (2008) state that the opportunity to conduct online transaction with Government reduces the need for business people to travel, thereby helping businesses to become more competitive. Backus (2001) argues that the delivery of integrated public services creates opportunities for businesses and Government to partner together for the sake of delivering information faster and more cheaply.

2.2.5 The importance of technology for e-Government

Backus (2001) suggests that the importance of technology in e-Government impacts on the following aspects: 24/7 model of information availability, need for content availability, human resources training, need for security of information, privacy of information, and growth of Government IT departments.

2.2.5.1 24/7 Model of information availability

In the 24/7 model, information is available all the time so systems and processes have to be adapted to a completely new service model. The processes can provide full services, even during the night, to allow citizens to get the information required and get an immediate response to queries (Backus, 2001). This communication medium will decrease response time resulting in increased citizen satisfaction with Government.

2.2.5.2 Need for content availability

An e-Government website, because of the need for content, consists of information. Government can collect, produce, and update content daily. Departmental content managers are responsible for e-Government website information (Backus, 2001; West, 2001). Content has to be uploaded frequently and kept up to date. Content needs to be adapted to suit the publishing technology being used.

2.2.5.3 Human resources training

ICT requires the training of people in an organization to be effective. Backus (2001) notes that people should feel comfortable with the tools otherwise they will return to old working patterns and habits. Human resources training for e-Government should be based on approved programmes of building capability specifically in the effective use of e-Government. Government human resource training could learn from other countries' experiences of implementing new technology for public officers and leaders of Government. IT technicians also require skills to maintain technological infrastructure (Gupta and Jana, 2003).

2.2.5.4 Need for security of information

Any computer security system is vulnerable to external and internal attacks. As far back as 2001, Backus observed that the Government, if it moves its core processes (information, communication and transactions) to the Internet, becomes far more vulnerable. The Internet

exponentially increases the number of entry points. However, protection is possible with anti-virus software, firewalls, encryption technology, and authentic identification tools (West, 2008) as well as improved security offered by cloud computing and other recent developments (Linthicum, 2011).

2.2.5.5 Privacy of information

In the later stages of the e-Government model, Government processes integrate detailed information about citizens and businesses that is often contained in multiple offices on many different computer systems. This integration of data can result in situations where the privacy of individual citizens is compromised. According to Backus (2001), Government responsibility should restrict such information being accessed by unauthorised parties. Due to public concerns regarding privacy, several countries have already passed data protection laws (West, 2008). Current concerns with protecting individual information privacy have resulted in a flurry of legislation worldwide, including key provisions of various privacy statutes such as the ICT privacy, data security breach notification statutes and answers to frequently asked privacy law questions (Marshall, 2011).

2.2.5.6 Government IT departments

With the implementation of e-Government, IT becomes increasingly important in Government services. A professional IT department inevitably grows not only during the implementation period but also through the maintenance of software, hardware and infrastructure (Backus, 2001; Gupta and Jana, 2003; Torres *et al*., 2005).

Brewer *et al.* (2006) state that if ICT is properly used, it reduces poverty, empowers people, builds capacities, skills, online inter-communication, inspires new governance mechanisms, and reinforces popular participation at all levels. The application range is unlimited, from electronic commerce to the community's empowerment of citizens, from good governance promotion and decentralization to advocacy initiatives, including human rights observance, long distance education, and environmental monitoring. The potential of IT rests on the ability to process, store, and retrieve, duplicate and transmit information, while being unconstrained by time, distance and volume. According to UNPAN (2005), ICT integrates IS

and products, and worldwide services are now increasingly becoming available to the smallest of enterprises and the remotest of regions.

2.3 The financial impact of implementing e-Government

"New technologies are seen as driving down operational costs associated with transactional services" (Torres *et al.*, 2005). West (2008) maintains that ICT facilitates information exchange and also improves the processing of information, creating new modes of sharing ideas, reducing the cost of collecting and analysing information. ICT enables information to flow faster, and more cost effectively worldwide. UNPAN (2008) notes that the primary savings with the use of ICT are: a move away from paper-based systems, savings on storage requirements, and savings in time.

UNPAN (2008) reports that international legislation and cultural norms prevent the achievement of savings through direct staff reductions, and staff-related savings are described in terms of reductions in projected future spending of the new system and reducing the need for future recruitments as transaction levels increase. The cost saving in e-Government emanates from transferring costs from the host agency to the service user.

In addition to cost saving, the UNPAN (2008) notes that e-Government should show results in the following areas:

- Greater potential to share workloads, access the same data, reduce duplication of effort, and associated cost saving.
- Real-time information and the efficient retrieval of data when dealing with information requests.
- Fast redirection of common queries and information requests through Intranet-based calculators and lists of frequently asked questions.
- Data storage access and retrieval of information assists compliance with legislation, improves audit trails, and reduces corruption.
- An improved system providing more balanced workflow and better information retrieval which improves staff satisfaction and retention.

The implementation of e-Government is aimed at cutting costs and improving Government efficiency. However, e-Government is not a shortcut to economic development, budget savings or clean, efficient Government. Electronic Government is not a “Big Bang”, a single event that immediately alters the universe of Government (Ndou, 2004). E-Government is a process (and it also often a struggle) that involves costs and risks, both financial and political. These risks can be significant to the aspect of cost. Bureaucrats believe e-Government can yield high savings. The upfront e-Government costs of new technology are substantial, and costs savings do not emerge until enough users start to take advantage of electronic delivery systems (Jaeger and Thompson, 2003).

2.4 Required skills for implementing e-Government

Required skills for implementing e-Government include increased integration of ICT into community administrations and basic IT skills involving employees working awareness of applications of the new technology in Government services. Government managers should understand the use of technology tools to improve the processes of Government operation in ministries and to ensure users have the ability of using information correctly in internal operable infrastructure for sharing of information that they need from Government (UNPAN, 2008). According to Signore *et al*. (2005), e-Government is used not only to link different Government agencies online (network) but is also used to transform the existing system to benefit users of the network.

Data requirements refer to the content of information belonging to the Government and are important for transactions, publishing, and interaction with the population. Those data requirements are linked to security information safety and must be protected from unauthorised access.

Ojo *et al.* (2007) suggest there are many skills required in the implementation of e-Government, and that they affect Government employees in general. Signore *et al*. (2005) note that IT skills help employees gain work knowledge in ministries, improve the quality of work, transparency, and efficiency, and offer the possibility of using technology to improve the processes of Government operations. The common objectives of requirements for implementing e-Government are covered in the following sections:

2.4.1 Information Technology skills

Ojo *et al.* (2007) comment that Information Technology skills are an aspect of technical skills for improving implementation of e-Government. Employees need basic IT literacy in the workplace, and IT technicians need technical skills to implement technical areas like establishing a network, and hardware and software for implementing e-Government. According to UNPAN (2010), standards software are needed to realize inter-connectivity, integration of data and convenience for users. Web 2.0 is a popular term with advocates of e-Government. Web 2.0 applications provide decentralized patterns for data submission and analysis, and provide a platform for user interaction in contrast to websites where users can passively view information. Web 2.0 (Web 3.0 in the near future) will provide citizens with an avenue for direct impact on how Government operates. UNPAN (2010) noted that Government are interacted with citizens using popular Web 2.0 tools such as blogs, chat rooms and SMS as well as communication technologies such as Facebook, Twitter and other social networking tools. As far back as 2001, Lau observed that the main IT skills needed for IT technical staff are:

- Strategy and planning for developing ministries' ICT infrastructure, and finding software solutions for data application.
- System development is related to establishment of the network communication, database, acquisition of hardware and software for supporting services, configuration of services online and facilitation of communication between employers, employees, and citizens.
- System implementation and maintenance involve network administration, software installation and hardware, and implementing security policies.
- User support and services involve supplying and receiving information to solve citizen problems and provide IT literacy skills for employees' training.

In addition, recent developments such as Web 2.0, cloud computing, distributed environments and VOIP, require additional development skill sets (UNPAN, 2010).

2.4.2 Information management skills

Information management skills involve the arrangement of resources, knowledge in public administration, and the ability to share the knowledge with citizens and other stakeholders outside Government ministries (UNPAN, 2008). These skills are fundamental for coordination within the Government. Information management includes identifying applicable information sources for the Government, creating systems for the management and recovery of electronic information, establishing the content to provide for diverse target groups and output media, and creating systems to make available information by different media. Information management also involves managing archive systems containing electronic and traditional media, renewing information from external and internal sources, implementing content management systems for many target groups and output media, filtering and arranging information, and continuous monitoring of training programmes for employees and end-users (Ojo *et al.*, 2007).

2.4.3 Information Systems skills

According to Ojo *et al.* (2007), Information Systems skills involve the ability to use ICT resources in implementing an e-Government strategy in a country. The skills include employees' and citizens' understanding of the use of new technology on e-Government initiatives. These IS skills include:

- Relationship management which involves determining the level of employees' knowledge in Government decision-making and their involvement in establishing long-term relationships with ICT providers. The level of ICT integration between providers, ensuring that the employees have adequate support and training, and identifying common sources of cooperation with partners to obtain the better use of information from Government services.
- E-Government implementation management results in establishing responsibilities and relationships between technology and online services for encouraging end users to obtain online services of good quality.

2.4.4 Leadership skills

Leadership skills in relation to e-Government implementation focus on administrative strategies in ministries while making sure that e-Government issues are addressed.

Leadership skills also include the ability to collaborate with providers and users to identify opportunities for improvement and innovation in service delivery (Ojo *et al.,* 2007).

2.5 Implementation of e-Government

In the last ten years, Governments throughout the world have used information and communications technologies for growing efficiency and quality of services. West (2008) confirms that a large variety of services which Government agencies offer for citizens and businesses are already available online in different countries around the world. For example, one could submit an income tax form, register a new business, or renew a driver's license. On an e-Government website, it is possible to get information from different Government agencies, working schedules, addresses, departments' phone numbers, information regarding Government officials, and locate normative official documents.

Implementing e-Government in developing countries can improve online services to citizens (Torres *et al.,* 2005). E-Government provides information and services to the people in a cheap, efficient and effective manner. E-Government holds the promise of empowering citizens to participate actively and productively in the emerging economy of knowledge. To set up service access points requires only the necessary equipment, connectivity to the Internet, and training. E-Government can provide universal access to citizens because of access to Internet cafes (Halchin, 2004; Corbett and Carroll, 2008). E-Government sites distribute information and deliver public services to citizens who use Government information and services frequently. Services can be available 24/7. E-Government offers citizens the potential to move closer to Government services and information (West, 2008). Implementation of e-Government sites can modify the relationship between Government and citizens to increase transparency (Torres *et al.,* 2005).

Electronic Government has the potential to transform Governmental efficiency, transparency, citizens' trust, and political participation in the transformation of bureaucracy to democracy. Developing countries can have an e-Government website to deal with complaints of citizens, business investment, and tourism. For example, tourists are able to book, from their own countries, hotel accommodation through the e-Government site (West, 2008).

The duty of Government is to provide the required infrastructure to allow the interconnection of information between the Government, private sector, citizens, stakeholders and Non-Governmental Organizations (NGOs) (West, 2008). The different stages of implementation of e-Government are often the following:

- Creation of a website is the first stage of implementing e-Government to provide information to Government agencies and public.
- One-way and two-way interactions are the second stage whereby citizens and other stakeholders can download forms, and send information by e-mail to Government officials.
- Online transactions are the third stage to support online information. For example, one could submit an income tax form, register a new business, or renew a driver's license.
- Government portal is the final stage of implementing e-Government comprehensively. Typically, an Internet connection is widely available and users have access to one-stop transactions without going to different Government agencies looking for official documents that are needed.

2.5.1 Approaches to e-Government implementation

The UNPAN (2003) states that there are four fundamental approaches to e-Government development. These are:

1. The national coordinated or top-down approach, which is conducted by the central Government and often features a national strategy. This plan coordinates all e-Government initiatives, spending, and implementation between Government agencies.

2. The national autonomous or parallel approach. Government agencies can develop their own e-Government initiatives, having less formal strategic planning, support, or coordination from the central Government.

3. In this case, sub-nationally, local Governments tend to be the drivers and initiators, but programmes are eventually adopted as policy by national Government.

4. Finally, the sub-national, autonomous approach. The innovations and programmes are developed at local level, but they can have a marginal influence on national Government activities.

2.5.2 Implementing e-Government transparency

Ndou (2004) comments that e-Government helps to increase the transparency of Government processes. In various ways, e-Government provides the advantages of direct participation of citizens in decision-making. IT offers great opportunities of transparency to citizens, businesses, and stakeholders to access Governmental information, policies, and political rules in online services. Typically, Government information to citizens was available only on hardcopy e.g. newspapers or it was necessary to go directly to Government offices in order to get information.

2.5.3 Potential benefits in implementing e-Government

The potential benefits in implementing e-Government in GB are associated with the use of ICT services, a more efficient Government administration, and a reduction in the amount of time that is spent on repetitive tasks. These improvements will afford Government employees more opportunities to learn new skills.

It is clear that the World Wide Web, the development of ICT infrastructure and Internet connections are transforming peoples' interactions all over the world. Government communications are increasingly being administered via email. Official documents are also increasingly being distributed via email, as attachments, as this facilitates communications between the Government, businesses and citizens. Government uses of Facebook, Twitter, MySpace and YouTube to make easy communication from Government services to citizens and where citizens can comment and send back their own opinion (Cordella, 2007; UNPAN, 2010).

Development of the telecommunication infrastructure in a country grows in tandem with increased Government visibility on the Internet. The potential of e-Government is associated with the quality of its online delivery services, the interactivity level of the Government's

operations, and the reliability of the IT. This potential of a country to use online Government services is often reflected in a measure called the development index (Seifert, 2003).

E-Government has been implemented and used worldwide and the substantial investment of resources continues to grow. E-Government has implications for democracy in that the citizens of a country with e-Government have more equal access to information, the ability to participate in Government forums, and the opportunity to engage in civic affairs. It is a challenge to evaluate the efficiency and effectiveness of an e-Government system (West, 2001). E-Government is one of various communication systems that can make contacting the Government that much easier and cheaper. E-Government tends to reduce costs as well as the amount of staff effort that is required to respond to citizens' questions, which necessitate human intervention within normal work hours. It can be argued that an agency could reduce its staff numbers, or at least redeploy existing staff more productively within the workplace if new technologies are used. Another obvious advantage is that it provides a cheaper way when compared with traditional printing methods of printing pamphlets, letters and so on (Abanumy *et al.,* 2005).

E-Government can also speed up the supply of news and other important information to the public. It is generally agreed that an e-connection would make it unnecessary for citizens to physically go to Government offices, which are only open at certain times of the day and week (Heeks, 2008; Parent *et al.,* 2005). It can be argued that e-Government is particularly useful in countries or regions where it is difficult and/or expensive to travel and where transport is difficult. In addition, electronic innovations enable Government departments to respond more quickly to citizens' needs than do the traditional methods (West, 2001). In addition, the widespread penetration and use of mobile devices in Africa enable the possibility of leapfrogging into the technological present without passing through all intermediate phases (Kitaw, 2006).

2.5.4 Quality of delivery of services in implementation of e-Government

Ndou (2004) observes that in developing countries, Governments use traditional methods (hardcopy) to deliver public services. The processes are time-consuming and there is a lack of transparency. Citizens have to fill out many different application forms, they need to visit

different offices and spend a long time waiting to obtain passport, driver's license, or other documents. If citizens need any official document, they have to travel to the Government office related to the document, or sometimes go to different offices and spend time to obtain a simple service. The consequences are business and citizen dissatisfaction and high costs. Governments in developing countries should focus on quality of services to improve citizen satisfaction with services such as getting in different purposes such as getting a passport or driving license, shopping online, and obtaining credit or debit bank card by Internet services (Horan and Abhichandani, 2006b).

Signore *et al.* (2005) claim that implementing e-Government in the delivery of services can reduce the ministerial bureaucracy, provide easy accessibility, speed up Government operations and transactions and enhance the quality of services regarding time and transparency.

2.6 E-Government challenges in IT development

According to Corradini *et al.* (2007), the challenges of e-Government for IT development and the potential of Government administration to use IT as a development tool hinge on the level of technological infrastructure, human capital, and Internet connectivity. The main challenge in implementing e-Government in developing countries is that most citizens cannot access the Internet. People from rural areas do not have access to electronic Government. The low levels of IT literacy in developing countries have a negative impact on the development of e-Government processes. The opportunities of training citizens are limited and costly. E-Government readiness strategies and programmes cannot be effective when people are mostly illiterate and have limited education.

Brewer *et al.* (2006) confirm that effective electronic Government strategies and programmes require modification of the traditional systems of delivery of information between Government, business, and society. Expanding and permanently updating a network system for Government, business, and citizens requires financial resources. Eldresi *et al.* (2008) have reported that the potential for e-Government is in the broad service that it can offer to people. Realising this potential, quite a few developing countries have initiated innovative e-Government programmes for providing socio-economic services to all. Development of an

integrated e-Government facility can be supported by an Internet-based legal framework, investment plans, and strong relationships with the private sector in IT-related projects.

2.6.1 Failures of IT projects globally

IT project failure is associated with limited Internet connectivity, insufficient computers in departments and inadequate understanding of employees regarding advantages and usage of e-Government (Heeks, 2008). Many electronic Government projects in developing countries have failed because of insufficient investment in equipment. In addition, lack of funding for employees' training programmes and weaknesses in critical success issues often contributes to failure (Heeks, 2008).

2.6.2 Failures of implementing e-Government

The failure of the IT project in GB is linked with the Government's limited, and perhaps inappropriate, use of ICT (Heeks, 2008). The IT project's failure is also associated with the country's poor Internet connectivity, with the insufficient number of computers in the various departments, and with the Government employees' inadequate understanding of the uses and advantages of electronic Government (Heeks, 2008).

According to Heeks (2008), many of the electronic Government projects that are undertaken in developing countries fail because of a lack of monetary investment in equipment, the absence of clear new service facilities, and a lack of funding for employees' training programmes that would help practitioners discover the strengths and advantages that e-Government can afford a country. In general, IT project failure tends to be the result of Government service employees being inadequately trained in ICT skills and development.

2.6.3 ICT infrastructure challenges

Use of ICT infrastructure can make Government responsive, legitimate, efficient, and transparent. Access to ICT, such as Internet, Intranet, and wireless can be supported by Government for helping the public gain access to information (Ndou, 2004). Wong *et al.* (2006) note that ICT infrastructure is one of the principal challenges for implementing e-

Government. Government needs to take precautions when using the Internet because it requires the sharing of information with the public. Developing countries like Guinea-Bissau have problems in establishing ICT infrastructure for e-Government development.

2.6.4 E-Government policy challenges

Al-Rashidi (2009) states that challenges for e-Government policy involve a plan to guide new rules to influence decision-making, legislative change, and laws to provide electronic opportunities to Government, organizations, the private sector, groups of people, and individuals. This policy includes many different aspects such as digital signatures archiving electronic information, data and computer security, and information delivery to the population. Ciborra and Navarra (2005) argue that implementation of e-Government in many developing countries is hampered by the absence of laws regarding e-Government because administrative skills are weakly developed and management abilities/skills cannot accommodate new technology. There is also the limited Government administrative support, citizens' resistance to change, managerial or political reluctance in implementing electronic Government.

Schuppan (2009) argues that the objective of e-Government policy is to enhance national socio-economic development by encouraging people in all sectors to benefit from ICT through the provision of a conducive environment that progressively maximises the quality and security of the life of a population and makes the best use of the country's human and natural resources as well as promotes multi-layered cooperation and knowledge sharing nationally, regionally and globally. Ndou (2004) reports that strategy implementation of e-Government policy is reflected in broadband capacity in the ICT infrastructure, introduction of new services to improve local and universal access, and service quality promotion of the exploitation of IT use related to equitable access to education and training.

2.6.5 Implementation challenges

In many developing countries, there are no long-term strategies to implement e-Government. Government needs to have strategic plans in place to overcome initial obstacles. One of the principal challenges for implementing e-Government is the need for a context-adapted strategy and the establishment of an appropriate implementation of e-Government in the

country. The challenge is to find a common vision and a long-term and dynamic strategy applicable to e-Government for organizing Government ministries (Ndou, 2004).

2.6.5.1 Inclusivity challenges

Any successful implementation of e-Government depends on the quality of information delivery. Although there are potential advantages in implementing e-Government, there are many challenges that can negate the benefits of e-Government. The main obstacle in implementing e-Government is the current levels of computer literacy in a country. Other challenges are computer security, privacy, and disparities in computer access (Signore *et al.*, 2005). Ndou (2004) argues that a disparity in computer access is one of the main challenges for establishing e-Government.

Wong *et al.* (2006) state that technology can present new obstacles for disabled people such as the physically disabled and blind. Disabled people require costly hardware and software for their computers, in order for them to access information and services online. Technology industries can design computers that will accommodate physically disabled people, and Governments in developing countries need to cater for the disabled employees as well, but there are often cost constraints.

2.6.5.2 Access and computer security challenges

According to Signore *et al.* (2005), computer security is one of the key challenges in implementing e-Government in any country. Computers have to be protected from access by unauthorized people and from disabling viruses. IT technicians can take care of ICT infrastructure in ministries, such as security management programmes, server control access, operation systems, employees' activities and continuity services. Jaeger and Thompson (2003) claim that in implementing electronic Government, continuity of services is also critical in availability of information and services in order to make citizens trust and have confidence in using e-Government without the risk of fraud.

2.6.5.3 Privacy challenges

Another critical challenge in implementing e-Government is the need for public confidence in the privacy and confidentiality of personal data available to the Government. The Government must support online privacy protection in an e-Government website and allow users to provide personal information in the confidence that it will be used only for the required purposes. Government should initiate technical solutions for possible independent audits and transparency of procedures in the website for users (Jaeger and Thompson, 2003).

2.6.5.4 Digital divide challenges

According to Wong *et al.* (2006), the digital divide refers to the lack of equal access to computers and the Internet and a lack of necessary skills or financial resources among certain users. Many citizens and businesses may be unable to access electronic Government because they are not connected to information and communication networks. Kamar and Ongo'ndo (2007) argue that this lack of equitable access may be due to one or more of the following factors:

- Low levels of computer literacy, the absence of computer skills, and inadequate electronic information available on online;
- The requested content may be inaccessible due to the native language of the e-Government website (linguistic barriers);
- Geographic isolation of rural areas may hamper channels of communication to information services and accessibility of network facilities;
- Hardware and software are still expensive for a population with low levels of income (poor people may not have enough money to purchase equipment and Internet services);
- Gender disparities as a result of social, economic or religious differences.

Seifert (2003) suggests that electronic information has become more important in recent decades because of the different rates of development in computer and Internet technology across the world between the developed and developing countries. According to Wong *et al.* (2006), the digital divide is comprised of the following (among other things): an income divide, a telecommunication access divide, an education access divide, a language and content access divide, a gender access divide, and rural and urban access divide.

2.6.5.5 Financial and human resources constraints

According to Grant (2008), the possible challenges to successfully implementing e-Government and the threats involved in its use are as follows:

- Insufficient funding for e-Government initiatives;
- A lack of administrative, technical and operational skill for planning the deployment and implementing of e-Government applications;
- High training and re-training costs for Government employees; and
- A lack of resources for training citizens in the use of e-Government applications.

2.7 Measures of e-Government

Regarding measures of e-Government, the focus should be on the success of its application. For e-Government to succeed, practical measures are needed that may indicate whether the objectives set out are being achieved. UNPAN (2008) reports that the major goals of e-Government are to: increase economic efficiency to the public and private sectors, make available IT in Government departments, and support online functions. Regarding the goals associated with e-Government, countries can formulate a list of indicators against which they would like to measure their progress. Qualitative indicators are: the impact of overall e-Government efforts on society, the economy, social development, and the effectiveness and efficiency of administration in Government. Public administration is the intermediary between a country's political structure and its citizens. Some of the measures that can apply to ascertain the successes and failures of e-Government include the following:

- An increase in the number of people connected to public networks in urban and rural areas;
- The range of services available through electronic channels and the extent of the services;
- The number of citizens and businesses accessing services through electronic channels;
- The increase or reduction in citizen queries and complaints;
- The time taken to respond to queries and complaints;

- The reduction in cost of an improvement in the quantity and quality of services delivered;
- The extent of inter-agency integration and information sharing.

2.7.1 Monitoring and evaluation of e-Government projects

According to Heeks (2008), the monitoring and evaluating of e-Government projects involve an assessment of the usability of the e-Government website. Since this e-Government website forms the face of the entire effort being made by the Government, it is important that it is convenient and easy to use. Eldresi *et al.* (2008) confirm that the quality of e-Government services is often evaluated by assessing citizen satisfaction; this can be done by conducting interviews or online questionnaires. If most citizens report satisfaction, this shows that the quality of communication is perceived to be good.

Eldresi *et al.* (2008) suggest that the quality of an e-Government website is judged by the following three aspects: from the users' views, developers' views, and managers' views. Users' views are concerned with external aspects or quality, which affect usefulness. One good way to evaluate an e-Government website is to consider users' views, because this provides feedback on level of usage. Developers' and managers' views are concerned more with technical aspects or internal quality which relates to maintenance, cost-efficiency, and proper functionality.

The purpose of a qualitative model of an e-Government website is to create a usable and accessible e-Government website at an international standard and one that satisfies its users. Signore (2005) claims that the qualitative model of an e-Government website is composed of the following characteristics: accessibility, navigation, interaction, content, design layout, reliability, and evaluation technique.

2.7.1.1 Monitoring accessibility of e-Government

West (2001) indicates that accessibility in the context of e-Government refers to the extent to which the e-Government website and its contents are available to a wide range of users with varied levels of physical capabilities/skills and technology. Wong *et al.* (2006) explain that an

e-Government website that is universally accessible can imply that a broad range of software, hardware, and audiences, including physically challenged citizens, can not only access the online content and services on the e-Government website but also effectively make use of it. Heeks (2008) argues that the World Wide Web Consortium (W3C) is an international tool which leads to the development and evolution of e-Government website technology. In particular, the Web Accessibility Initiative (WAI) is an internationally agreed recommendation for e-Government website accessibility for people with special needs, and it is expected that electronic Government sites follow the standards set out by WAI. It is important that reasonable steps are taken to encourage developers so that they alter those practices, policies and procedures that make it impossible or unreasonably difficult for people with disabilities to access or use an e-Government website (Signore *et al.*, 2004).

2.7.1.2 Navigability of e-Government systems

Signore (2005) defines navigability as the ease with which an e-Government website can be used. The site should help the user to find information or it should orient them to go through the available basic search options. Navigation includes all the features that make it convenient or inconvenient for a user to browse the contents of an e-Government website. Morgeson (2008) maintains that the navigation architecture should help users to spend minimal time and effort in locating and using the desired information and services online. If the e-Government site has valuable information for the citizen, it is not of much use if that information is buried somewhere deep inside the site, and the visitor is not able to easily reach it. Moreover, a certain consistency in the navigation pattern is very important, particularly for a large e-Government website with large numbers of modules and pages.

Despite e-Government website promises of ease of use and access, in terms of creativity and efficiency, agency managers and leaders are finding that e-Government websites are increasingly presenting challenges of inflexibility, inconsistency, workflow bottlenecks, and costs. Golubeva *et al.* (2002) comment that the navigation systems should inform users where they can go next and give them an overview of the e-Government website. Heeks (2008) states that the developer needs to design the navigation system on the home page of an e-Government site to direct the users at the beginning of their search.

Lee (2005) indicates that the navigation of an e-Government website has multiple search aspects (search engine, menu bar, go-back-and-forward button). The navigation bar should be presented in a logical and consistent way, with a text box that best describes what the users will receive after clicking on the link for their particular need. Information presented on an e-Government website should provide easy functions for citizens so they can access Government information.

2.7.1.3 Interaction of e-Government systems

Interaction on the e-Government site should make feedback or two-way communication between Government and public users possible. The interaction feature on an e-Government site, for example, could be a form application by the user from the Government. The services may involve mechanisms for obtaining services, downloadable forms to be printed and e-mailing them back to Government agencies or it could be a full transaction, for example, a birth certificate issue and identity card renewal (Joseph and Jeffers, 2009). The Government employees should regularly check all information that citizens send by e-mail or through other digital means. Interaction on an e-Government site has components like: e-mail (people can answer or respond to Government requests); search engines (site needs to have it on all pages to help citizens find what they need); download forms (should be available in word or PDF documents), message boards (tools for users to post messages) (Heeks, 2008).

2.7.1.4 Readability of e-Government systems

Signore (2005) observes that content should focus on readability. Sentences should be as short as possible to ensure reader understanding. The content manager should assure language quality in all respects. It is important to have a standard number of lines of text on one page and that content is written at a level that can be understood by users. Information should be structured by organizing headings, subheadings, and paragraphs correctly. Backus (2001) suggests that the developer must be careful with the length of paragraphs and also the number of sentences in a paragraph. Content needs to show the last update date of files and correctness of the information. Because an e-Government website's function is to present content, a developer has to collect, organize, and update content daily (Signore *et al.*, 2004). Text-based messages should be of high quality with regard to spelling, punctuation, and grammar. Good quality pictures should be included on the site together with well written text descriptions (West, 2008; Backus, 2001).

2.7.1.5 Design layout of e-Government systems

West (2008) states that an e-Government site should have a citizen-friendly design and layout so that people will find navigating the site in order to find the desired information is an enjoyable and easy process. The colour scheme of the e-Government site, its layout, and the consistency of its design elements have to be such that the website is intelligible and easy to read. Signore (2005) argues that because the layout is the first feature of an e-Government site that a user encounters, it should be attractive and enjoyable for the user. Layout should be simple, well organized, and easy to understand to help users to find out how they can navigate the structure. Good layout of a page will make the e-Government site easily readable and more attractive for citizens. The developer should use standard fonts and agreeable colours, because this will increase the interest and participation of the citizens for seeking online information services.

2.7.1.6 Reliability of e-Government systems

Hujran and Chatfield (2008) indicate that reliability in this context refers to the extent of trust which a citizen has in the Government website with respect to security and legal requirements. A Government website can ensure citizens' confidence by operating within the legal framework and by clearly explaining to the users the terms and conditions of the e-Government website. Yonazi *et al.* (2008) claim that reliability assumes more importance when it comes to online transactions, as well as when it comes to making payments through the e-Government website. Well-worded disclaimers, privacy policies, terms and conditions, and copyright information enhance the credibility of the e-Government site and help in further building the users' trust.

Heeks (2008) states that another equally important aspect related to credibility is the site address or Universal Resources Locator (URL). According to the existing international naming conventions, each country has a certain domain(s) that is reserved for its Government's website – for example, '.gov.za' (South Africa), '.gov.br' (Brazil), and '.gov.gw' (Guinea-Bissau) – and such domains are not freely available for registration by anyone else as they are allocated only to a Government department after due verification.

Thus, the presence of such an address further adds to the credibility of the Government website.

2.7.2 Evaluation techniques

Abdel-Fattah and Galal-Edeen (2008) note that a variety of qualitative and quantitative evaluation techniques are deployed to assess the performance, impact, and citizen-centricity of a Government website. Evaluation techniques can consist of the following: online user surveys, informal user feedback, usage data analysis, web performance data, and expert reviews.

2.7.2.1 Online user surveys

According to West (2007), this technique involves the e-Government site visitors responding to questions posed through pop-up surveys which appear whenever the site is accessed. This technique allows the Government website managers to survey a large number of users in a relatively short time. An online user survey could be random or it could be targeted at selected users based on certain characteristics such as one's qualification, age group, ethnic background and/or gender.

2.7.2.2 Informal user feedback

Mosse and Whitley (2008) observe that this technique involves analysing all the unsolicited feedback from the visitors to the e-Government website. This feedback is received from time to time by way of guest books, e-mail forms, helpdesks, phone lines, and other methods. Such feedback can help Government departments to eradicate snags and errors in the site and also to formulate questions and exercises for formal user surveys.

2.7.2.3 Usage data analysis

Heeks (2008) notes that this kind of evaluation technique involves the analysis of web log data that has been collected through specialised software installed on the web servers. Quantitative data – like page views, number of hits, and unique visitors – is obtained through this method, and it allows a Government department to track overall usage trends over time.

2.7.2.4 Web performance data

Heeks (2008) points out that this technique involves measuring the site performance on technical aspects like the download time, speed of data transfer, number of broken links, and accessibility for the disabled. There are various specialised tools, testing software, and free websites that facilitate the online evaluation of an e-Government website with regard to the above-mentioned aspects.

2.7.2.5 Expert reviews

Heeks (2008) argues that an important qualitative method of assessing a Government website is available by means of an expert review. In this approach, a panel of experts reviews the e-Government website and evaluates it against a set of predefined parameters. As stated above, different countries may have different sets of performance indicators and evaluation techniques for their e-Government plan, since they are driven by the goals and targets set in the overall vision of their country's e-Government plan (Heeks, 2008). Countries cannot, however, view evaluation as a once-off activity, and it cannot be conducted only at the end of the project. Evaluation strategy as well as indicators should be a part of the overall plan of the project (Heeks, 2008).

2.8 E-Government across the World

The information in this section has been compiled with the assistance of the global average e-Government index.

UNPAN (2008) reports that the world average of the global e-Government index is increasing and many countries around the world invest resources in developing websites that are informative. An e-Government index is a tool which is useful for policy planners and is employed as an annual benchmark that presents a more inclusive and less subjective measure of a country's e-Government online presence, to evaluate its telecommunications infrastructure and assess its human development capacity to use technology.

According to UNPAN (2008), the result of the e-Government index reflects development of country's economy, society, and democracy. The following continents are ranked relative to the mean e-Government global index of (0.4514): Europe (0.6490), America (0.4936), Asia (0.4470), Oceania (0.4338), and Africa (0.2739). Asia and Oceania are slightly below the world average, while Africa lags far behind. Among individual countries that lead the e-Government ranking in the world are: Sweden (0.9157), Denmark (0.9134), Norway (0.8921), and the United States (0.8644). This comparative ranking index allows countries to demonstrate their high level of use of IT for development in their region. The countries that are lagging behind in the ranking index need to be more focused in the development of their e-Government strategies, policies, and democracy (UNPAN, 2008).

UNPAN (2008) noted that in the last few tears ICTs have become increasingly affordable. As technologies have advanced the cost of infrastructure and accessibility has been drastically reduced around the world. The reduction in costs as observed by UNPAN (2008) has led to a jump in the adoption of new technologies in many developing countries as well without the national Governments having to incur heavy investment in land-based infrastructure. In particular mobile telephony has increased in the last few years allowing for an unprecedented accessibility for the average user.

Ambitious e-Government initiatives have been launched in many countries. Lam (2005) stated that in December 2002, President George W. Bush signed e-Government in law, signalling a major step towards modernizing public sector it in the United States of the America (U.S.A.) moreover, in the United Kingdom (UK), the target set by the former Prime Minister Tony Blair was to have 100 percent of all Government services online by 2005. More generally in Europe, a major goal of the European Union's e-Europe 2005 plan was to have online public services in e-Government.

According to UNPAN (2008) Governments around the world are moving forward in e-Government development. However, given the high demand placed by e-Government on a multitude of foundational pillars which include the prerequisites of infrastructure, capacity development, appropriate policies, ICT applications, relevant content that needs to be in place to fully implement e-Government services and progress relevance.

UNPAN, (2008) noted that since services are the public face of Government, the primary objective of all e-Government initiatives is to provide the user with an efficient alternative medium for interacting with public sector services providers. This is generally accomplished by improving the flow of information both externally and internally.

2.8.1 E-Government in Africa

UNPAN (2005) has observed that although the use of the Internet in Africa has spread in the last few years, the lack of telecommunication infrastructure in Africa in general is a serious constraint when it comes to the rapid adoption of e-Government. The available lines are concentrated in the capital cities, where only some of the population lives. UNPAN (2003) reports that in most countries, rates of growth among Internet users have slowed in recent years, because most public and private users who can afford a computer have already obtained connections.

As in many other developing countries, among other limiting factors is an irregular supply of electricity, especially in the rural areas, and electricity is a basic prerequisite for e-Government to succeed. A lack of financial investment in e-Government programmes and website services has resulted in limited telecommunication infrastructure and low levels of human development capacities in Africa. Information and Communication Technology literacy among citizens has a significant role to play in implementing e-Government because it is fundamental to the ability of citizens to access and use electronic information. UNPAN (2008) laments the fact that, with the African regional index of 0.2739, e-Government capacity can be described as being deficient. This index reflects a near total absence of the core areas necessary to sustain an enabling e-Government environment.

UNPAN (2008) observes that the South African e-Government rating of 0.5115 is the highest in Africa, allowing the Government to successfully emulate the programmes of developed countries. Therefore, South Africa is a leader of e-Government in sub-Saharan Africa, and has a strong online presence. The labour department website – http://www.labour.gov.za – is a good example of an e-Government site, and the website has been designed in a simple manner to allow users to easily find what they need. UNPAN (2008) explains that South

Africa has taken the initiative to upgrade its official Government sites with interactive features that include search capabilities, site maps, feedback, broadband, and discussion boards. This development indicates an increasing acceptance amongst the decision-makers of some countries of e-Government as an essential and potentially powerful medium by which to disseminate information to citizens.

Ngulube (2007) observes that political leadership in Africa should be dedicated to pressing for change in regard to the current acceptance of institutional rigidity, technological backwardness, and resistance to the political regime. Nguluba (2007) noted that Sub-Saharan African leaders have not shown complete commitment to increase the ICT infrastructure in order to renovate Government development. According to Ngulube (2007), the implementation of the African Information Society Initiative in 1996 held expectations for Africa. The initiative envisaged an engagement framework to create Africa's information and communication infrastructure, but inadequate progress has been observed by Ngulube (2007) reportedly due to lack of resources and political will.

Mutula (2005) argues that the digital divide in developing countries in general and in Africa in particular is closely tied to the contextual economic environment of the respective countries. Countries with thriving economies are by and large associated with increased access to ICTs compared to those whose economies are faring badly. The digital divide in Africa is also exacerbated by the scant attention paid to the ICT needs of disadvantaged people in society, such as those in rural poor areas, women and children, as well as people with visual impairments or hearing difficulties.

2.8.1.1 African Implementation of e-Government

Kitaw (2006) reports that implementation of e-Government in Africa is growing as a number of national and local Governments develop and implement national ICT policies, putting critical information online, automating administrative processes and interacting with their citizens through online services for example in Rwanda, Ethiopia and Mauritius.

Kitaw (2006) suggested that implementing e-Government in Africa needs to have the necessary infrastructure in place, such as computer hardware and software together with reliable telecommunications infrastructure services for connectivity to allow users' easy

access to Government information via Internet, availability of human resources with necessary skills to collect and organize information. All these require political will and adequate commitments from top Government officials for successful e-Government implementation. According to Mutula (2008), African countries face a disparity in development of infrastructure between urban and rural areas, including poor energy power and telephone services, generally low literacy levels of the population and uncoordinated e-Government activities in the rural areas.

Mutula (2008) stated that literacy remains a major barrier to the development of e-Government in African countries. According the UNESCO (2009), Sub-Saharan Africa has one of the world's lowest adult literacy rates, with only 60% of the population of 15 years and over able to read and write in 2009, well below the world average of 80%. There are also strong regional differences in literacy levels, Southern Africa being generally more literate than Western Africa.

2.8.2 E-Government in West Africa

UNPAN (2008) indicates that the West African region was at the bottom of the ranking for using e-Government across the world and had a "regional index of 0.2110 in 2008 as compared with the world average of 0.4514". Cape Verde leads the region in developing e-Government (UNPAN, 2008).

Liberia (0.2170) and Guinea-Bissau (0.1521) "did not have an online presence in 2005 and had rankings of 163th and 170th respectively in the" United Nations (UN) survey of 2008. It is to be lamented that most countries in the West African region remain at the bottom of the ranking because they have the lowest population of educated people, weak IT infrastructure, and no development experience in implementing e-Government. The three countries that were ranked at the bottom of the regional index were: Sierra Leone (0.1463), Guinea-Conakry (0.1402), and Niger (0.1142) (UNPAN, 2008).

However, in several developing West African Countries (WACs), there are e-Government initiatives to improve both the access and the reach of electronic public services. For the involvement of greater numbers of the population through public access systems, West African countries need to develop online services that utilise computers, telephones, and

networks to connect villagers in the remote areas to the Internet (Gupta and Jana, 2003). WACs need to learn from the experiences of those many Governments in the developing world that have recently begun to establish and expand e-Government service structures.

Successful implementation of Information and Communications Technologies has proved to be an effective instrument for connecting disparate Government communication networks at every level and for increasing citizen participation in public decision-making (West, 2008). Whether they are streamlining the provisioning of Government services or empowering populations, e-Government and ICT have become the most important requirements for modern Governments all over the world. In order to realise the development of e-Government, WACs have an important responsibility to fully exploit the potential use of e-Government and ICT so as to engage citizens in Government operations (UNPAN, 2004).

2.8.3 E-Government Readiness in Guinea-Bissau

E-Government readiness rankings evaluate the progress of a country compared to all other countries in terms of using e-Government infrastructure. In general, e-Government readiness goes beyond Government and leadership, competency and technology issues. The evaluation of e-Government readiness places citizens at the forefront of IT, by focusing on the Governmental services and products that primarily affect them. UNPAN (2008) observes that the Global E-Government Readiness Index could influence changes in Government structure, leadership and Government management.

Table 2.1 (UNPAN, 2010) shows the indices of all the countries in West Africa have the lowest ranking region in the 2010 Survey. UNPAN (2010) state that the main reasons for these low rankings are the poor telecommunications infrastructure and low levels of human capacity in the region. There is no broadband to access electronic information and due to the limited telecommunications resources, few countries in the region have managed to publish e-Government websites for their citizens.

Table 2.1: E-Government development in West Africa

Country	E-Government development index value		World e-Government development ranking	
	2010	2008	2010	2008
Cape Verde	0.4054	0.4158	108	104
Côte d'Ivoire	0.2805	0.1853	144	173
Ghana	0.2754	0.997	147	138
Nigeria	0.2687	0.3063	150	136
Mauritania	0.2359	0.2028	157	168
Senegal	0.2241	0.2531	163	153
Togo	0.2150	0.2191	165	160
Liberia	0.2133	0.2170	166	163
Gambia	0.2117	0.2253	167	159
Benin	0.2017	0.1860	173	171
Mali	0.1815	0.1591	176	175
Sierra Leone	0.1697	0.1463	177	178
Burkina Faso	0.1587	0.1542	178	176
Guinea-Bissau	**0.1561**	**0.1521**	**179**	**177**
Guinea	0.1426	0.1402	180	180
Niger	0.1098	0.1142	183	181
Sub-reg. average	**0.2156**	**0.2110**		
World average	**0.4406**	**0.4514**		

UNPAN (2010) laments that the main reason GB lags behind other countries is because it has weak telecommunications. The lower quality of local e-Government services is related to

lower levels of Internet access. Limited access to these new technologies is because of poor infrastructure, low levels of computer use, and low levels of computer literacy of the Guinea-Bissau population.

According to UNPAN (2010), the level of Internet use in Guinea-Bissau is still low compared to other countries in West Africa. The Government of Guinea-Bissau must invest heavily in building broadband infrastructure and increasing the implementation of e-Government applications for its citizens and employees in ministries so as to increase the use of ICT infrastructure in Government agencies. Wong *et al.* (2006) note that the creation of an e-Government website is considered to be the first stage of full implementation of e-Government services, and the major potential area of e-Government services is that they can facilitate democratic activities like online voting, voter registration, and public feedback.

According to UNPAN (2010), e-Government readiness assessments involve determining the adequacy of human resources for e-Government in individual Government agencies. Human resource planning for e-Government is based on the agreed set of competencies required for e-Government. These skills are definitely not restricted to technical skills. Concrete recommendations for e-Government skills are designed by Government for establishing services administration in the country in general for citizens, employees, and other organizations.

Kaaya (2004) points out that the use of e-Government enhances people's participation in democracy. In addition, people use e-Government services to help with tax payments, job applications, renewing driver licenses, passports and a range of other practical uses. However, Internet online usages in GB are limited. Agriculture is a core feature of the GB economy due to the favourable climate; it is suggested by WorldBank (2009a) that information and links about agriculture be used strategically in addition to other important issues such as health and education.

2.8.3.1 National ICT Policy

According to Kandiri (2008), a national Information and Communications Technology policy should establish the nation's objectives, principles and plans for the successful delivery of ICT. A national ICT policy is also an indispensable tool for successfully administering the

complex process of e-Government implementation. Agyeman (2007) has commented that GB has no ICT policy and that the present Government has not evidenced the ability to implement technology initiatives in the country.

2.8.3.2 Objectives of an ICT Policy

The objectives of an ICT policy, as reflected by Kandiri (2008), include the following:

- Identifying the advantages that result from the application of IT;
- Offering tools and models that will rationally answer the challenges posed by ICT;
- Providing information and communication facilities as well as services and administration at a reasonable or reduced cost;
- Increasing the excellence of services and their outcomes;
- Supporting information sharing, transparency, responsible work practices, reductions in the bureaucracy of Government ministries, and the enlargement of public involvement in civic matters;
- Providing citizens with the possibility of accessing Government information whenever they wish;
- Attaining a specific level of IT resources for use by institutions of public education and Government agencies;
- Supporting the concept of on-going learning;
- Providing the Government and private sector with the maximum level of ICT awareness and the capability to keep it up-to-date; and
- Helping the public to appreciate IT, its improvements and its cross-disciplinary capabilities.

The objective of an ICT policy is to enhance national socio-economic development by encouraging the beneficial activities of ICT in all sectors through the provision of a conducive environment that will progressively maximise the quality and security of the lives of the people in the country, make the best use of the country's human and natural resources, and promote multi-layered cooperation and knowledge sharing at the national, regional and global levels (Al-Mutawkkil and Heshmati, 2006).

The specific objectives of the ICT policy are to ensure that all sections of the development plans and projects have an ICT component and to coordinate all the ICT activities in the country, including the formulation of appropriate policies, strategies and plans for the implementation of e-Government, e-governance, e-health, e-education and e-commerce (Kandiri, 2008). GB needs to develop a national ICT policy that will guide the development of its infrastructure, its institutional arrangements, and its human capital so as to support ICT applications, which will in turn assist in meeting the nation's development needs, priorities and strategies.

According to Agyeman (2007), GB does not have an ICT policy and there is no confirmation from the Government that it plans to introduce an ICT policy. However, the Government of GB promulgated its Telecommunications Basic Law Decree Nº 03-99 in 1999 in order to do the following:

- Promote the enlargement of telecommunications in GB through the definition of an adequate legal framework in accordance with global demands;
- Promote and emphasise the role of telecommunications as a fundamental instrument in economic and social development;
- Create favourable conditions for the emergence and development of competition in the telecommunications sector in order to facilitate users' access to new services at the lowest prices; and
- Develop and improve telecommunications services for public use, aiming at better nationwide coverage in terms of universal access to telecommunications.

GB's previous Governments implemented various IT systems, but unfortunately they have all been widely regarded as failures. GB has to invest more resources into IT development in a more strategic way if it is to increase its access to information technologies. The installation of electronic terminals in strategic places in the country will give citizens access to the services available from the Government, will integrate the systems, will provide networks and databases of public administration, and will make all Government-related information available to society (Choudrie *et al.*, 2004).

2.8.3.3 Benefits of having a national ICT policy

Kandiri (2008) states that a national ICT policy should focus on the following:

- The development of ICT infrastructure
- The improvement of public services
- The reducing of the costs involved in delivery service, communications and purchasing
- The building of skills in:
    - Research and development
    - ICT education and training
- The development of legislation and policies to correspond with the requirements of:
    - Diffusion of IT
    - Development of ICT industries
    - Trade policies for ICT-related goods and services
    - Pricing and taxation of electronic services
    - Protection of intellectual property
    - Privacy of personal data
    - Protection of cultural and linguistic diversities
    - Protection against illegal and harmful content
- Access to ICT infrastructure
- Access to information
- The monitoring of ICT
    - Monitoring the use of ICT
    - Measuring the impact of ICT

It is evident from the above list that a national ICT policy ought to comprehensively address almost all the aspects that have an influence on the wellbeing of any particular society.

Kandiri (2008) also states that ICT policies have to take into account other policies, such as education, information, trade and investment, and cultural and linguistic policies. The establishment of a written national ICT policy has value in itself, since at the very least it conveys the message that the Government is looking towards the future and intends to pursue the utilisation of ICTs within society. Kandiri (2008) observes that a Government should aspire to put its policy content into actual practice and should become a role model by applying ICTs in their own administration and services.

Aita (2005) argues that the application of ICTs in Government may encounter legal or policy-related barriers. An ICT policy should ensure that the laws are updated so as to recognise electronic documents and transactions. The Government should take proactive steps towards ensuring that policies support rather than impede e-Government. Aita (2005) observes that policies have to ensure the success of e-Government programmes, in particular the validity of electronic documents and transactions. Adesida (2001) notes that the role of the Government in creating an electronic information society that can seize the opportunities provided by ICTs is crucial. The Government should provide the strategic vision and the leadership necessary to make the policy a success. In addition, the Government can help create the right regulatory and public policy environment by way of stakeholder participation. Any country considering developing and implementing e-Government should thus establish a clear vision for e-Government.

Trusler (2008) notes that South Africa's e-Government policy of 2001 was brought about after an exhaustive two years consultation process with various private representatives, community organisations and public service officials. According to Trusler (2008), South Africa's e-Government policy outlined a ten-year implementation plan for implementing e-Government in South Africa. Trusler (2008) states that the implementation plan drew on tested worldwide practices and sought to avoid the mistakes of others while improving on the successes of other Governments who had succeeded in the implementation of e-Government initiatives.

If GB introduces a national ICT policy, this policy will be helpful in implementing e-Government, which will in turn benefit the administration of Government agencies and will be beneficial for the transmitting of information between the Government and the country's citizens.

2.8.3.4 ICT infrastructure in Government

In recent times, ICT has become one of the most important factors for the growth of the national economy of developing countries. Developing countries are beginning to appreciate the importance of developing their ICT activity in order to catch up with developed countries.

Developing countries should invest more in the field of ICT by building the related infrastructures, improving their ICT policies, and having national databases.

ICT has been classified as one of the most important tools for the development of domestic and global economic growth. The infrastructure of ICT can assist in developing the expectations encapsulated in local policy and focusing the Government on improving new technology in order to develop the country (Al-Mutawkkil and Heshmati, 2006).

The Government network component of the ICT infrastructure comprises a wide area network (WAN) that spans the country's use of new technology. A local area network (LAN) that is located mainly in Government ministries and departments can also help Internet services grow rapidly in GB. A metropolitan area network (MAN) is not available yet in GB because of low communication infrastructure technology, and Bissau (capital city) is not one of the larger cities in the world. A MAN is a network that interconnects users with computer resources in geographic area or region larger than that covered by even a large LAN but smaller than the area covered by a WAN. The term is applied to the interconnection of networks in a city into a single larger network.

Guinea-Bissau is a small country in West Africa with less than two million inhabitants. The latest civil war, which occurred in the 1990s, destroyed its economy and infrastructure. The new Government's main priorities are to rebuild the country's IT infrastructure and telecommunications as well as make use of new technology in order to implement an e-Government. In doing so, GB will be following the development of others countries in West Africa and the rest of the world.

As a result of its limited bandwidth, the Government of GB suffers terribly from an unsatisfactorily slow Internet connection (Agyeman, 2007). According to the Resettlement Policy Framework Community Driven Development Project Guinea-Bissau (2008), IT infrastructure in GB has not been developed and that is why Government agencies cannot deliver the information that is needed to citizens, businesses and NGOs. There is a weak computer network infrastructure, a limited exchange of information between Government agencies and the private sector, a limited transparency between Government services and citizens, a limited free-flow of information, and the absence of computerised management information systems.

Mutula (2005) argues that most of the countries in Africa suffer from inadequate bandwidth, which hampers the delivery of Government services to citizens. The Government of GB lacks basic infrastructure in terms of Government services such as education, health and agriculture. There is currently a lack of essential technological infrastructure, such as landline telephone services in rural regions of the country, which is required in order to be able to implement new technology in GB. The lamentable state of the country's infrastructure and its Government services is one of the reasons for the failure of IT implementation in the country (Agyeman, 2007).

Mutula (2008) observes that for e-Government to be effectively implemented in GB, the following infrastructure and services are needed:

- A national information infrastructure as a backbone for e-Government service delivery.
- Technology infrastructure that is made up of computers, servers, networks (broadband and wireless) and mobile devices;
- E-Government legislation and policy;
- An e-Government strategy; and
- E-Government services that consist of portals that enable citizens to ask questions and receive answers about, for example, the payment of taxes and fines and the issuance and renewal of driver licences.

2.8.3.5 Telecommunication Infrastructure in Guinea-Bissau

No matter the country, it can be expected that telecommunication infrastructure investment will have a strong impact on the development of the economy. Telecommunication infrastructure development can help grow IT software for the sake of the delivery of information to the public.

Agyeman (2007) has lamented that GB has a weak telecommunication infrastructure and also that the country's mobile phone network only offers low coverage throughout the nation. Most mobile phone network coverage in GB is in the country's capital of Bissau. According to e-StandardsForum (2010), GB has three mainline telephone companies, namely GuineTel,

MTN and Orange. These companies have 318 cellular subscribers per 1,000 people. In 2004, the coverage of the GuineTel network was in excess of 20% of the country's geographical area and most of the mobiles that are used are in Bissau. In 2007, MTN's mobile phone coverage covered almost 49% of the country. In 2007, Orange's coverage was at 41%. As of 2010, GB has 30,000 Internet users and 508,800 mobile phone users (e-StandardsForum, 2010). It is clear that Agyeman's (2007) claims are largely true, thus opportunities to exploit mobile infrastructure are also limited.

GB has weak Internet connectivity, a low-speed network, and most of its Internet access is exclusive to Bissau. Most cyber cafés offer low-speed connections. It is also significant that the Internet use is dominated by youthful users. According to Agyeman (2007), GB has the poorest content and lowest maturation level of e-Government in Western Africa. The e-Government activities of GB are currently too centralised, the budgetary allocations for e-Government activities appear inadequate, and there are limited Internet and intranet connections within ministries.

2.8.3.6 Benefits to implementing e-Government in Guinea-Bissau

Kaaya (2004) argues that the benefit of implementing e-Government is its application of information and communication technologies in Government administration, which reflects Government change and uses new improved methods for public services and democratic processes, and thus lowers administration costs. The most important advantages to implementing e-Government are that it increases the transparency of the Government's administration activities and reduces bureaucracy.

Many developing countries like GB use traditional methods (i.e. hardcopies) to deliver information between ministries and other organisations, and as a result of this much information gets lost in the process. However, citizens could communicate much more easily with the Government via electronic methods were there an e-Government in the country. The major benefit to using e-Government is that it saves time, saves money, and offers greater security of public information (Ndou, 2004). E-Government also offers a new way of doing business that allows users to make a 'one-stop shopping trip'.

Implementing e-Government would provide significant reductions in online transaction costs, in manpower, in space, and in time spent dealing with citizens. E-Government would also increase the Government's accountability in terms of its public administration. Guinea-Bissauans could enjoy equal opportunities in terms of accessing information because e-Government has the capability of bringing people nearer to their Government agencies, no matter what their physical location (Jaeger and Thompson, 2003). Implementing e-Government in GB offers the guarantee of empowering the country's citizens to actively and beneficially involve themselves in the emerging economy. The Government of Guinea-Bissau would be able to use e-Government to provide information to the public and to transform Government administration so as to make it more effective, accessible, accountable and applicable (Kandiri, 2008). The next section deals with the primary theoretical frameworks that informed this study.

2.9 Theoretical framework

This study focuses on the challenges in implementing e-Government in Guinea-Bissau. According to West (2004), e-Government is a key tool for innovation of Government development and adaption of new technology by Government. Heeks and Bailur (2007) indicate that the model-based work paradigm has dominated theoretical framework use in implementing e-Government research. UNESCO (2005) argues for value of its e-Government toolkit, particularly its e-readiness evaluation framework that guides ICT policy construction for developing countries. According to UNESCO (2005), the framework can support policy makers of the country and Government senior officers by offering comprehensive strategies on preparing ICT policy.

The following theoretical frameworks have indirectly influenced this study.

Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT has provided a framework that managers can adopt in order to be successful when introducing new technology and it helps in planning and building readiness in adopting new systems. The UTAUT incorporates eight models "(i.e. the theory of reasoned, the technology acceptance model, the motivational model, the theory of planned behaviour, a model combining the technology acceptance model and the theory of planned behaviour, the

model of PC utilisation, the innovation diffusion theory, and the social cognitive theory)" and three of them are widely used for this type of research, namely the Technology Acceptance Model (TAM), the Model of PC Utilisation (MPCU) and Innovation Diffusion Theory (IDT). According to Venkatesh *et al.* (2003), UTAUT is a fundamental theoretical framework for investigating users' acceptance of e-Government. The researcher of the present study was influenced by three of these models, namely TAM, IDT and MPCU.

Technology Acceptance Model (TAM)

TAM is a theoretical framework and model that was indirectly used in this study. TAM was originally developed to predict IT acceptance and practice in the workplace, and has been applied to many types of technology and users. Wang *et al.* (2009) have suggested that the TAM is a motivational theory for employees because it helps them to understand and accept new technology and its usage in employment activities. This study used the adapted TAM to measure Internet use acceptance by Government departments for implementation of e-Government initiative.

However, enabling implementation of an e-Government initiative in the Government ministries requires cross-functional work within all departments and collaborative work with other public organizations. The adapted TAM can also be used to measure the acceptance of Internet use by different user groups in other non-Government departments or in other public organizations. TAM assists in gaining a better understanding of user's perceptions, both perceived ease of use and perceived usefulness of the proposed technology innovation.

Innovation Diffusion Theory (IDT)

Moore and Benbasat (1991) have argued that the adapted properties of innovations are accepted in IDT and could be used to explore individual technology acceptance. Venkatesh *et al.* (2003) have suggested that the seven attributes of innovation (i.e. relative advantage, ease of use, image, visibility, compatibility, results demonstrability, and voluntariness of use) may be used to adopt or reject an innovation. IDT theory has been hypothesised by different researchers involved in a number of studies on IS (Information Systems) adoption as able to influence the attitude of potential adopters (Venkatesh *et al.*, 2003).

Model of PC Utilisation (MPCU)

The MPCU is a model for studying PC utilisation. Thompson *et al.* (1991) presented the MPCU model for the IS context to help users with support and facilitation in PC utilisation and to enable users to believe that by using the technology they have found an easy method for solving their problems. Thompson *et al.* (1991) have identified six attributes in this model, namely job fitness, complexity, long-term consequences, affect towards use, social factors, and facilitation conditions.

In summary, each of these theories and models has contributed indirectly to the framing and content of the questionnaire and interview schedule. This study does not set out to directly test any one of the theories, but has drawn on and combined relevant elements from the theories.

2.10 Conclusion

This chapter presented a summary of the literature that gives a general overview of e-Government in the world, the view of e-Government in Africa, the situation of e-Government in West Africa, e-Government readiness in Guinea-Bissau and lower level of ICT infrastructure use in GB Government.

E-Government is a relatively new concept for citizens. Countries around the world continue to invest in the Internet or IT to ensure good quality and efficiency of services. The poor administration of Government services is the reason that many e-Government projects fail in developing countries. Failures of IT projects in developing countries are often related to the instability of political, social and economic issues which can affect implementation of e-Government.

The model of an e-Government site demonstrates that implementing of IT is an important strategy for Government services. Development of ICT infrastructure can improve the citizens' interaction with Government, and the incorporation of Information and Communication Technology in the process of policymaking. Implementation of e-Government was discussed, to find out how GB Government officers could follow the new technology development to improve the country administration to public benefit. This next chapter deals with the research methodologies used in this study.

3 CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes methodological issues pertaining to this study. A predominantly quantitative approach, with some qualitative elements, was adopted in assessing the challenges in implementing an e-Government website in Guinea-Bissau with special reference to Government ministers and departments.

It was between 2002 and 2004 that the Guinea-Bissau Government first implemented its inter-ministerial network service and database for connecting Government ministries. However, that system failed. This study identifies some of the reasons for this failure as well as probing some of the issues regarding the challenges and problems that face the GB Government in terms of implementing an e-Government website.

It is important to investigate the employees' levels of computer literacy in ministries/departments and to make plans for employees and people in general to acquire computer literacy skills so that they can interact with the e-Government website from any geographical point in the country. This study investigates the process of implementing an e-Government website and analyses the projected benefits that a GB e-Government website would offer as well as the requirements involved and the Government's readiness for such a step. Survey questionnaires were developed through which information could be gathered from the respondents. Sampling techniques were used to select one hundred respondents from throughout the various Government ministries. Some of the Government employees were interviewed, with the final sample size for the interviews being ten employees from each of the different ministries. The premise behind this was that the quantitative and qualitative research methodology approaches would benefit the present study as the two approaches complement one another and allow one to compare (triangulate) the results from each approach.

3.2 Research strategy

The present study primarily used the survey research strategy. Babbie and Mouton (2001) state that there are three main research strategies: case studies, experiments and surveys. The survey research strategy was chosen for this study because the objective is to analyse, describe, contrast, classify, compare and interpret the findings on the challenges of implementing an e-Government website in GB. According to Baines and Chansarkar (2002), this research strategy can be used to gather both quantitative and qualitative data. A quantitative approach refers to research that seeks to quantify the data gathered and then also typically applies some form of statistical analysis to it. Qualitative research, on the other hand, refers to research that provides insights into and an understanding of the problem that is under the spotlight.

To set the scene for the current study, the selected employees were surveyed, and some were interviewed, so as to obtain more information about how best to approach the challenges of implementing an e-Government website in GB.

3.3 Data collection techniques

The questionnaire was initially formulated by the researcher and then refined through consultation with the research supervisor. The techniques for data collection were an administered questionnaire and an interview schedule. The main task of this study was to try to find successful methods for and challenges in implementing an e-Government website and it was thus necessary to collect data from different Government ministries/departments for use in assessing IT use in GB.

The data collection process was undertaken by the researcher. The questionnaire constituted the main source of data collection for the study. The questionnaire was the medium used for ascertaining what obstacles and problems were faced during the previous attempt to implement an e-Government programme in GB. It was printed out so as to make it easy for

respondents to complete and return, as it is well known that electronic surveys suffer from poor response rates. The printed questionnaires were personally handed to GB ministries employees and personally collected, once complete. The respondents were assured of confidentiality and anonymity.

3.3.1 Questionnaire

The questionnaire was used to discover the challenges, obstacles and issues that could be faced in the implementation of an e-Government in GB (see Appendix A). The questionnaire is a commonly used research instrument and can be a reliable source of research data. A total of one hundred questionnaires were administered to GB ministerial employees, who were selected to give their opinions and knowledge about implementing an e-Government website in their ministries. The respondents were selected from the following roles: those who were on first IT implementation from 2002 – 2004; IT technician and General Directors linked with IT department in all ministries. GB ministries employees also cooperated by helping to distribute the questionnaires within their ministries. The respondents were assured that their answers to the questionnaire would remain confidential, and they were encouraged to answer as honestly as possible. Before completing the questionnaire, the consent form was explained, signed by the respondents, and then returned to the researcher.

The participants were contacted individually in their offices so as to explain the study and its purpose. The researcher left his contact details with each individual so that the participants could contact him so as to inform him of the exact date and time that they could take part in the study. Only when this was done were appointments scheduled for administering the questionnaire.

The questionnaires were administered to the officers in charge of e-Government initiatives in the relevant ministries and departments of the Government of GB as they were the key sources of data collection at ministerial/departmental level. Finally, after the data was collected and collated, the process of data interpretation and analysis was undertaken. The questionnaire was divided into the following five sections:

I	**–** use of technology in GB;
II	**–** Government employees' usage of IT;
III (objective 1)	**–** experience of the first (i.e. 2002 to 2004) IT implementation;

IV (objective 2) – implementing an e-Government website (advantages, requirements and readiness) in GB;

V (objective 3) – challenges that may hinder the country's e-Government development

In general, demographic descriptions are important in understanding the characteristics and representative of the sample. The sample consisted of 100 respondents to the study survey. The questionnaire did not have a section which gathered the demographic details of the respondents. Initially, the view was that demographic data was not of material value to the study. However, during analysis it was realised that demographic data would have added an extra dimension to the possibilities of identifying trends related to demographics. The absence of demographic data is thus a limitation in the study.

The criteria used in selecting the sample included the following categories:

- IT professionals are familiar with the previous failure of the first IT implementation from 2002 – 2004 and they have experience in attempts to implement e-Government in GB;
- Employees: those who have more than ten years of job experience and some knowledge of e-Government implementation in different ministries;
- General Directors: most of them have been employed in Government for more than twenty years and their positions are related to the implementation of e-Government in GB.

3.3.2 Interview schedule

The interviewees were all asked for their permission to conduct the interview, and this was granted. Prior to the interviews, bookings were made via telephone. The researcher was therefore able to establish a definite time arrangement with these sampled Government officers. The ten respondents being selected for interviews from each ministry (employees, IT technicians and General Directors) had studied abroad in English-speaking countries. All the interviews were conducted in English. Prior to conducting each interview, the purpose and objectives of the study were briefly explained to each of the respondents, which assisted in putting the respondents at ease. In the interview, six open-ended questions were asked and answers to these questions helped establish the opinions of the officials concerning the

implementation of an e-Government website and the use of ICT within the country (see Appendix B – Interview protocol).

The purpose of the interviews was also to find out more about the interviewees' perceptions of the effectiveness of an e-Government website in terms of good governance, which demands that there be democratic, responsive, participative, non-corrupt and transparent policy-making (Gascó and Jiménez, 2008). For the interviews (which were structured interviews), the interviewees sat face-to-face with the interviewer, who worked from a prepared interview schedule. In addition, it was assumed that the respondents were being cooperative and honest, providing the researcher with unbiased information. It was decided to interview some of the General Directors as well the ICT technicians of different departments within ministries. Each of these interviewees was directly involved with the failure of the first IT implemented during 2002 – 2004 and could provide useful input for implementation of e-Government in GB.

The interviews were recorded by way of a digital voice recorder, and all respondents consented to being recorded. A voice recorder was used in the interviews with each respondent so as to allow the researcher to accurately collect information from all those interviewed. After each interview, the interviewer presented the answers to the respondent in order to clear up any possible misconceptions on the part of the interviewer as to what the respondent had actually said or meant to say.

3.4 Population of the study

The population of the study was the various Government ministries and departments, which made for twenty-three units of analysis. The ministries and departments that were surveyed were: the Presidential office; the Prime Minister's office; the Parliament office; the Supreme Court; the Voting office; the Ministry of Foreign Affairs; Energy and Natural Resources; Women and Social Cohesion; Education; Territorial Administration; National Defence; Interior; Justice; Civil Services and Labour; Transport and Communication; Economy and Planning; Finance; Fisheries; Agriculture and Rural Development; Infrastructure and Urbanisation; Public Health; Youth and Sport; and Commerce, Tourism and Industrial Arts.

The population frame for the study was Government officials and employees, including IT staff. A sample of one hundred respondents was used. Each of the twenty-three ministries had four respondents (one IT professional, one employee, and two general directors). The questionnaires/interviews helped the researcher to detect the IT challenges that are the real issues facing the Government. The ten interviews with general directors, IT professionals and employees were used as follow-up: they provided the researcher with more detailed information and helped discern the causes of the failure of the technology in previous years.

3.5 Ethical considerations

The research was conducted in English, a language common to the researcher and all the participants. The participants were informed from the outset about the nature and the purpose of the study. The issue of voluntary participation was stated so that the participants would be taking part in the study willingly, thus enhancing the quality of the information gathered. The participants were assured that any information they provided would be kept confidential, and they were not obliged to disclose their work position and identity. They were also informed of their right to withdraw at any point in the study, for any reason. In so doing, they were assured that they would not suffer any prejudice as a result and any information they had given would be returned to them.

3.6 Coding and method of analysing the data

The survey data collected through the questionnaires was evaluated and coded. The purpose behind data evaluation is to check for any ambiguities as well as for completeness, comprehensibility, internal consistency, and relevance. Gilbert (2008) advises that completed questionnaires should be assigned a unique form, because this facilitates in checking the data for errors. Each completed questionnaire was assigned a unique identifier so that it could be associated with a specific ministry. Once the data for this study had been collected, the information was coded for statistical processing. The data was analysed by way of Statistical Packages for Social Sciences (SPSS), version 15.0 for Windows. This software programme also has a graphics function that can be used to create a variety of charts. This function was helpful in terms of illustrating the statistical results of the analysed data. Charts were used to display the respondents' selections on various questions. In general, the chi-square goodness-

of-fit test was used to test whether any response option was selected significantly more/less often than others.

3.7 Evaluation of the methodology

The survey research strategy was chosen because the objective was to ascertain the challenges and obstacles that could face those assigned to implement an e-Government in GB, with special reference to Government ministries/departments. In addition, the survey approach sought to assess the readiness of employees for e-Government and also identify some of the problems encountered with previous implementation attempts during 2002 – 2004. The goal was to assess the extent to which the Guinea-Bissau Government has responded to the challenges and the overall readiness of Government officials and employees with regard to establishing e-Government in the country.

One notable advantage of the survey research strategy is its flexibility. Many questions may be asked on a given topic, giving considerable flexibility to the analysis of a particular set of data. The survey research strategy is generally weak in terms of validity and strong in terms of reliability (Babbie and Mouton, 2001). The relative weakness in validity of the survey research methodology emanates from its artificiality. For example, finding out that a person gives conservative answers does not necessarily mean the person is conservative.

One of the prerequisites for using questionnaires and interviews is to make sure that the respondents and interviewees are capable of giving accurate responses. It was fortunate that all the respondents and interviewees in this case were well versed in issues pertaining to e-Government within their ministries/departments. This can be attributed to the fact that almost all the respondents were part of the e-Government task team that was entrusted with the responsibility of formulating an ICT policy for Guinea-Bissau (Gascó and Jiménez, 2008).

3.7.1 Reliability and validity

Reliability is the degree to which a test consistently measures what it sets out to measure, while at the same time yielding the same result (Lee, 2005). Hujran and Chatfield (2008) have observed that it is in the quantitative approach that data and findings are controllable, predictable, consistent and replicable.

Validity is the degree to which a measure does what it is intended to do (Babbie and Mouton, 2001). Content validation was achieved in this study by making sure that the questionnaire items were related to the questions that the study set out to answer. Criterion validity was achieved by comparing the instruments of measurement to those published in the literature, for example, the United Nations e-Government benchmarks. According to Cronbach (1971), content validity should be assessed by experts in the area of study using the review method.

Regarding the interview, it has been shown that validity is a persistent problem in interviews. For instance, validity can be compromised when the interviewer asks leading questions. The researcher made every attempt to avoid leading questions in the interviews – each standard question was asked in a similar way and the respondent's answer recorded.

3.8 Conclusion

The methodology of the research was the focus of this chapter. Two complementary research approaches – quantitative and qualitative – were used in this study. It was explained in this chapter how the study was conducted, how Government employees were chosen, how sampling was done, and what was done in order to collect data to answer the research question. Furthermore, data collection methods, such as personal interviews, were discussed. The following chapter will present the results of the study.

4 CHAPTER FOUR: FINDINGS

4.1 Introduction

The previous chapter explained how the study was conducted; specifically, what was done in order to collect data so as to answer the research questions concerning GB's Government ministries. This chapter presents the data obtained from the population of the study. The objective of this chapter is to transform raw data into meaningful information. It is worth noting that it was evident from the data collection process that the study's participants were all well versed in the issues surrounding the implementation of e-Government within their ministries. This observation is attributable to the fact that almost all the respondents were part of the task team that was initially entrusted with the responsibility of formulating and implementing e-Government and thus they were familiar with the barriers and challenges that may hinder GB's e-Government development.

The data that is presented in this chapter is not associated with any one particular ministry. In order to encourage full and frank participation, the respondents were promised that their ministries would not be individually identifiable in the report. The data presented in this chapter was obtained by way of questionnaires and an interview schedule.

One hundred completed questionnaires were personally administered and collected from respondents employed in GB Government ministries. The questionnaires were manually scanned to check for inconsistencies and no-responses, but all questionnaires were judged to be usable. The high rate of response and thorough completion of the questionnaires is largely due to the fact that the researcher is employed in the ministry and personally administered the questionnaires.

The results are organised according to the themes of the research issues. In particular, the sections below follow the relevant sections in the questionnaire. Some of the findings are presented in this chapter in the form of figures and tables as these present trends in the data more appropriately.

4.2 The importance of an e-Government website

This section of the questionnaire asked the respondents their opinion as to the importance of an inclusive e-Government website.

4.2.1 Government services

This bar graph shows the distribution of the respondents according to their level of agreement with regard to the importance of Government services being available to citizens by way of a website.

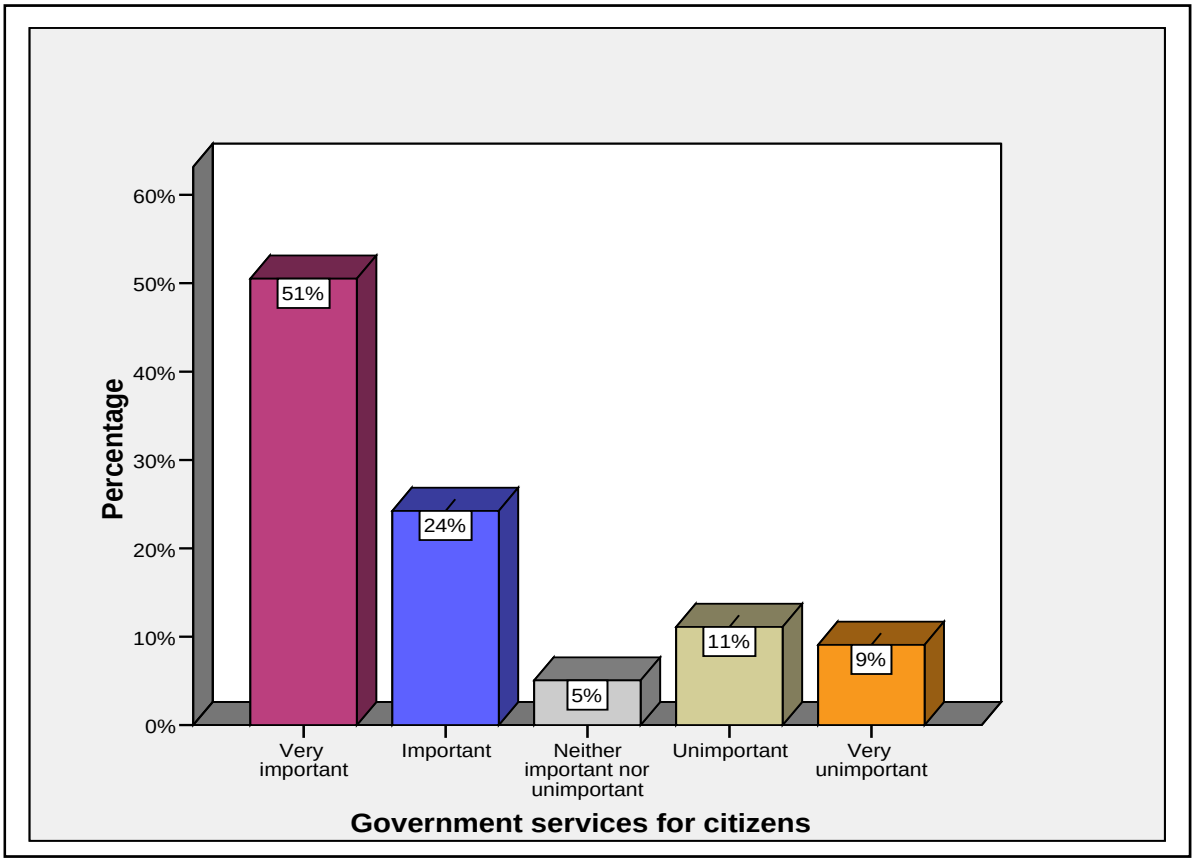

Figure 4.1: Government services for citizens

Figure 4.1 above shows that seventy-five (75%) of the respondents were in favour of implementing the new technology in the country to allow citizens to have direct contact with Government services, but twenty (20%) of the participants do not see implementation of this new technology as important. It is notable that the majority show support for an e-Government website.

According to the chi-square test Table 4.1 below, significantly (p<.0005) more than expected of the respondents, selected 'Very Important'.

4.2.2 Complaints on website

This bar graph shows the distribution of the respondents in terms of their level of agreement as to the importance of citizens being able to post their complaints on a ministry's website.

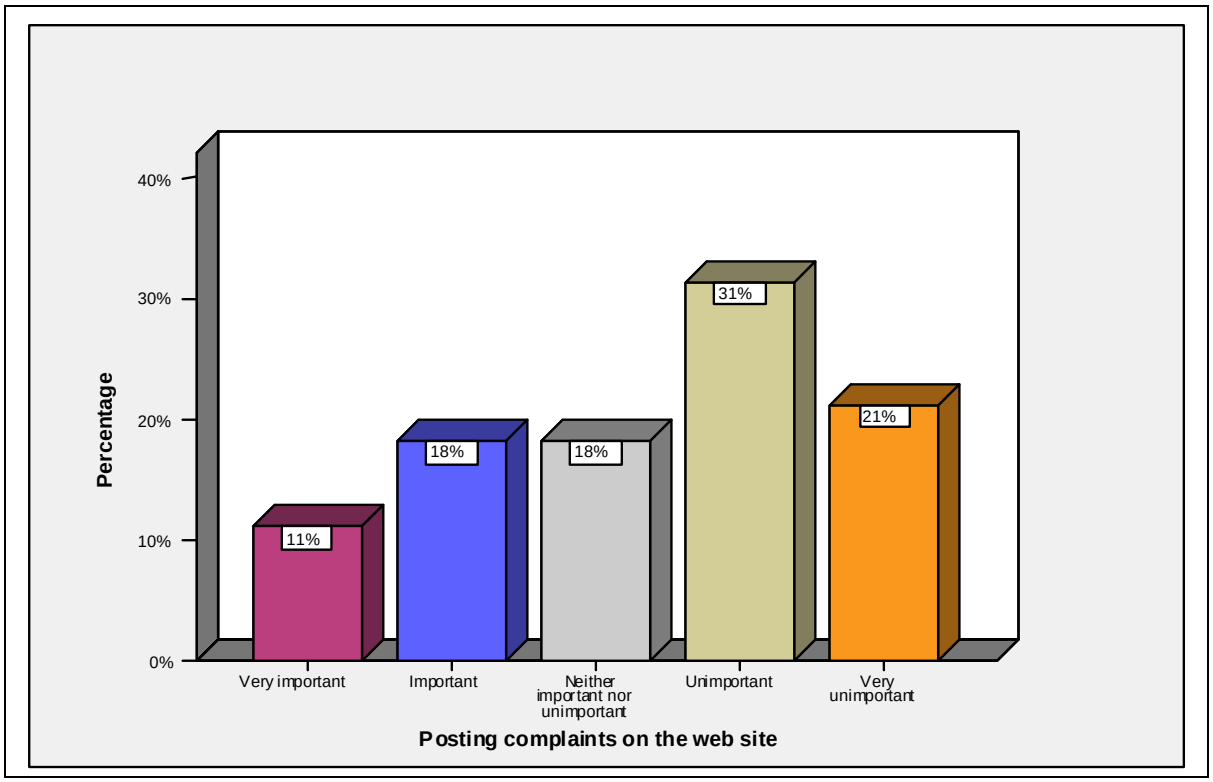

Figure 4.2: Posting of complaints on the website

The respondents were asked to indicate their agreement with the statement that supposing their ministry had a website, whether it would be important for citizens to be able to post their complaints on that website. Fifty-two (52%) of the respondents indicated that citizens being able to post complaints on a website is unimportant. Twenty-nine (29%) of them said that this issue is important. According to the chi-square test Table 4.1 below, significantly (p=.012)

more than expected of the respondents, selected 'Unimportant'. This is an interesting reversal of the previous patterns with the majority not supporting complaints being posted on the website.

4.2.3 The table of respondents' perceptions of the importance of an e-Government website for delivery of Government information

In question 4.1, the respondents were asked to rate the importance of having an e-Government website on a five-point scale, as is indicated in the Table below:

1 – Very important	**2** – Important	**3** – Neither important nor unimportant	**4** – Unimportant	**5** – Very unimportant

Figure 4.3 below provides average score graphic for question 4.2.

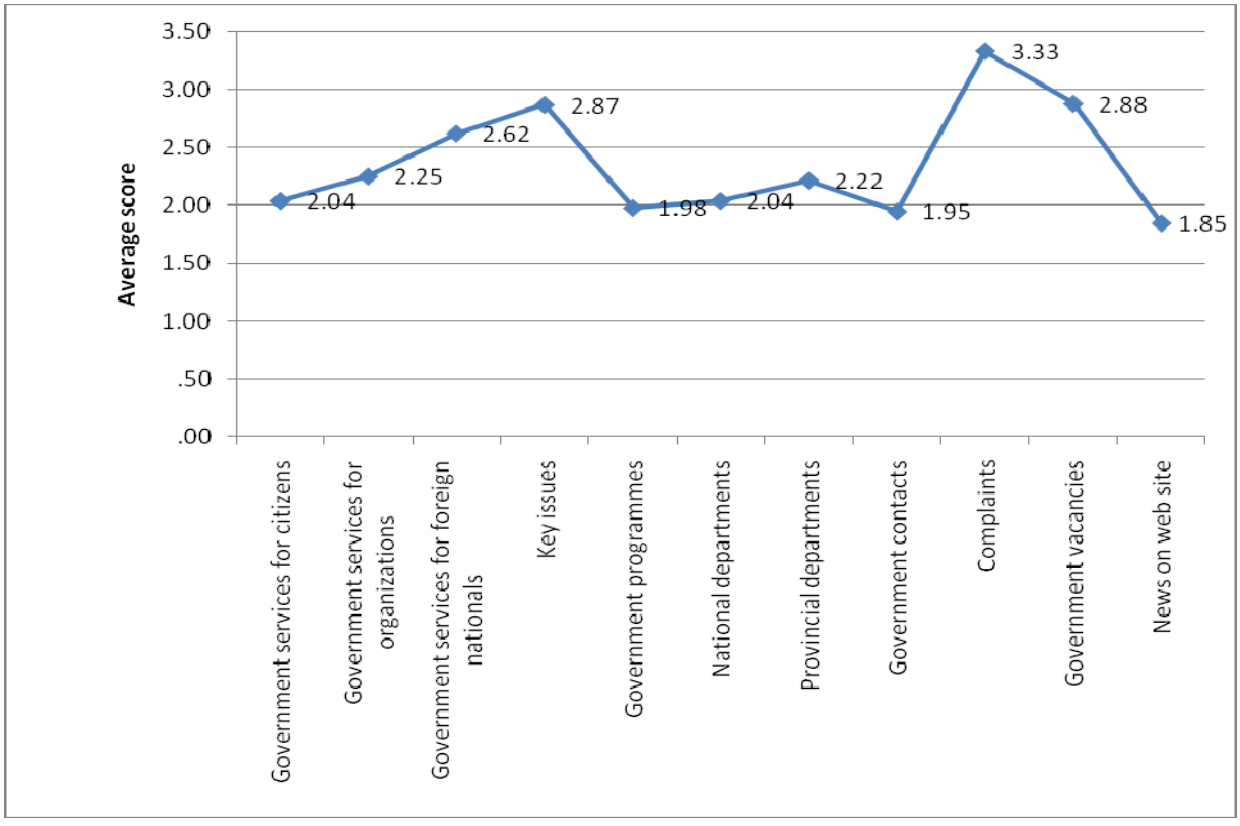

Figure 4.3: Average score graphic for the importance of an e-Government website

Table 4.1: Chi-square test results of the importance of various types of information of e-Government website for delivery Government information.

Question	Chi-square goodness-of-fit	
	p-value	Interpretation significantly more selected..
Government services for citizens	<.0005	very important
Government services for organizations	<.0005	important
Government services for foreign nationals	0.084	
Key issues	0.152	
Government programmes	<.0005	very important
National departments	<.0005	very important
Provincial departments	<.0005	important
Government contacts	<.0005	important/very important
Complaints	0.031	unimportant
Government vacancies	0.762	
News on web site	<.0005	very important

According to the chi-square test, there is significant disagreement (Unimportant) with 'Complaints'; significant agreement (Very important) is found for all the other items except 'Government services for foreign nationals', 'key issues' and 'Government vacancies' for which the responses options were chosen equally.

4.2.4 Responsibility for promoting an e-Government website

This bar graph shows the distribution of the respondents according to who they say is responsible for promoting an e-Government website.

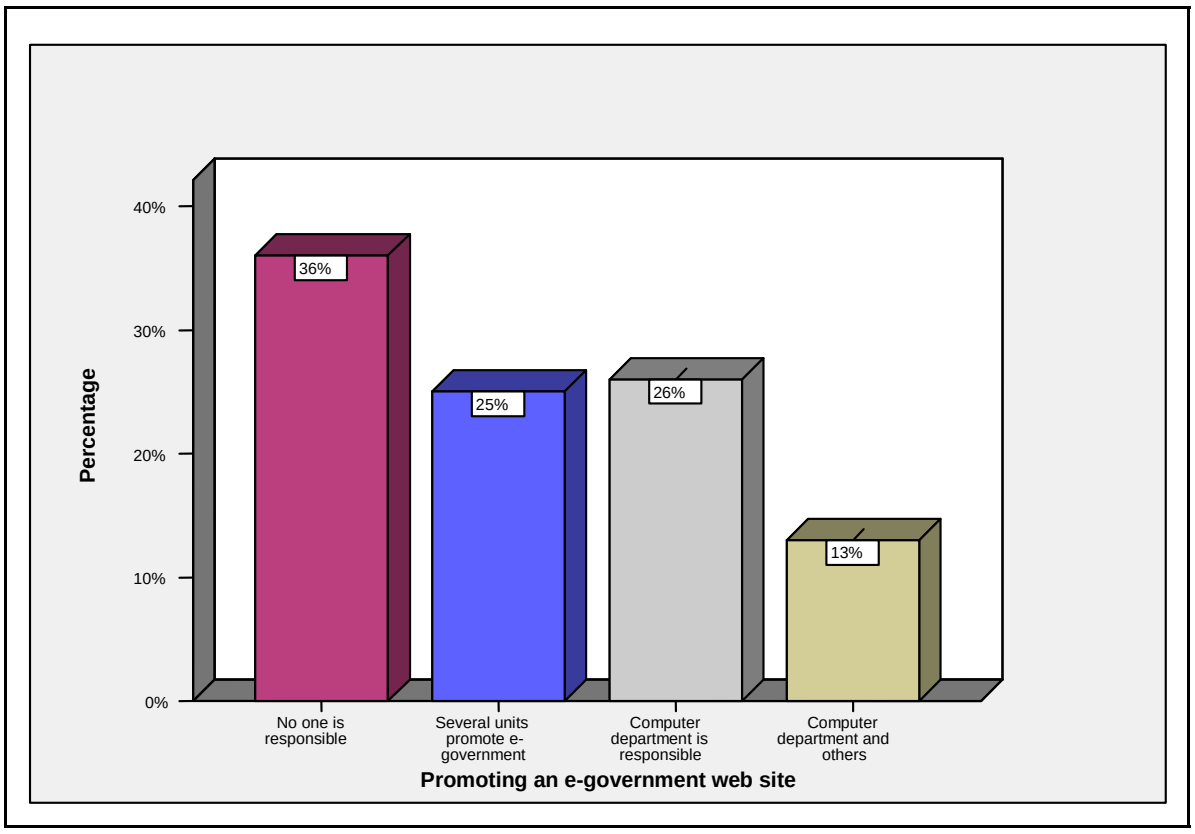

Figure 4.4: Promoting an e-Government website.

Thirty-six percent (36%) of the respondents confirmed that no one is responsible for promoting e-Government and Internet development. Twenty-five (25%) of the participants said that it is unclear if anyone is in overall charge in terms of promoting e-Government. Twenty-six (26%) of the respondents stated that the computer department is primarily responsible for Internet development and promoting the use of a website. Thirteen (13%) of the respondents said that Internet development and having a website are coordinated by the

computer department with the involvement of others. According to the chi-square test, this is a significant result (p=.014) with 'No one is responsible' being selected more often and 'Computer department and others' being selected less often than expected.

4.2.5 The importance of Internet services

This bar graph shows the distribution of the respondents in terms of how they rated the importance of Internet services.

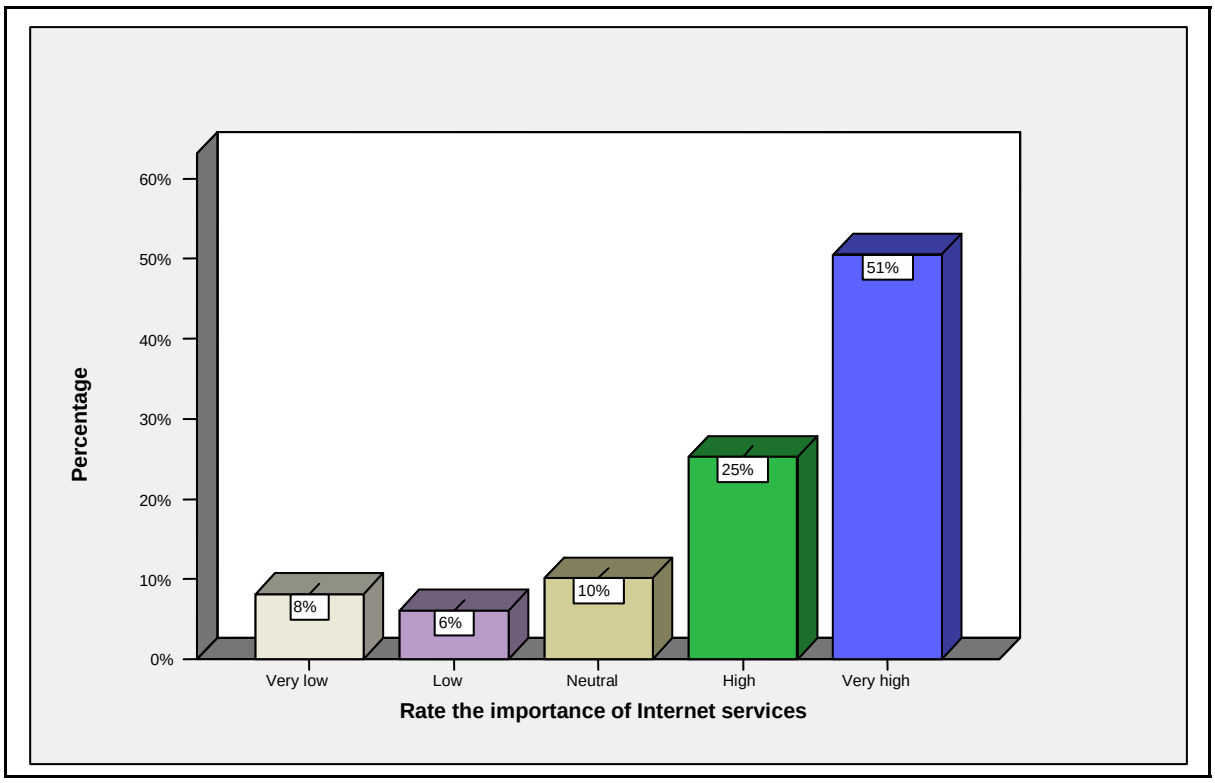

Figure 4.5: Rate the importance of Internet services

It can be seen from Figure 4.5 above that approximately 76% of the respondents chose "high or very high" in terms of the importance of having Internet services within ministries, with only a total of 14% rating it as low and very low. According to the chi-square test, significantly (p<.0005) more than expected responded 'Very high'.

4.3 Government employees' usage of IT

This section of the questionnaire investigates the use of new technologies within Government ministries in GB. It helped the researcher to find out how familiar the employees are with the new technologies that have recently been brought into their departments.

4.3.1 Microsoft Word for writing documents and Excel for work involving calculating

This bar graph shows the distribution of the respondents according to how often they say they use Microsoft Word in their ministries for writing documents.

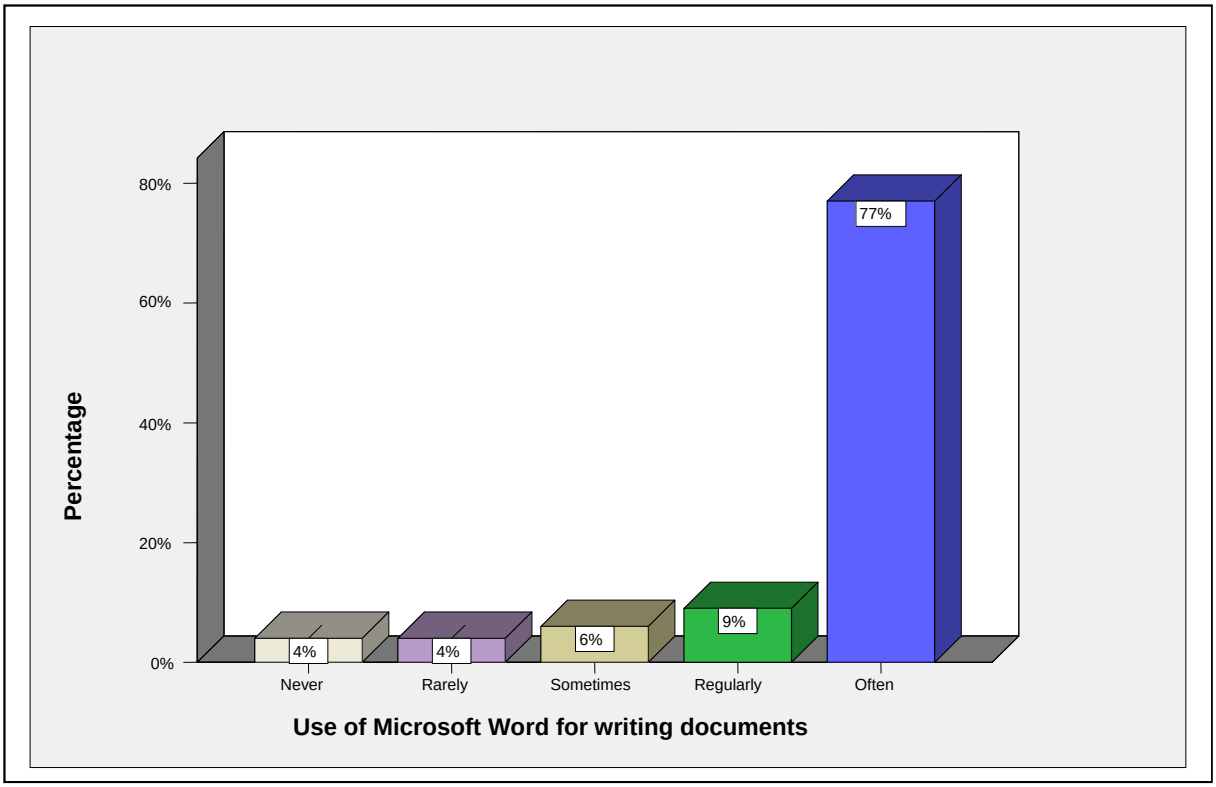

Figure 4.6: Use of Microsoft Word for writing documents

Regarding ministry employees' usage of Microsoft Word, eighty-six (86%) of the respondents stated that they use this software regularly or often in their departments, while

fourteen (14%) of the respondents said they sometimes/rarely/never use Microsoft Word for writing documents.

Use of Microsoft Excel for work involving calculating, showed similar patterns to the use of Microsoft Word. Eighty-six (86%) of total respondents reported that they very often or regularly use Microsoft Excel in their ministries for work that involves making calculations. Only fourteen (14%) of the respondents said they sometimes/rarely/never use the software in their ministry.

In each case, significantly ($p<.0005$) more respondents than expected indicated that they use these tools ‘Often’.

4.3.2 Microsoft Access for managing data and PowerPoint for presentation

This bar graph shows the distribution of the respondents according to their level of agreement as to how often they use Microsoft Access in their ministries for managing data.

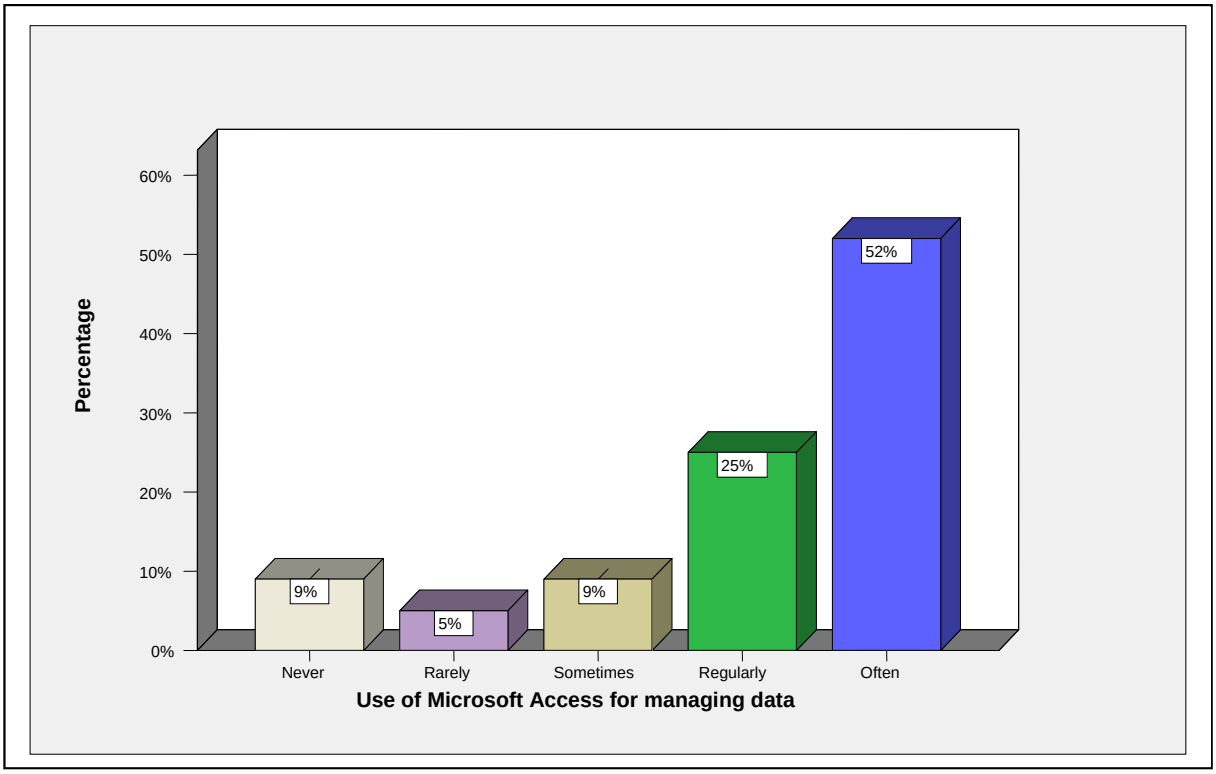

Figure 4.7: Use of Microsoft Access for managing data

It can be seen in Figure 4.7 above that seventy-seven (77%) of the respondents stated that they use it regularly or often in their ministries. Twenty-three (23%) of the respondents indicated that they sometimes/rarely/never use the software for managing data in their ministries.

Use of Microsoft PowerPoint for presentations showed similar patterns to the use of Microsoft Access. Thirty (30%) of the respondents noted that they use it regularly or often in their departments. Sixty-nine (69%) of the respondents stated that they sometimes/rarely/never use Microsoft PowerPoint for presentations.

In each case, significantly (p<.0005) more respondents than expected indicated that they use these tools 'Often'.

4.3.3 Intranet and Internet for inter-ministerial communication

This bar graph shows the distribution of the respondents according to how often they said they use the Intranet for inter-ministerial communication.

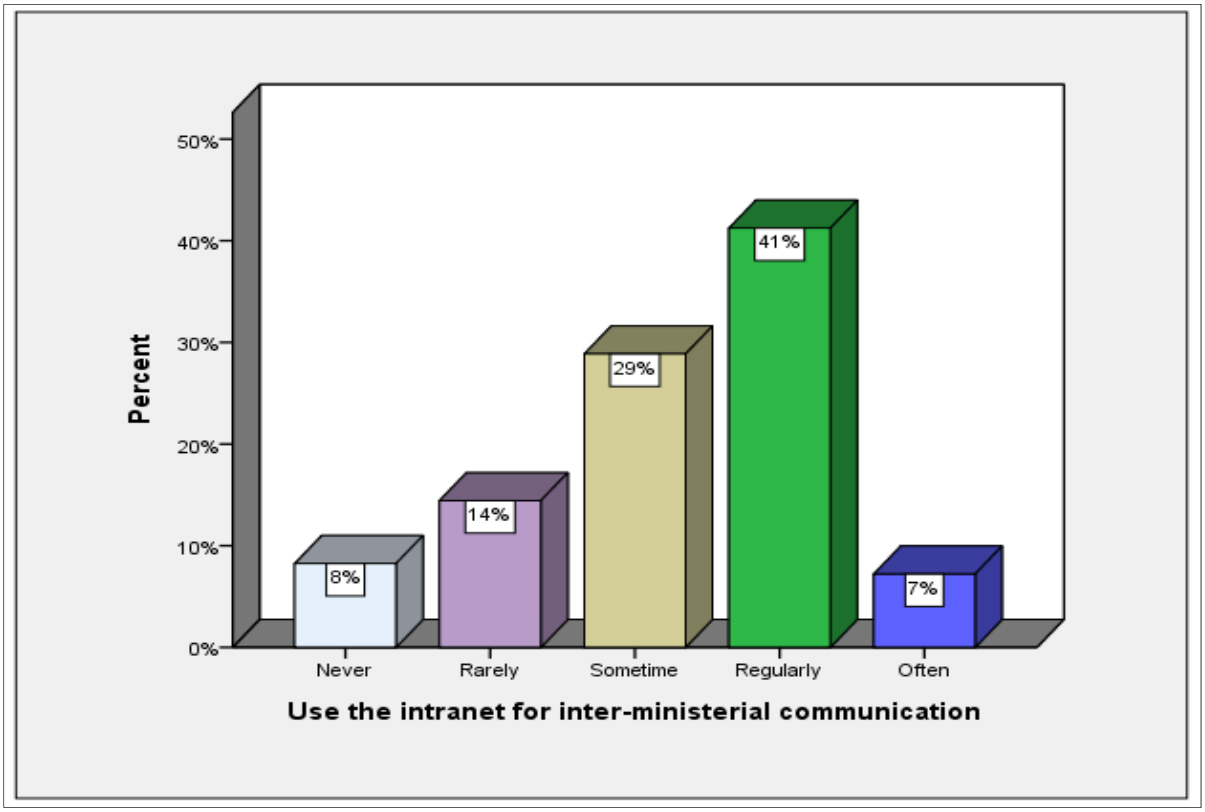

Figure 4.8: Use Intranet for inter-ministerial communication

Regarding ministry employees' usage of Intranet for inter-ministerial communication, forty-eight (48%) of the respondents indicated that they use this software regularly or often in their departments, while fifty-one (51%) of the respondents noted they sometimes/rarely/never use the Intranet for inter-ministerial communication. Significantly (p<.0005) more than expected indicated 'Regular' use of the Intranet.

Use of the Internet to gather information for their ministry showed similar patterns to the use of Intranet. Thirty-three (33%) of the respondents stated that they use it frequently or regularly in their ministries. Seventy-six (76%) of the respondents indicated that they

sometimes/rarely/never use the Internet to gather information for their ministries. Significantly (p<.0005) more than expected indicated that they ‘Sometimes’ use the Internet.

4.3.4 Skype for inter-ministerial Video-Conferences and inter-Western Africa Vide-Conferences

This bar graph shows the distribution of the respondents according to their level of agreement as to how often their ministries use Skype for inter-Western Africa video conferences.

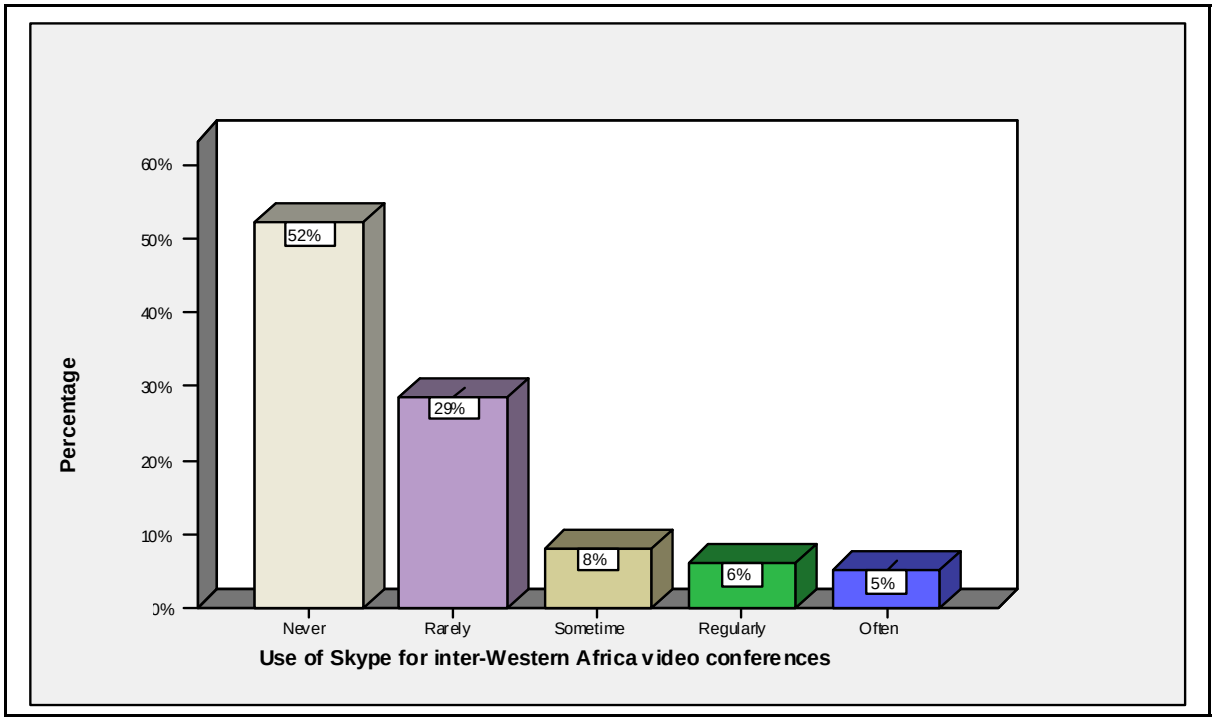

Figure 4.9: Use of Skype for inter-Western Africa video conferences

It can be seen in Figure 4.9 above that eighty-nine (89%) of the respondents said that their ministries never/rarely/sometimes use Skype for inter-Western Africa video conferences. Only eleven (11%) fell into the “other” category, as they simply said that they do use Skype. The results in Figure 4.9 above show that most of the respondents do not use Skype to participate in inter-Western Africa video conferences. A significant (p<.0005) number of respondents responded ‘Never’.

Use of Skype for inter-ministerial Video-Conferences showed similar patterns to the use of Skype for inter-Western African Video-Conferences. Thirteen (13%) of the respondents stated that they use it regularly or often in their ministries. Eighty-seven (87%) of the

respondents indicated that they sometimes/rarely/never use Skype in their ministries. This is a significant (p<.0005) result.

4.3.5 Summary of the levels of using IT by Government employees

Figure 4.10 below summarises the degree to which Government employees have and make use of IT.

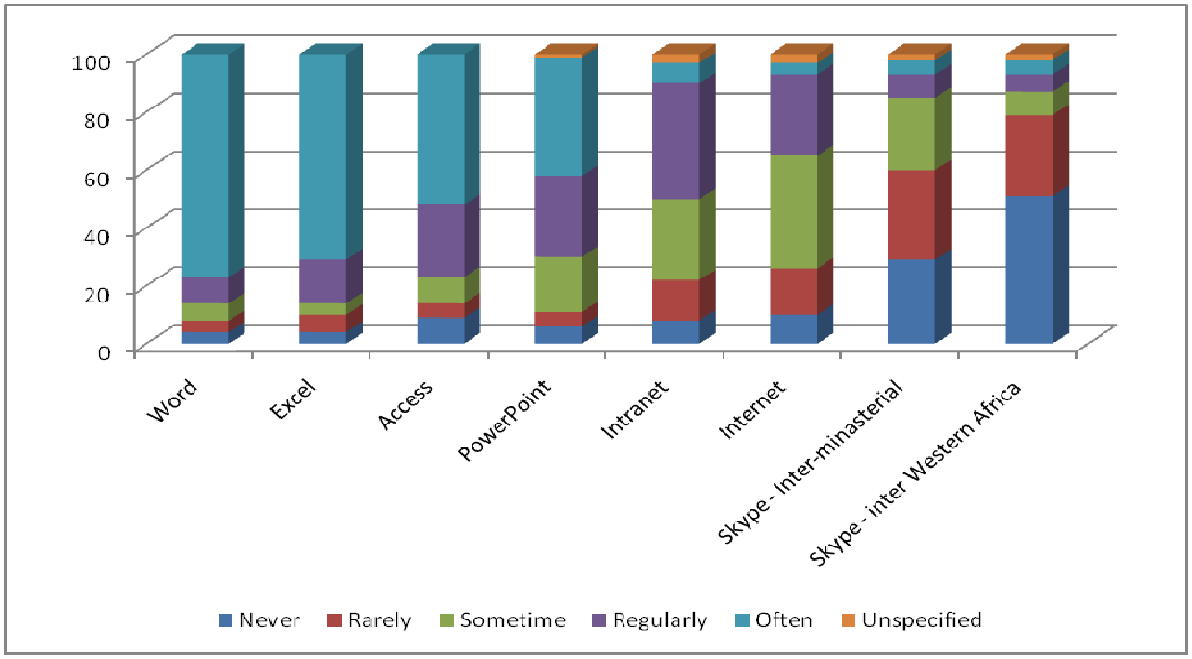

Figure 4.10: A summary of Question 2 – Government employees' usage of IT.

Figure 4.10 provides a graphic summary of all the answers to the questions relating to Government employees' usage of IT within their ministries.

The summary results show that respondents generally use common productivity tools such as Word and Excel quite frequently. Intranet, Internet, and Skype are used significantly less often.

4.4 Computer courses attended and skills used

This section of the questionnaire sought to find out the level of computer literacy of GB's Government employees. The e-Government implementation process is linked to the computer literacy skills of its population.

4.4.1 Computer course(s) attended by employees

Table 4.2 shows below how many of the respondents have attended one or more computer courses.

Table 4.2: Computer courses attended by Government employees

Variable	**Yes (%)**	**No (%)**	**Did not respond**
Microsoft Word	74.0	26.0	
Microsoft Excel	80.0	20.0	
Microsoft Access	83.0	17.0	
Microsoft PowerPoint *	81.0	18.0	1.0
Intranet *	48.0	49.0	3.0
Internet *	52.0	47.0	1.0
Skype *	30.0	66.0	4.0

As can be seen in Table 4.2 above it is clear that there is a correlation between usage and having attended a course(s) on that particular package/technology. Thus, the lower percentages shown for Intranet (48%), Internet (52%) and Skype (30%) courses attended would provide one reason for the lower usage percentages for these technologies.

* - Some of the respondents did not provide an answer to these questions

4.4.2 A bar graph summary of computer courses attended

Figure 4.11 below provides a bar graph summary of courses attended by Government employees.

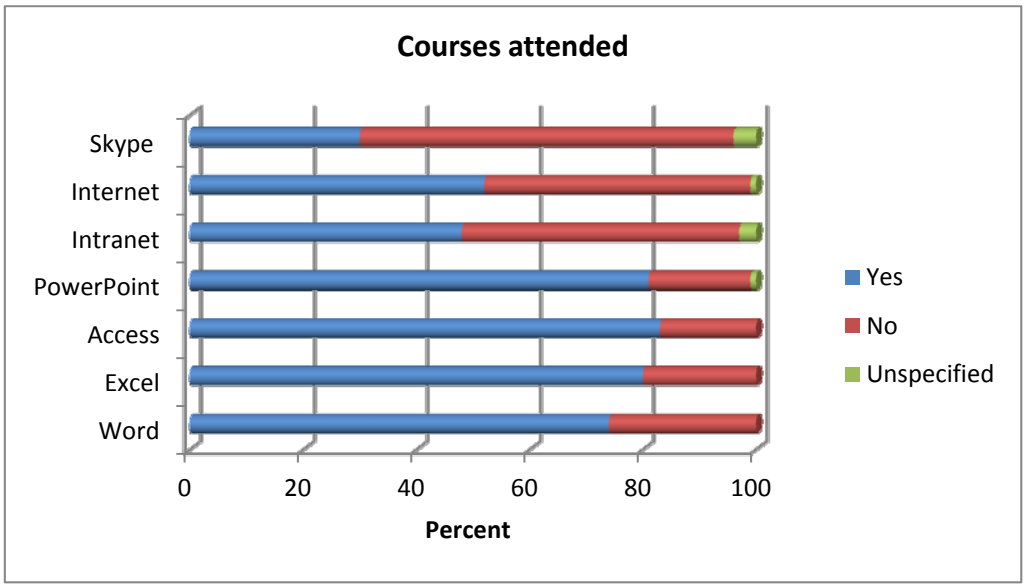

Figure 4.11: Courses attended

The results in this figure (bar graph) provide information from different aspects of using IT software types by employees in GB Government ministries. The summary results in figure 4.11 above shows that respondents generally use software/technology in their departments such as Word, Excel, Access and PowerPoint quite frequently. Intranet, Internet, and Skype uses are significantly lower.

4.4.3 Computer software skills used

This section focused on participants experience in working with computer software skills in Government services. The intention was to find out how often Government employees use the skills they gained specifically from having attended a course(s).

Table 4.3 below shows how many of the respondents use the computer software skills they gained through having attended a course about how to use software/technology in their departments.

Table 4.3: Technology/software skills used by Government employees

Variable	**Yes (%)**	**No (%)**
Microsoft Word	79.0	21.0
Microsoft Excel	83.0	17.0
Microsoft Access	85.0	15.0
Microsoft PowerPoint	84.0	16.0
Intranet	58.0	42.0
Internet	63.0	37.0
Skype	38.0	62.0

As can be seen in Table 4.3 above, seventy-nine (79%) of the respondents stated that they use the Microsoft Word skills they attained through attending the course on how to use this programme; only twenty-one (21%) of them said that their skills were not attained through a course, but were learned on the job. Table 4.3 above indicates that the respondents used software/technology in their departments frequently as a result of computer software skills used from courses attended. Only Intranet, Internet and Skype were not used frequently.

4.4.4 A bar graph summary of skills gained through courses attended.

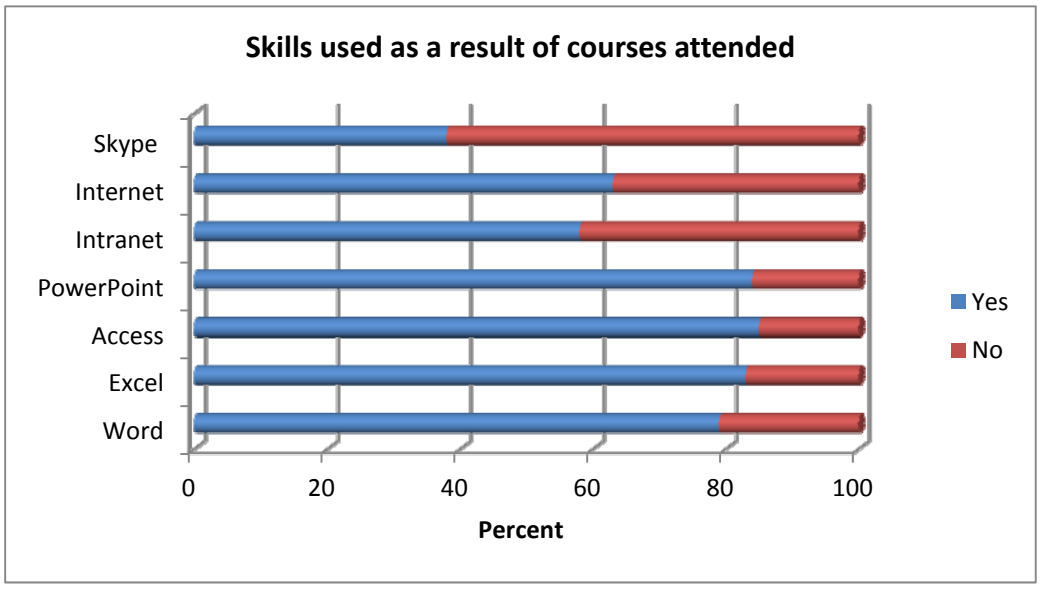

Figure 4.12: Skills used as a result of courses attended

Figure 4.12 above shows the distribution of the respondents' answers to questions that investigated to what degree Government employees' usage of IT is based on skills learned through IT courses that they attended.

4.4.5 Government employees' skills used from various IT software types as a result of the courses attended.

Table 4.4 below shows the results of the Chi-square tests that were conducted with regard to Government employees' usage of IT based on skills acquired through IT courses.

The following options were given to the respondents in relation to the questions to do with each of the types of software: 1 – Yes; 2 – No.

Table 4.4: The results of the Chi-square tests concerning the two questions (Courses attended and Skills used).

	Courses attended		Skills used	
Skill	p-value	Option selected Significantly more often	p-value	Option selected Significantly more often
Word	<.0005	Yes	<.0005	Yes
Excel	<.0005	Yes	<.0005	Yes
Access	<.0005	Yes	<.0005	Yes
PowerPoint	<.0005	Yes	<.0005	Yes
Intranet	0.919		0.11	
Internet	0.615		0.009	Yes
Skype	<.0005	No	0.016	No

The p-values for all the courses attended, except Intranet and Internet, are less than the level of significance of 0.05, Skype courses are significantly 'not attended', while courses for Word, Excel, and PowerPoint are significantly attended.

The p-values for all the skills used, except Intranet, are less than the level of significance of 0.05. Skype skills were significantly 'not used' but there was significant indication that the other skills were used.

4.5 Experience of first IT implementation, 2002 – 2004

This section summarises the respondents' opinions as to why GB's previous (i.e. 2002 to 2004) attempt to implement IT within the various Government ministries failed.

4.5.1 Insufficient number of computers within ministries

This bar graph shows the distribution of the respondents according to their level of agreement with the claim that too few computers where provided in the various ministries.

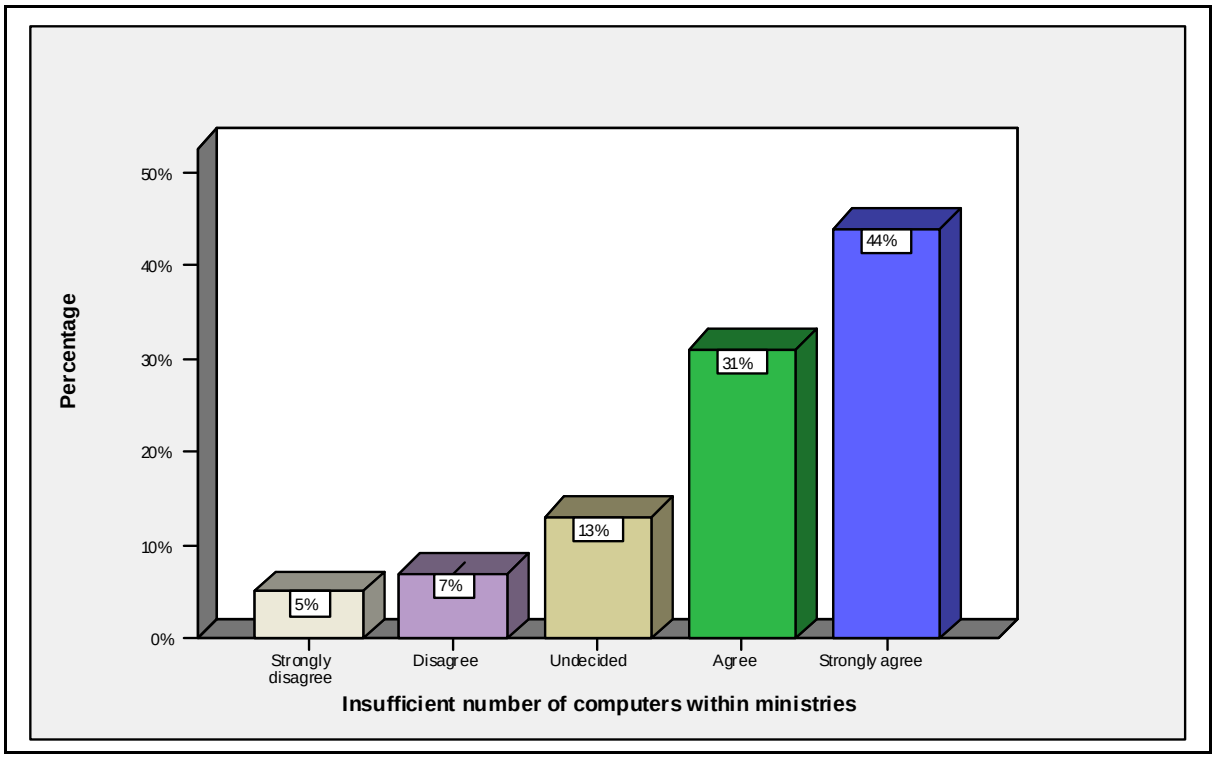

Figure 4.13: Insufficient number of computers within ministries

Over seventy-five (75%) of all respondents either "agreed" or "strongly agreed" that their ministries did not have enough computers to properly implement IT between 2002 and 2004, while twelve (12%) said that they "disagreed" or "strongly disagreed" with this assertion.

4.5.2 The ministries did not have a website

This bar graph shows the distribution of the respondents according to their level of agreement that the ministries did not have a website.

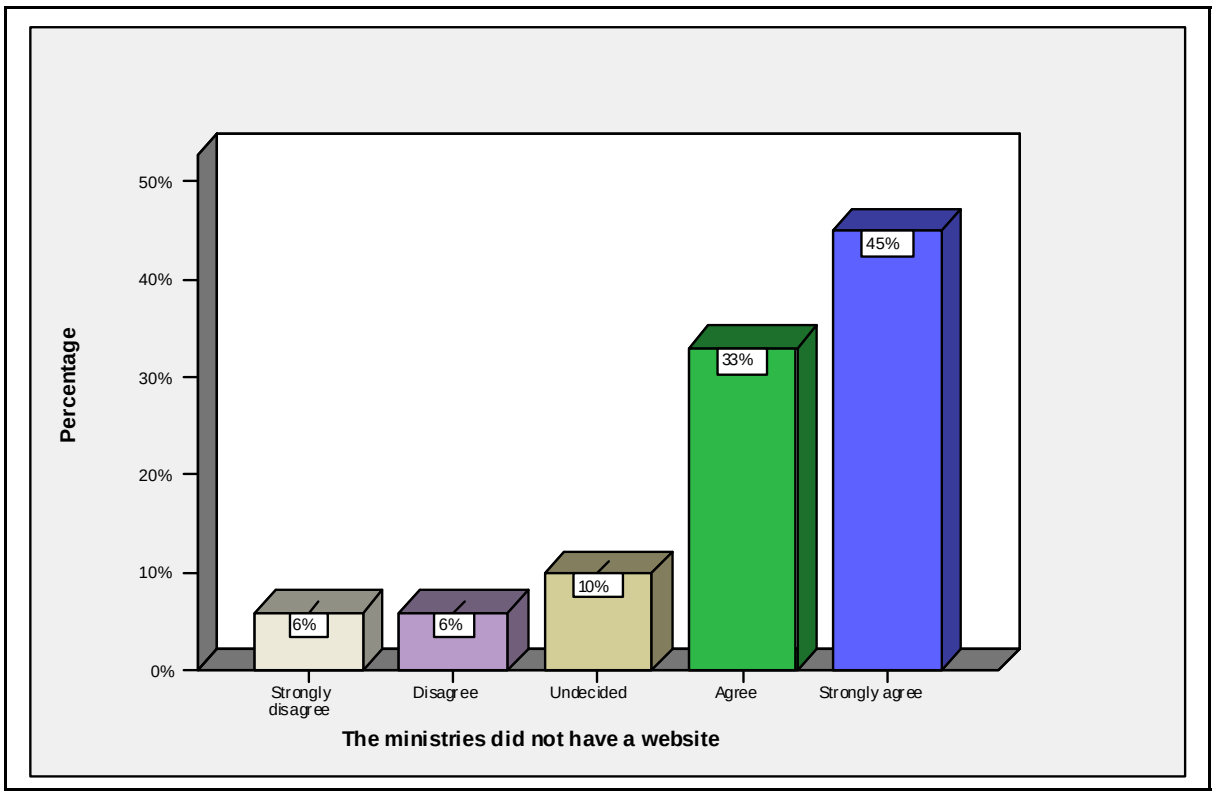

Figure 4.14: The ministries did not have a website

Seventy-eight (78%) of the total respondents either agreed or strongly agreed with the statement that a website was not available in their ministries for publishing Government information. Only twelve (12%) of them said they disagreed or strongly disagree with the statement that the ministries did not have a website.

This research did not clarify the perception of 12% of the respondents that there was a website presence. It may have resulted from differing interpretations as to what it means to have a website.

4.5.3 The low level of employees' IT knowledge

This bar graph shows the distribution of the respondents according to their level of agreement that ministry employees had too little IT knowledge for the e-Government project to have been successfully implemented between 2002 and 2004.

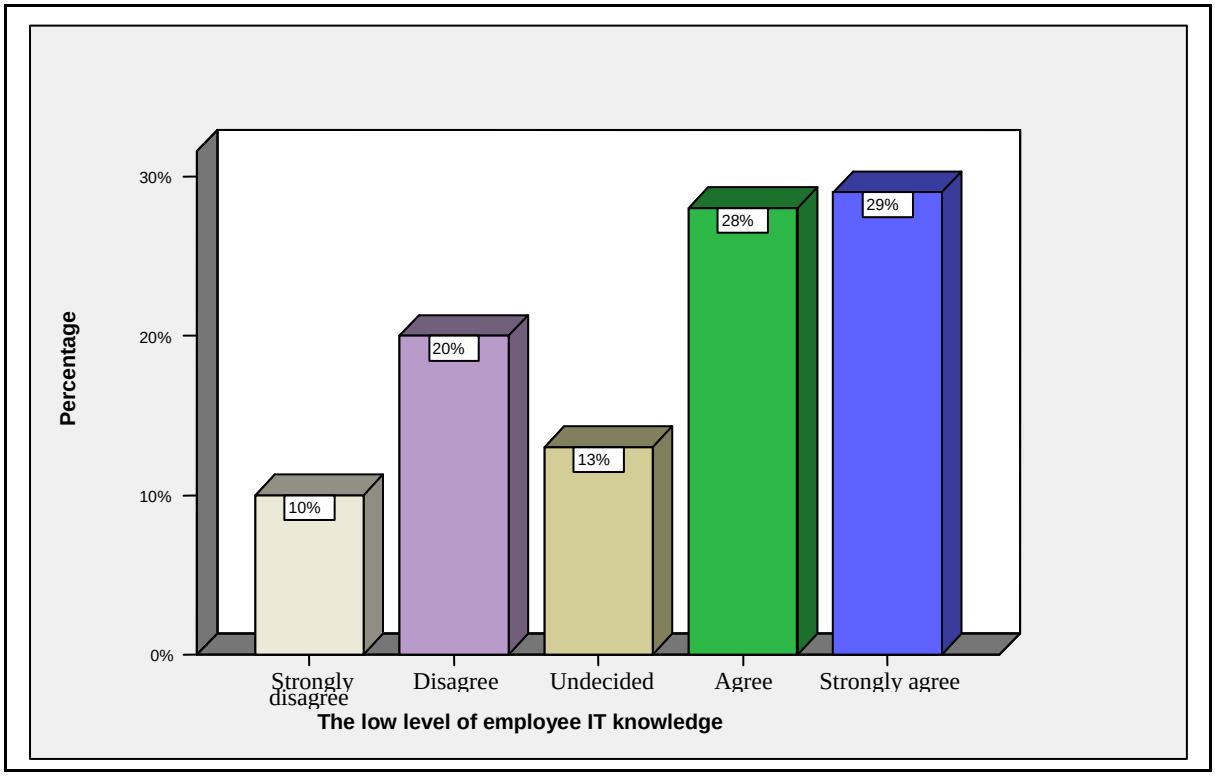

Figure 4.15: The low level of employee IT Knowledge

Fifty-seven (57%) of the respondents agreed or strongly agreed that the ministry employees did not have sufficient IT knowledge for the 2002-2004 implementation project to succeed. Thirty (30%) of the participants disagreed with the statement that the ministries employees did not have sufficient IT knowledge for the 2002-2004 project to succeed.

4.5.4 Lack of funding for employee training courses

This bar graph shows the distribution of the respondents according to their level of agreement that there had been a lack of funding for employee training courses.

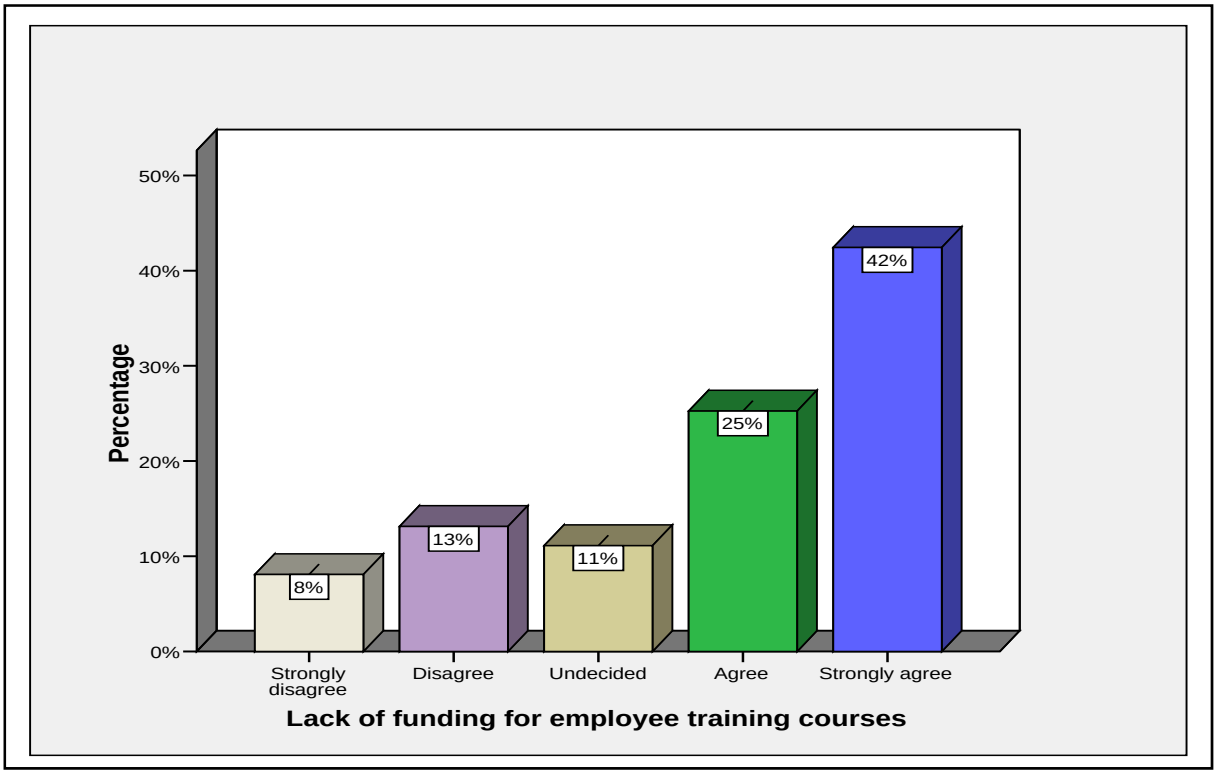

Figure 4.16: Lack of funding for employee training courses

Based on the responses reported in Figure 4.16 above, sixty-seven (67%) of the respondents agreed or strongly agreed that the Government did not have the funding necessary for employee training courses. Twenty-one (21%) of the respondents either disagreed or strongly disagreed.

4.5.5 Summary of the first IT implementation during 2002 – 2004

Figure 4.17 below provides a bar graph summary of the experience of the 2002 – 2004 attempts to implement e-Government.

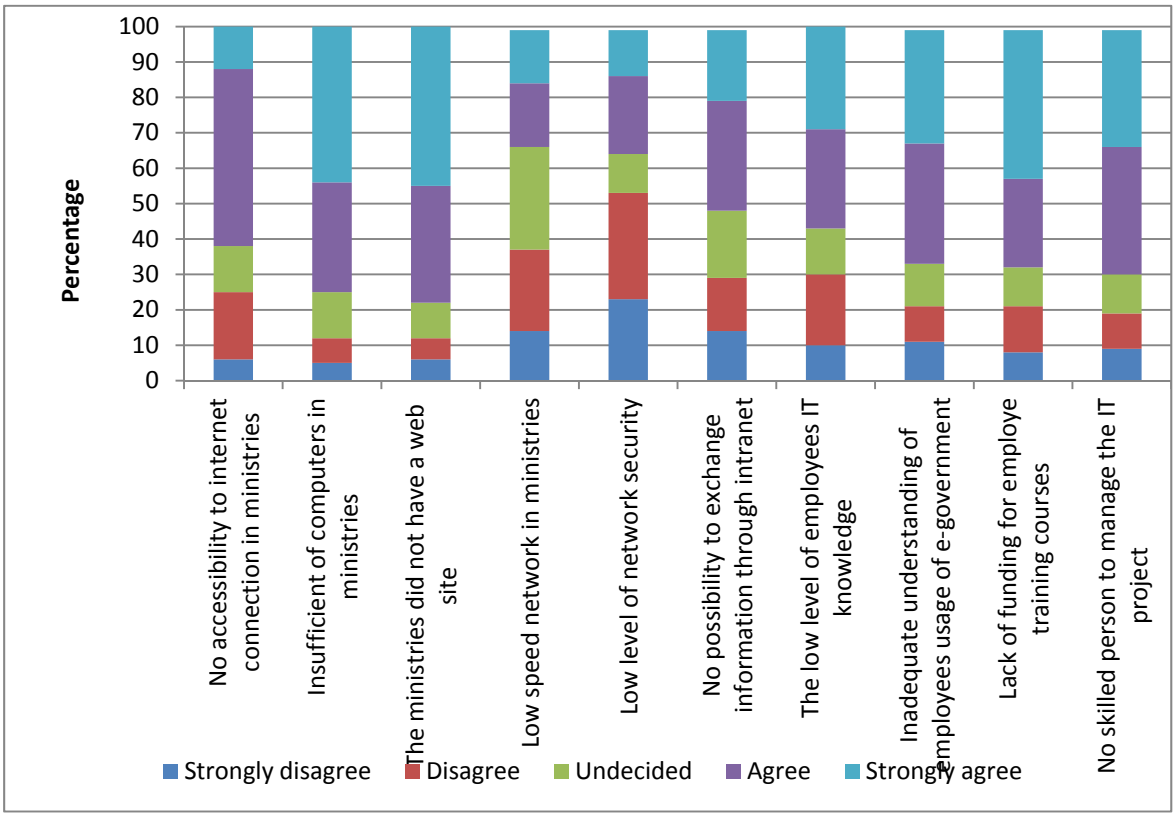

Figure 4.17: Experience of first IT implementation, 2002 – 2004.

Table 4.5: The combined category results from respondents regarding question 4.5.

	Agree or strongly agree	Disagree or strongly disagree
No accessibility to internet connection in ministries	62.0	25.0
Insufficient of computers in ministry	75.0	12.0
The ministries did not have a website	78.0	12.0
Low speed network in ministries	33.0	37.0
Low level of network security	35.0	53.0
No possibility to exchange information through internal network (intranet)	51.0	29.0
The low level of employees IT knowledge in ministries	57.0	30.0
Inadequate understanding of employees usage of e-Government	66.0	21.0
Lack of funding for employee training courses	67.0	21.0
No skilled person to manage the IT project	69.0	19.0

Figure 4.17 and Table 4.5 above summarise the results from this section, which reveal that most of the respondents felt they did not have adequate knowledge and information about how to implement e-Government in their ministries. The 2002 to 2004 IT implementation attempt – the country's first – indicated that the employees' knowledge in terms of the process involved in implementing IT and e-Government was very low. Most of the ministries did not have a website for publishing Government information, there was no connection between the different ministries, there was inadequate understanding as to employees' usage of e-Government, and there was a lack of funding for employee training courses. It is noteworthy that respondents' responses about the low speed of the network and low levels of network security did not fit this general trend.

4.5.6 The table of responses about the first IT implementation in 2002 to 2004

In Question 4.5, the respondents were asked to rate the experience of the first (i.e. 2002 - 2004) IT implementation on a five-point scale, as is indicated below.

1 – Strongly disagree	**2** – Disagree	**3** – Undecided	**4** – Agree	**5** – Strongly agree

Table 4.6: The results of the chi-square test concerning the experience of the first (i.e. 2002 – 2004) IT implementation

Question	Chi-square goodness-of-fit	
	p-value	Interpretation significantly more selected
No accessibility to internet connection in ministries	<.0005	Agree
Insufficient of computers in ministries	<.0005	strongly agree
The ministries did not have a web site	<.0005	strongly agree
Low speed network in ministries	0.098	
Low level of network security	0.016	Disagree
No possibility to exchange information through intranet	0.056	
The low level of employees IT knowledge	0.005	agree/strongly agree
Inadequate understanding of employees usage of e-Government	<.0005	agree/strongly agree
Lack of funding for employee training courses	<.0005	strongly agree
No skilled person to manage the IT project	<.0005	agree/strongly agree

Table 4.6 above shows the chi-square results. According to the chi-square test, there is significant disagreement with 'Low level of network security'; significant agreement is found for all the other items except 'Low speed network in ministries' and 'No possibility to exchange information through intranet' for which the responses options were chosen 'equally'.

It is evident that 'no website' and 'insufficient computers' are amongst the most important reasons for failure.

Figure 4.18 below show the average response for question 4.5

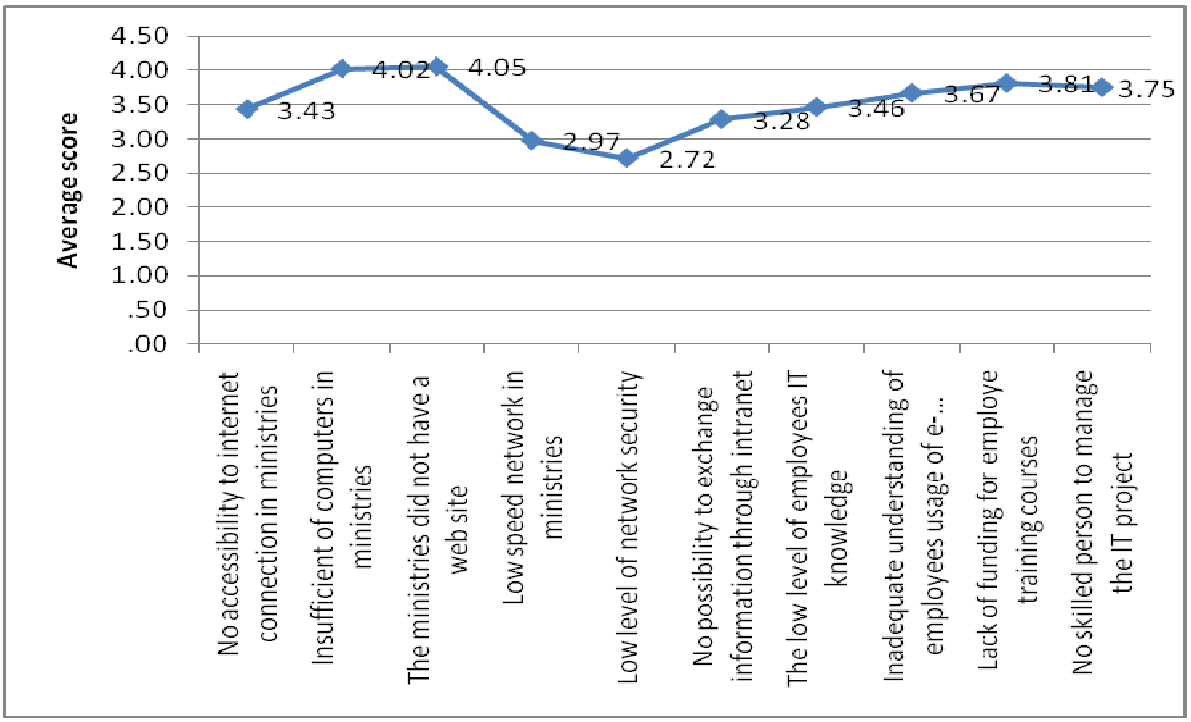

Figure 4.18: Average response graphic of the experience of first IT implementation, 2002 - 2004

4.6 Advantages of implementing e-Government

This section of the questionnaire is about the advantages of implementing e-Government in Guinea-Bissau. Possible advantages, including greater transparency in terms of Government operations, were presented and respondents indicated their level of agreement with each.

4.6.1 Positive impact of implementing e-Government

This bar graph shows the distribution of the respondents according to their level of agreement as to how positive the impact will be of having e-Government in GB.

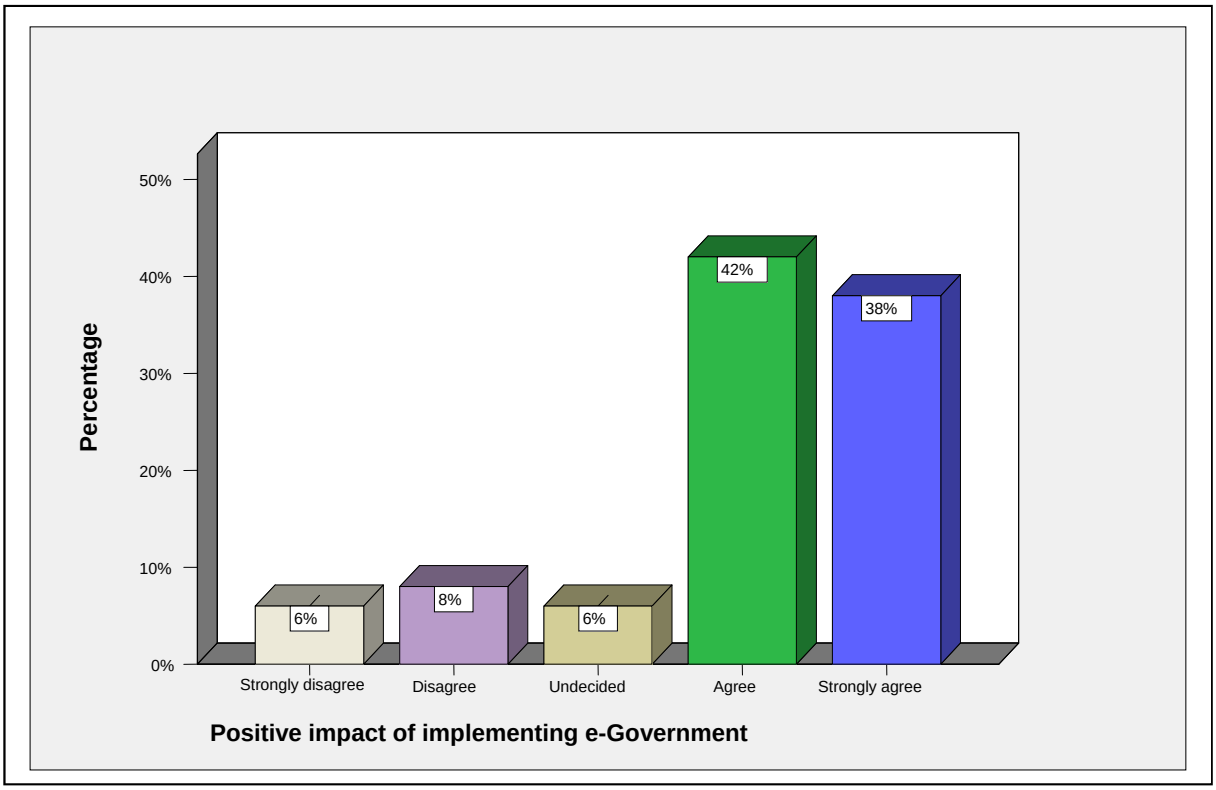

Figure 4.19: Positive impact of implementing e-Government.

It can be seen from Figure 4.19 above that eighty (80%) of the respondents agreed or strongly agreed that implementing e-Government in the country will have a positive impact, while only fourteen (14%) of the respondents disagreed or strongly disagreed with this claim.

4.6.2 Improve overall transparency and participation level

This bar graph shows the distribution of the respondents according to their level of agreement as to the claim that an e-Government will improve the overall transparency of the Government as well as the participation level of citizens.

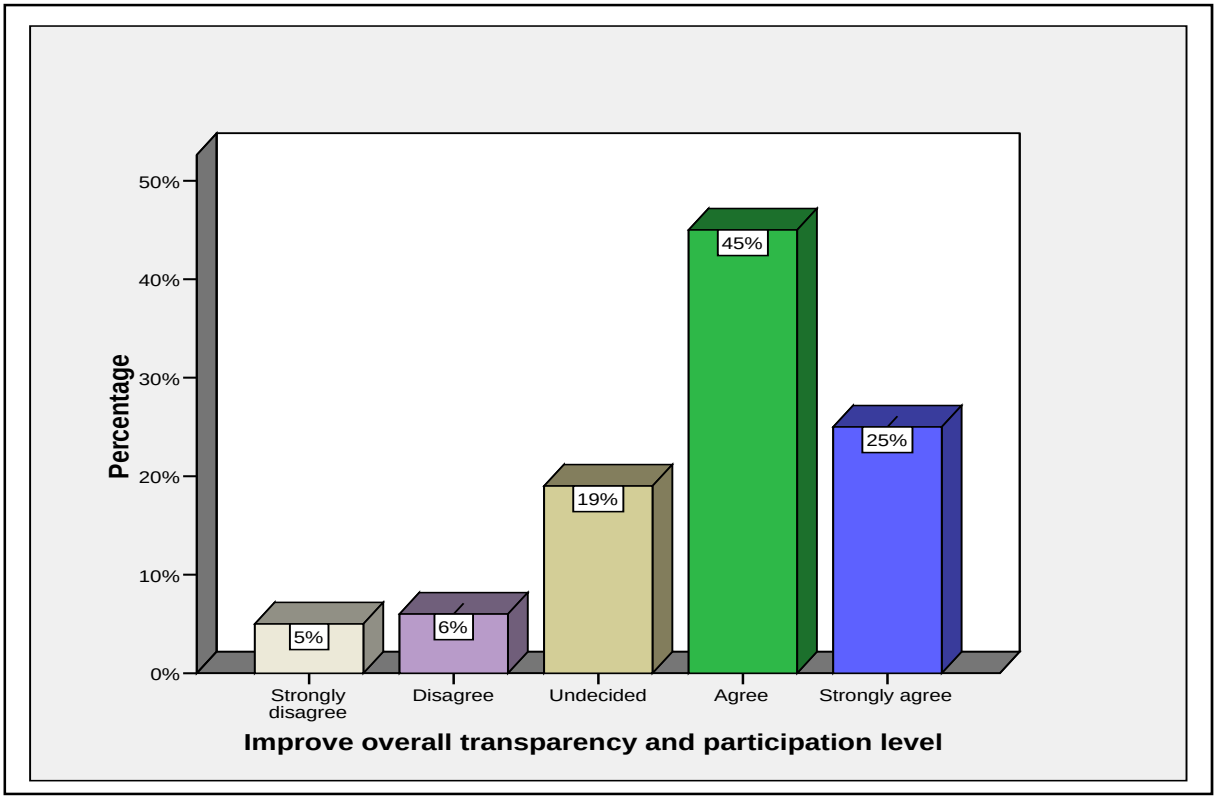

Figure 4:20: Improve overall transparency and participation level

Figure 4.20 above shows seventy (70%) of the respondents agreed that implementing e-Government will improve the transparency and the level of participation while only eleven (11%) of the respondents disagreed or strongly disagreed.

4.6.3 Reduce the cost of Government information delivery

This bar graph shows the distribution of the respondents according to their level of agreement as to the claim that e-Government will reduce the cost of Government information delivery.

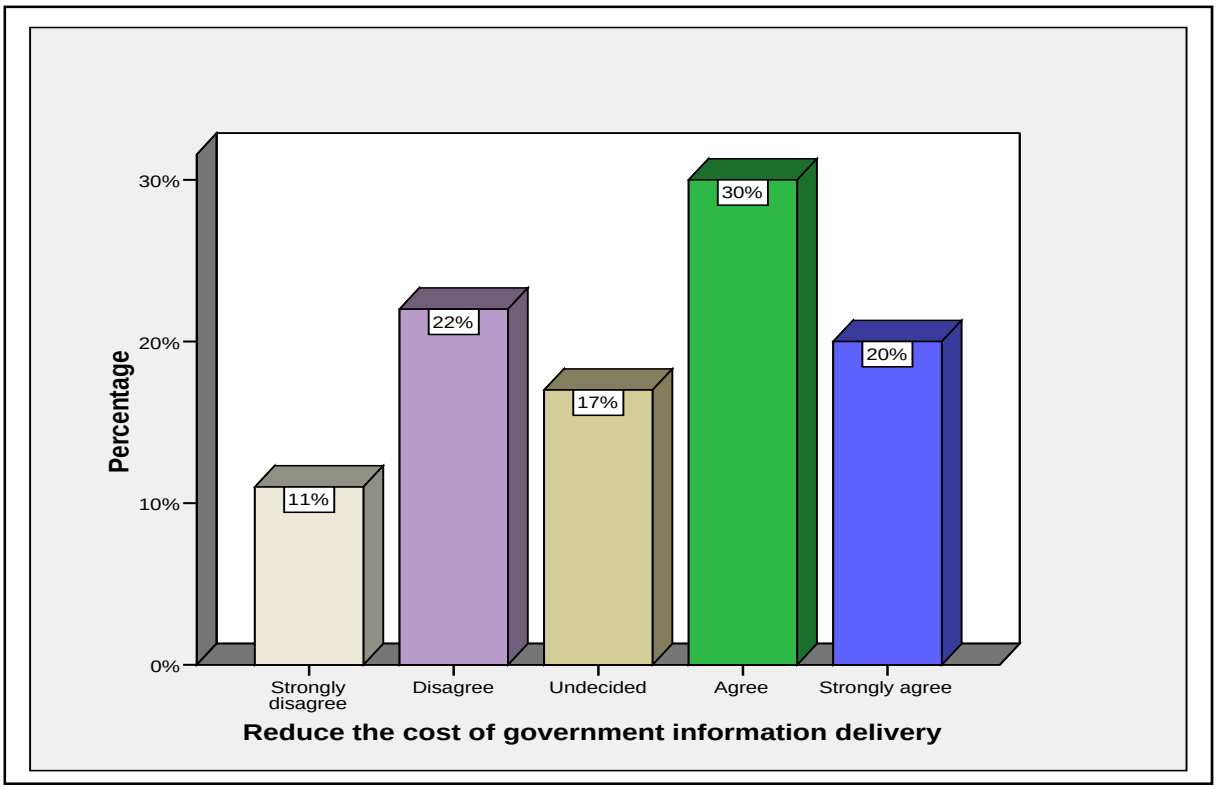

Figure 4.21: Reduce the cost of Government information delivery.

Figure 4.21 above indicates that fifty (50%) of the respondents agreed or strongly agreed that implementing e-Government can reduce the cost of Government information delivery, whereas thirty-three (33%) of them disagreed or strongly disagreed with this claim. It is noteworthy that the crucial aspect of cost reduction shows a fairly even spread across the 5 categories, unlike the previous aspects that showed strong support.

4.6.4 E-Government website enables improved policy distribution

This bar graph shows the distribution of the respondents according to their level of agreement as to the claim that an e-Government website allows improved distribution of policy.

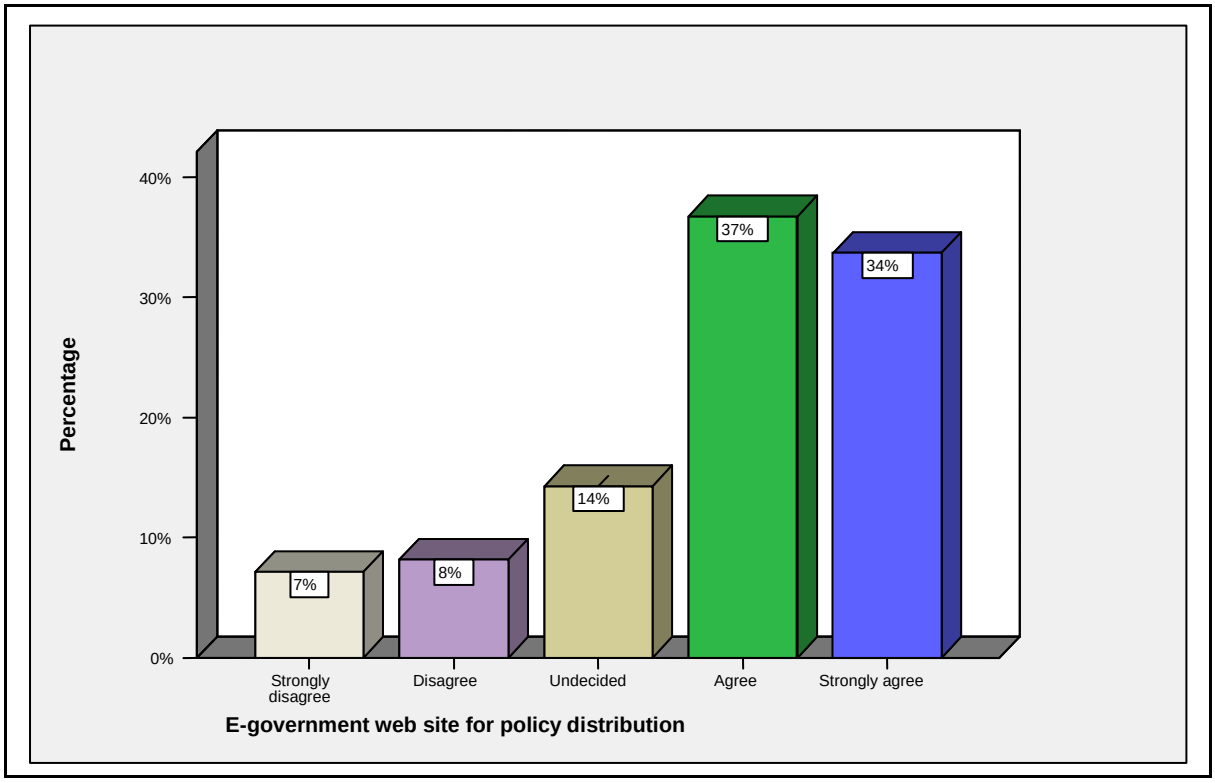

Figure 4.22: E-Government website for policy distribution.

It can be seen from Figure 4.22 above that seventy-one (71%) of the respondents either agreed or strongly agreed that an e-Government website is a better method for distribution of policy and public information than traditional methods (hardcopy), while fifteen (15%) of the respondents disagreed or strongly disagreed with it once again, an apparent strong show of support for this aspect. This strong perception that a website would be a better method for distribution of policy and information documents needs to be counter-balanced against the well-documented lack of Internet access amongst the general population. Infrastructure intervention would be required on a national scale.

4.6.5 Summary of the advantages of implementing e-Government

Figure 4.23 below shows a bar graph summary of the advantages to implementing e-Government as perceived by the respondents.

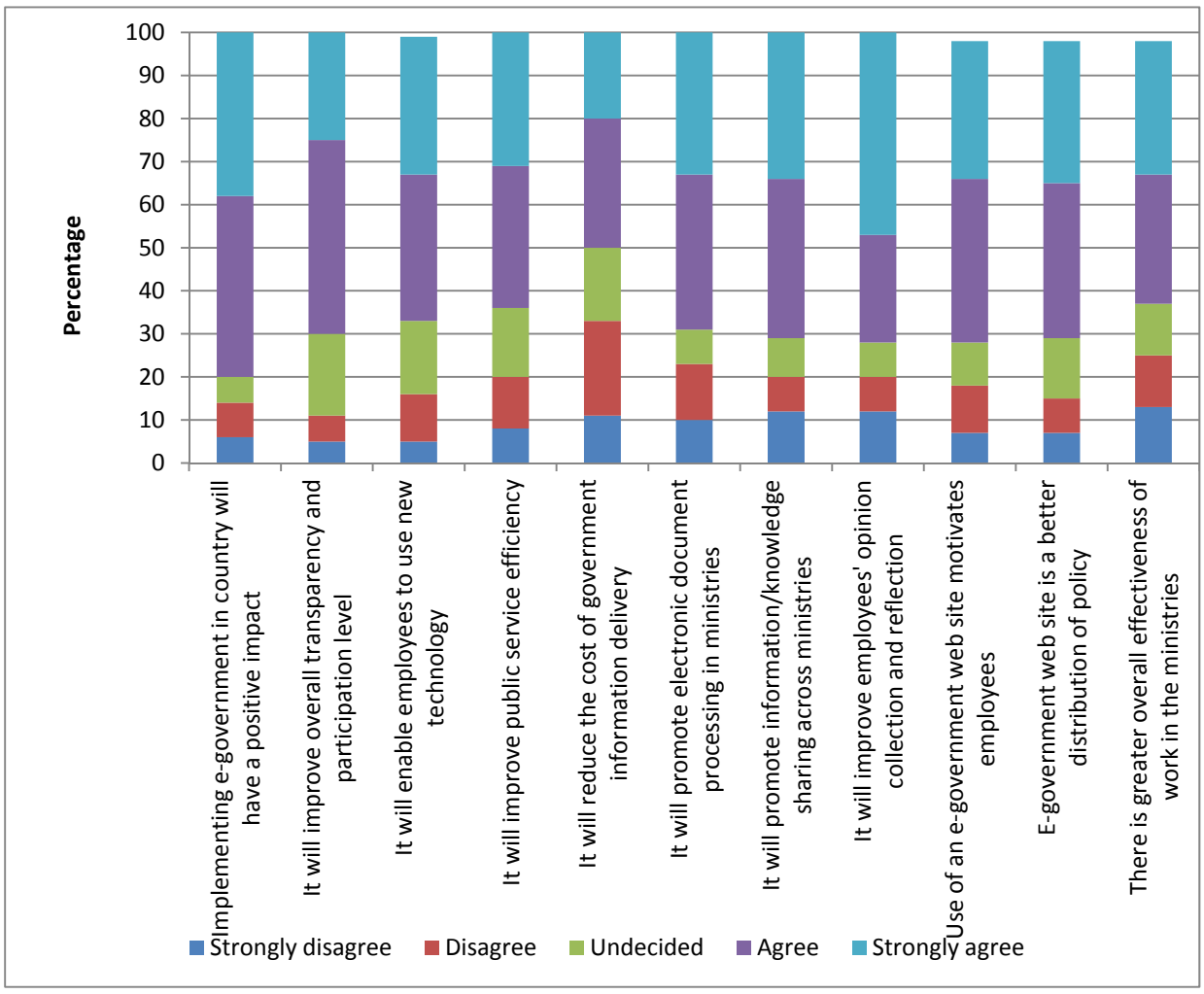

Figure 4.23: Advantages of implementing e-Government

Table 4.7: The combined category results from respondents regarding question 4.6.

	Agree and strongly agree	Disagree and strongly disagree
Implementing e-Government in country will have a positive impact	80.0	14.0
Improve overall transparency and participation level	70.0	11.0
Enable employees to use new technology	66.0	16.0
Improve public service efficiency	64.0	20.0
Reduce the cost of Government information delivery	50.0	33.0
Promote electronic document processing in ministries	69.0	23.0
Promote information/knowledge sharing across ministries	71.0	20.0
Improve employees' opinion collection and reflection	72.0	20.0
Use of an e-Government website motivates employees	70.0	18.0
E-Government website is a better distribution of policy	71.0	15.0
There is greater overall effectiveness of work in the ministries	61.0	25.0

Figure 4.23 and Table 4.7 show that most respondents generally agreed with the advantages presented in the questionnaire, with the possible exception of cost reduction.

In addition, respondents were asked to rank the advantages of implementing e-Government in Government ministries for better delivery of information in public services.

4.6.6 The table of the advantages of implementing e-Government

Respondents rated the advantages of implementing e-Government in Guinea-Bissau on a five-point scale, as is indicated below.

1 – Strongly disagree	**2** – Disagree	**3** – Undecided	**4** – Agree	**5** – Strongly agree

Table 4.8: Results of the chi-square test regarding the advantages of implementing e-Government in Guinea-Bissau

Question	Chi-square goodness-of-fit	
	p-value	Interpretation significantly more selected
Implementing e-Government in country will have a positive impact	<.0005	agree/strongly agree
It will improve overall transparency and participation level	<.0005	agree
It will enable employees to use new technology	<.0005	agree/strongly agree
It will improve public service efficiency	<.0005	agree/strongly agree
It will reduce the cost of Government information delivery	0.046	agree
It will promote electronic document processing in ministries	<.0005	agree/strongly agree
It will promote information/knowledge sharing across ministries	<.0005	agree/strongly agree
It will improve employees' opinion collection and reflection	<.0005	strongly agree
Use of an e-Government web site motivates employees	<.0005	agree/strongly agree
E-Government web site is a better distribution of policy	<.0005	agree/strongly agree

There is greater overall effectiveness of work in the ministries	<.0005	agree/strongly agree

The p-values for all the items in Table 4.8 above are less than the level of significance of 0.05, and therefore significant agreement is shown for all the items.

4.7 Requirements for implementing e-Government

This section of the questionnaire asked ministry employees to provide their views on the requirements for successfully implementing e-Government in GB.

4.7.1 Stakeholders' participation in e-Government strategy

This bar graph shows the distribution of the respondents according to their level of agreement as to the claim that stakeholders need to participate in the e-Government strategy if e-Government is to be successfully implemented in GB.

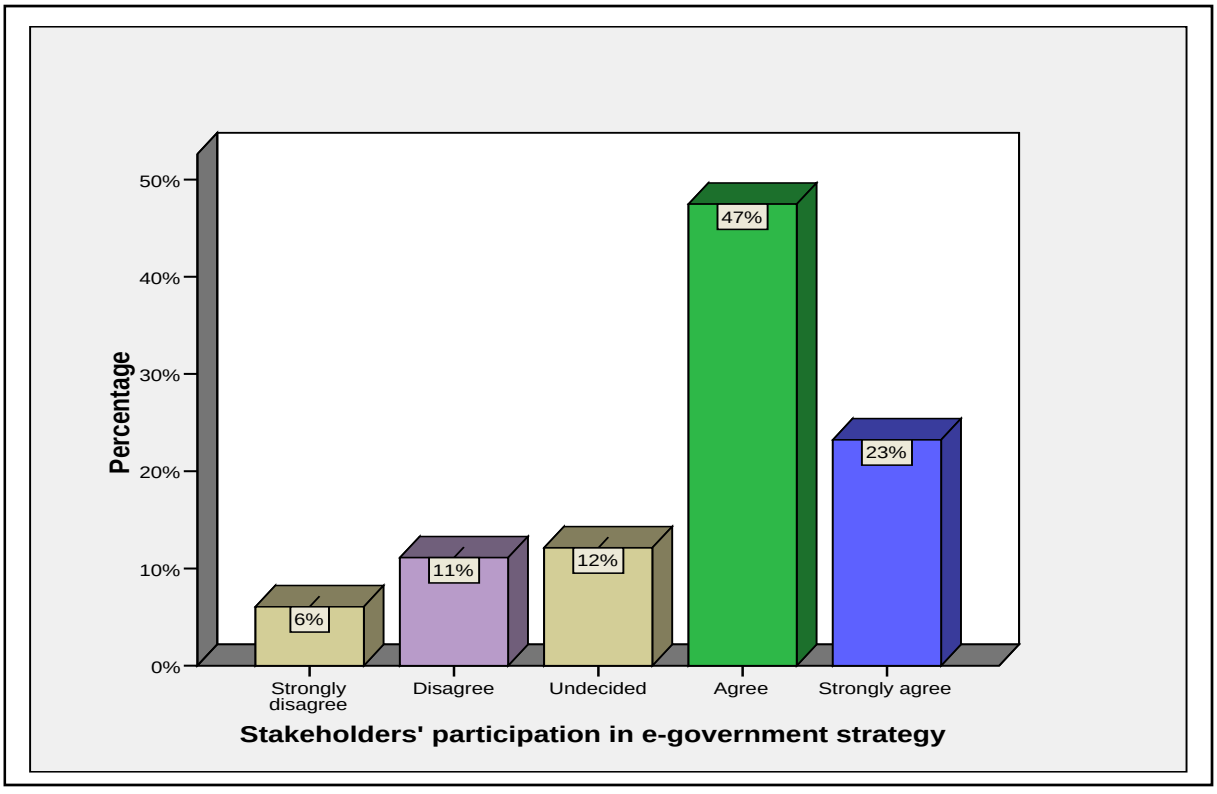

Figure 4.24: Stakeholders' participation in Government strategy

As indicated in Figure 4.24 above seventy (70%) of the respondents agreed or strongly agreed that one of the requirements for implementing e-Government is that stakeholders must participate in the country's e-Government strategy. Twenty-three (23%) of respondents either disagreed or strongly disagreed with this claim.

4.7.2 Technical skills

This bar graph shows the distribution of the respondents according to their level of agreement as to the importance of technical skills in developing e-Government in GB.

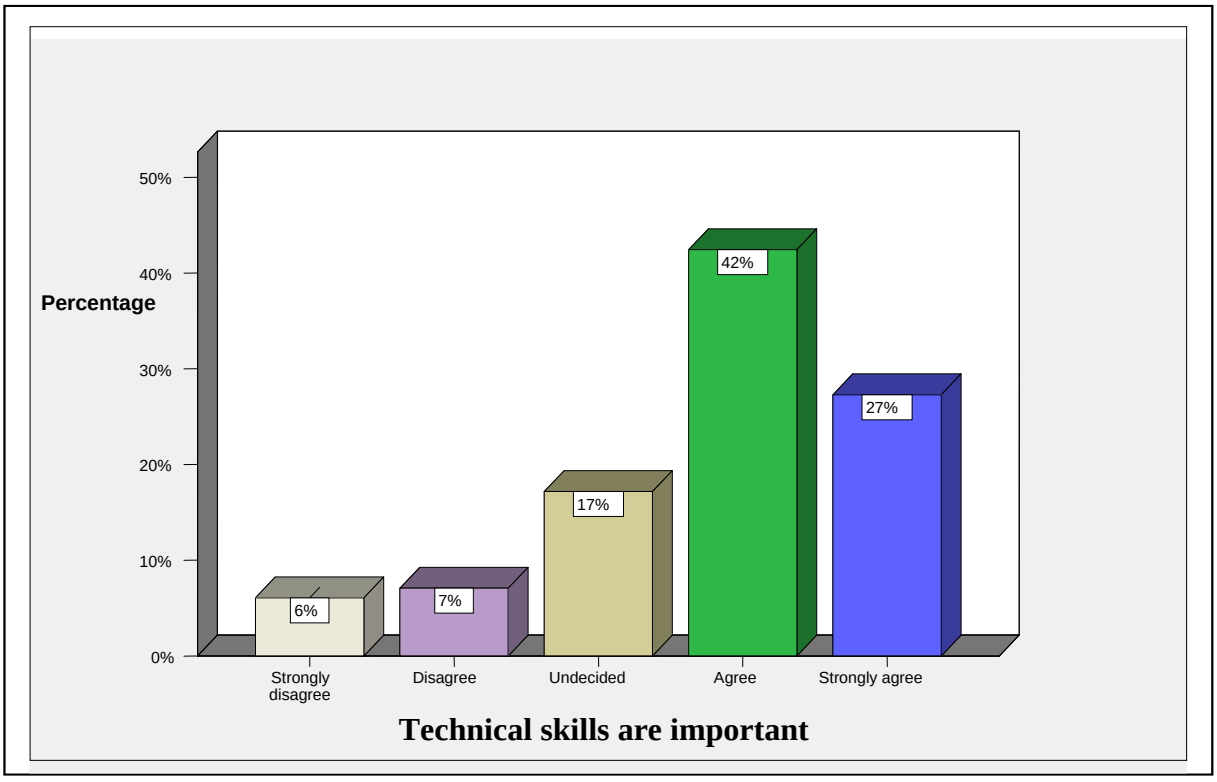

Figure 4.25: Technical skills are important

As indicated in Figure 4.25 above, sixty-nine (69%) of the participants considered having the right technical skills as important to developing/using e-Government in the country. Only eleven (11%) disagreed or strongly disagreed with the claim that technical skills are important.

4.7.3 A budget plan

This bar graph shows the distribution of the respondents according to their level of agreement as to the importance of a budget plan for e-Government.

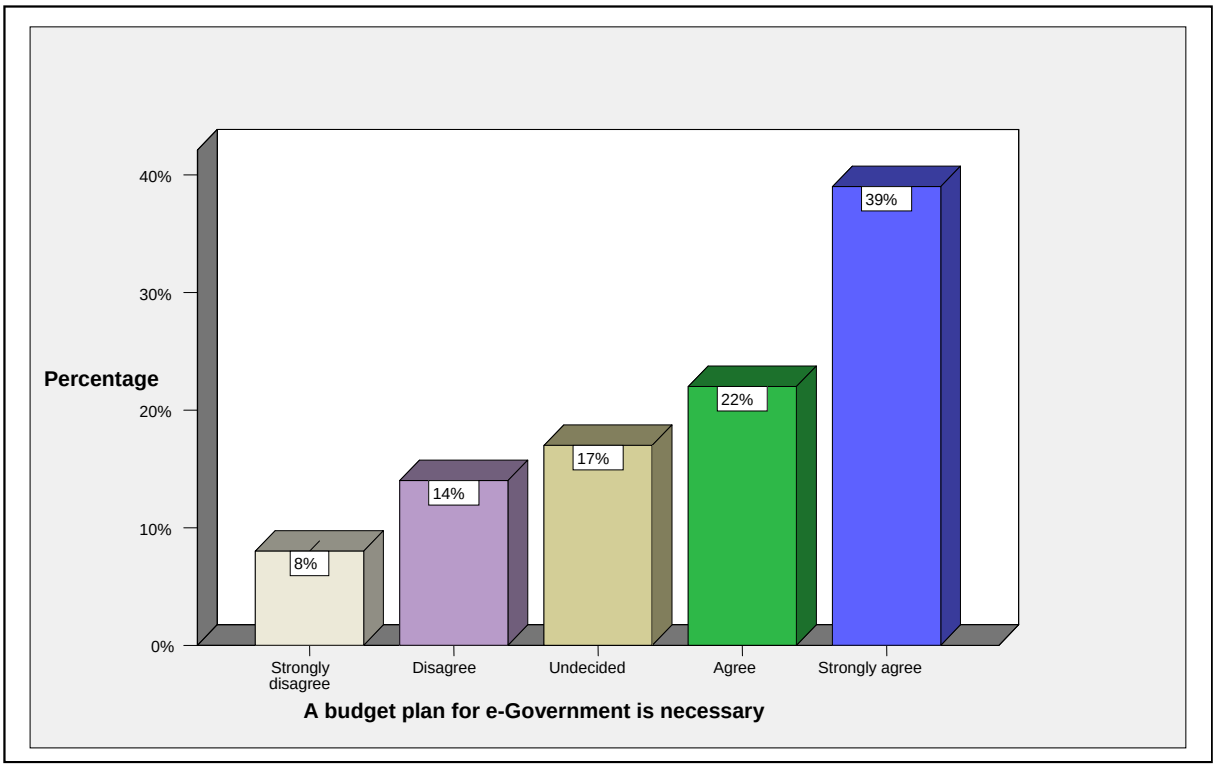

Figure 4.26: A budget plan for e-Government is necessary

As indicated in Figure 4.26 above, sixty-one (61%) of the respondents agreed or strongly agreed that a long-term budget plan is necessary to improve the usage of e-Government in the country. Twenty-two (22%) of the participants either disagreed or strongly disagreed with this claim.

4.7.4 IT education for employees

This bar graph shows the distribution of the respondents according to their level of agreement as to the importance of IT education for employees.

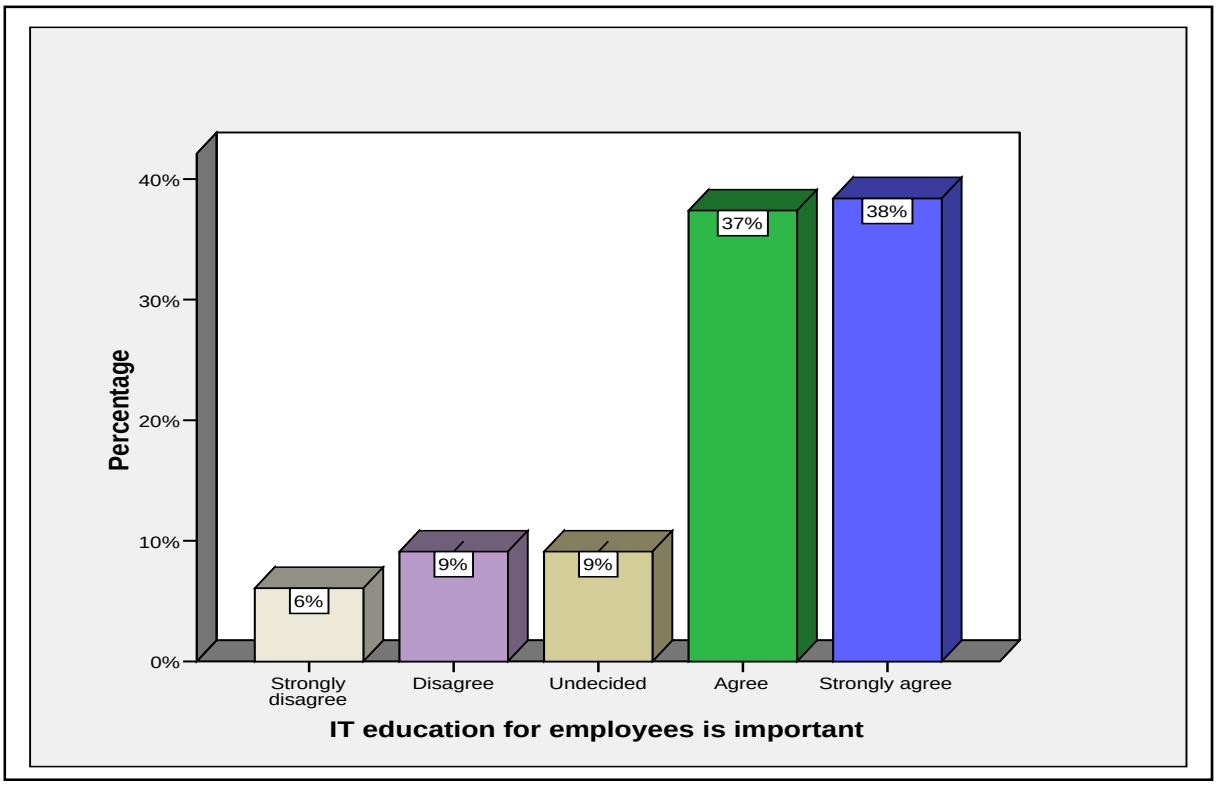

Figure 4.27: IT education for employees is important

Figure 4.27 above indicates that seventy-five (75%) of the respondents agreed or strongly agreed that IT education is important for ministry employees. Only fifteen (15%) of the participants either disagreed or strongly disagreed with it.

4.7.5 Summary of the requirements of implementing e-Government

Figure 4.28 below provides a bar graph summary of the requirements for implementing e-Government in GB.

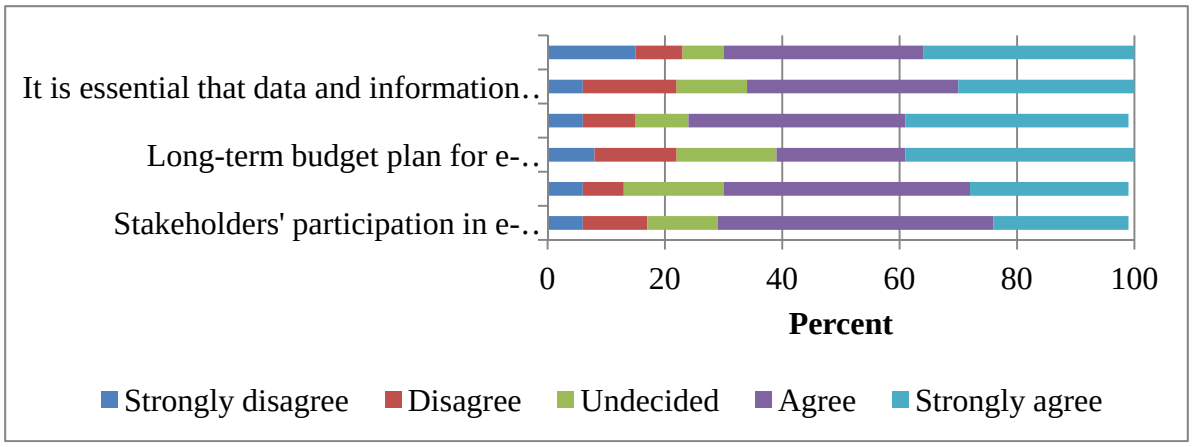

Figure 4.28: Requirements for implementing e-Government

Table 4.9: The combined category results from respondents regarding question 4.7.

	Agree or strongly agree	Disagree or strongly disagree
Employees in my ministry need to be equipped with high skills	70.0	23.0
It is essential that Data and information protection be safe from unauthorized people	66.0	22.0
IT education for employees is important	75.0	15.0
Long-term budget plan for e-Government is necessary	61.0	22.0
Right technical skills are important to develop/use e-Government	69.0	13.0
Stakeholder participation in e-Government strategy	70.0	17.0

Figure 4.28 and Table 4.9 above show that most respondents generally agreed with the requirements presented in the questionnaire. In addition, respondents were asked to rank the requirements in order of importance.

4.7.6 The table of the requirements of implementing e-Government

In question 4.7, the respondents were asked to rate the requirements for successfully implementing e-Government in Guinea-Bissau on a five-point scale.

1 – Strongly disagree	**2** – Disagree	**3** – Undecided	**4** – Agree	**5** – Strongly agree

Table 4.10: The results of the chi-square test concerning the requirements for implementing e-Government in Guinea-Bissau

Question	Chi-square goodness-of-fit	
	p-value	Interpretation significantly more selected
Stakeholders' participation in e-Government strategy	<.0005	agree
Right technical skills are important to develop/use e-Government	<.0005	agree
Long-term budget plan for e-Government is necessary	<.0005	strongly agree
IT education for employees is important	<.0005	agree/strongly agree
It is essential that data and information protection be safe	<.0005	agree/strongly agree
Employees in my ministry need to be equipped with the right skills	<.0005	agree/strongly agree

The results in Table 4.10 above show that there is significant “agreement” for all the items because the corresponding p-values are all less than the level of significance, namely 0.05.

Figure 4.29 below show the average score graphic of question 4.7

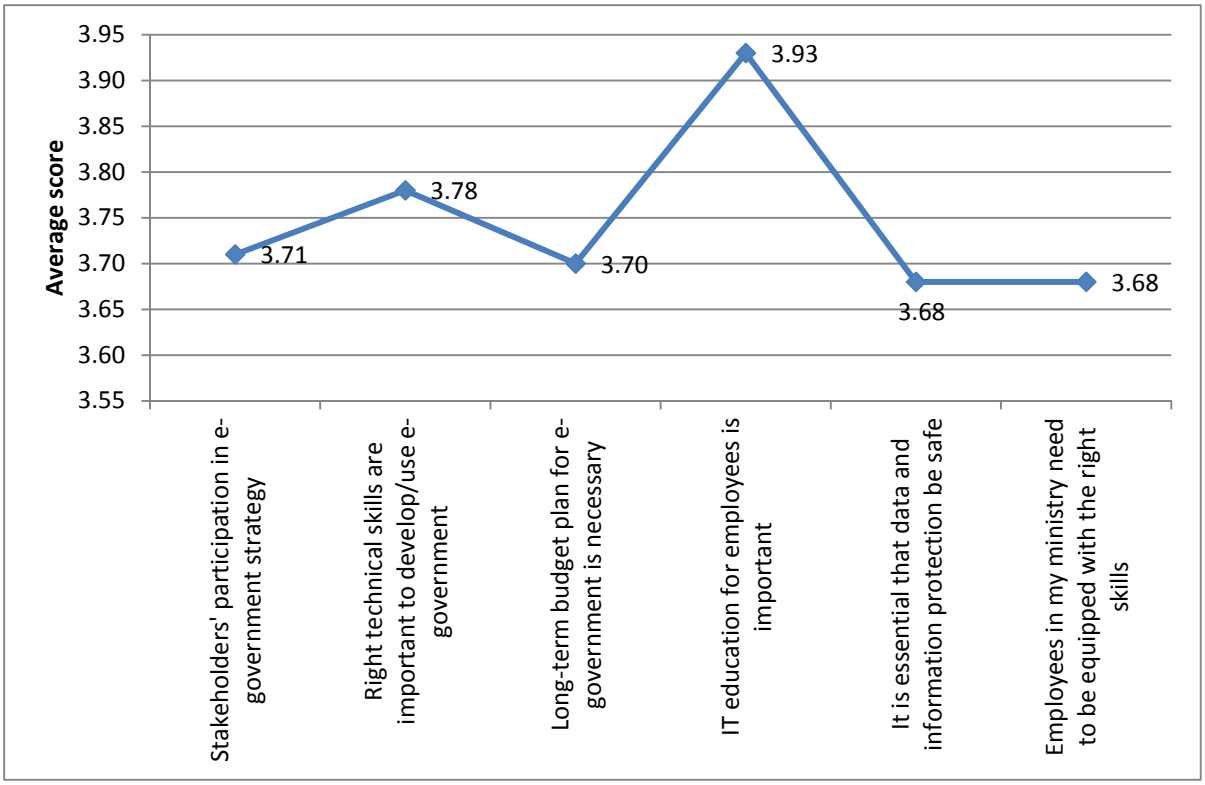

Figure 4.29: Average score graphic of the requirement for implementing e-Government

All of the above aspects were reported as being important, but it is noteworthy that IT education received the highest mean score. Participants thus emphasise the importance of increased IT education. The item on "skills" is rated important, but not at the same level as "education". This distinction could have been interrogated further in the interviews.

4.8 Readiness of implementing e-Government

This section of the questionnaire aimed to find out the level of readiness of the Government of GB.

4.8.1 Summary of the readiness of implementing e-Government

Figure 4.30 below provides a bar graph summary of the readiness of ministries to implement e-Government

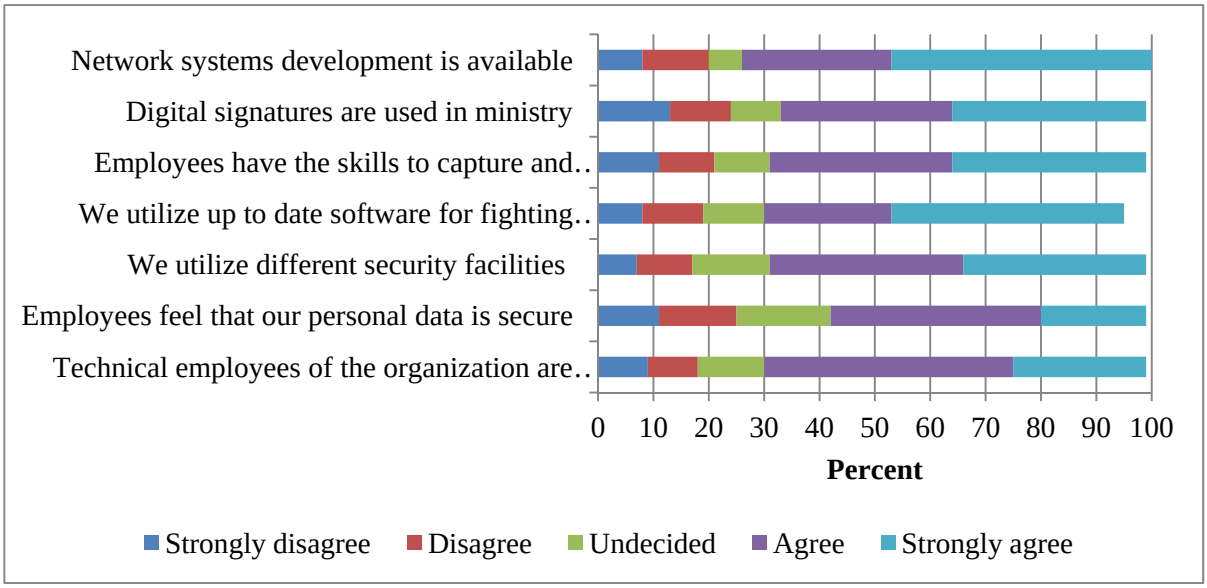

Figure 4.30: Readiness for implementing e-Government

Table 4.11: The combined category results from respondents regarding question 4.8.

	Agree or strongly agree	Disagree or strongly disagree
Network systems development is available	74.0	20.0
Digital signatures are used in ministry	66.0	24.0
Employees have the skills to capture and update data	68.0	21.0
We utilize up to date software for fighting viruses	65.0	19.0
We utilize different security facilities including filtering, logging and authentication	68.0	17.0
Employees feel that our personal data is secure	57.0	25.0
Technical employees of the organization are acquainted with issues concerning network security	69.0	18.0

It can be clearly seen from Figure 4.30 and Table 4.11 above that the general perception of the respondents is that most of the security and infrastructural necessities for implementing e-Government are in place and are used.

4.8.2 The table showing readiness of employees for implementing e-Government

In question 4.8, the respondents were asked to rate, on a five-point scale (as is indicated below), the readiness of their ministries to implement e-Government in Guinea-Bissau.

1 – Strongly disagree	**2** – Disagree	**3** – Undecided	**4** – Agree	**5** – Strongly agree

Table 4.12: The results of the chi-square test concerning the readiness to implement e-Government in Guinea-Bissau

Question	Chi-square goodness-of-fit	
	p-value	Interpretation significantly more selected
Technical employees of the organization are acquainted with issues	<.0005	agree
Employees feel that our personal data is secure	<.0005	agree
We utilize different security facilities	<.0005	agree/strongly agree
We utilize up to date software for fighting viruses	<.0005	strongly agree
Employees have the skills to capture and update data	<.0005	agree/strongly agree
Digital signatures are used in ministry	<.0005	agree/strongly agree
Network systems development is available	<.0005	strongly agree

The results in Table 4.12 indicate that there is significant 'agreement' for all the items because the corresponding p-values are all less than the level of significance, namely 0.05.

Figure 4.31 below shows the average score of question 4.8

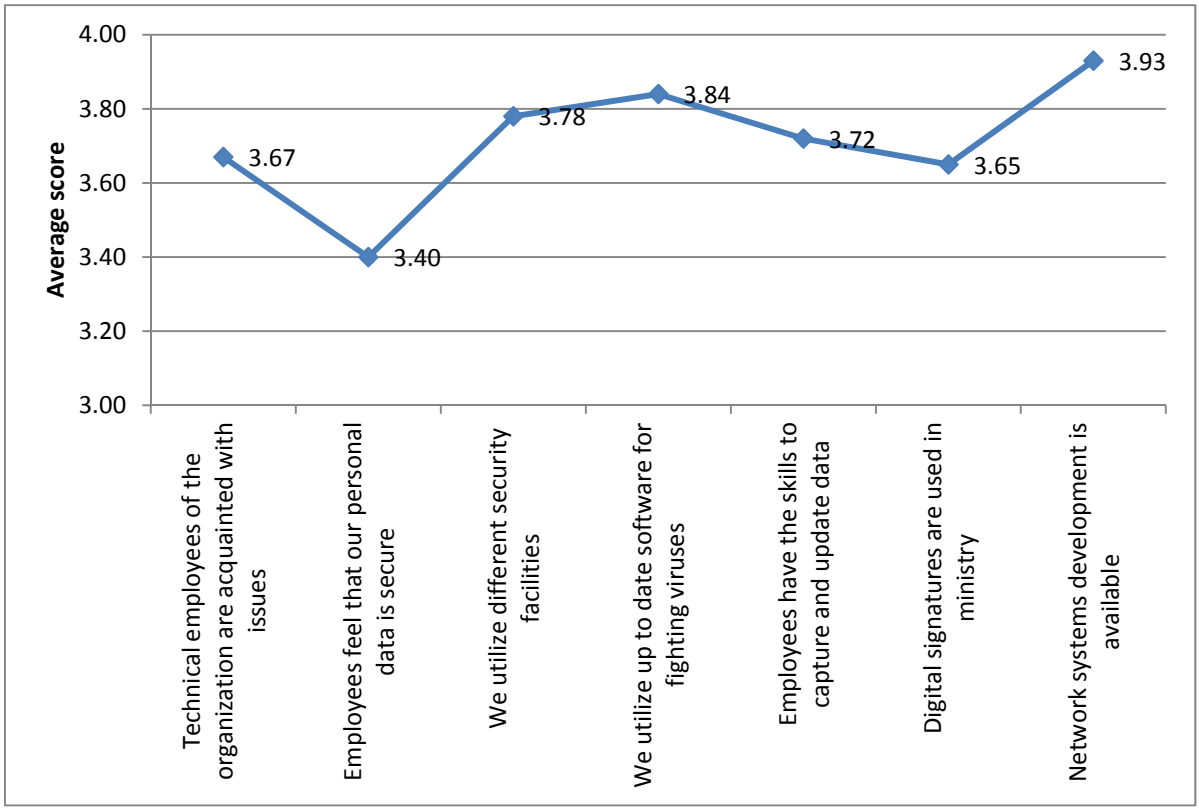

Figure 4.31: Average score graphic of the readiness of implementing e-Government

All aspects were rated 'important', but those with higher mean scores are worth nothing. Existing networks, up-to-date ant-virus software and security are in this category. Data capture skills also show a relatively high mean score, perhaps supporting the earlier observation that skills development is adequate.

4.9 Challenges that may hinder e-Government development

This section of the questionnaire focused on the challenges that may hinder e-Government development in GB.

4.9.1 Lack of trust between employees and Government

This bar graph shows the distribution of the respondents according to their level of agreement as to the claim that there is a lack of trust between ministry employees and the Government.

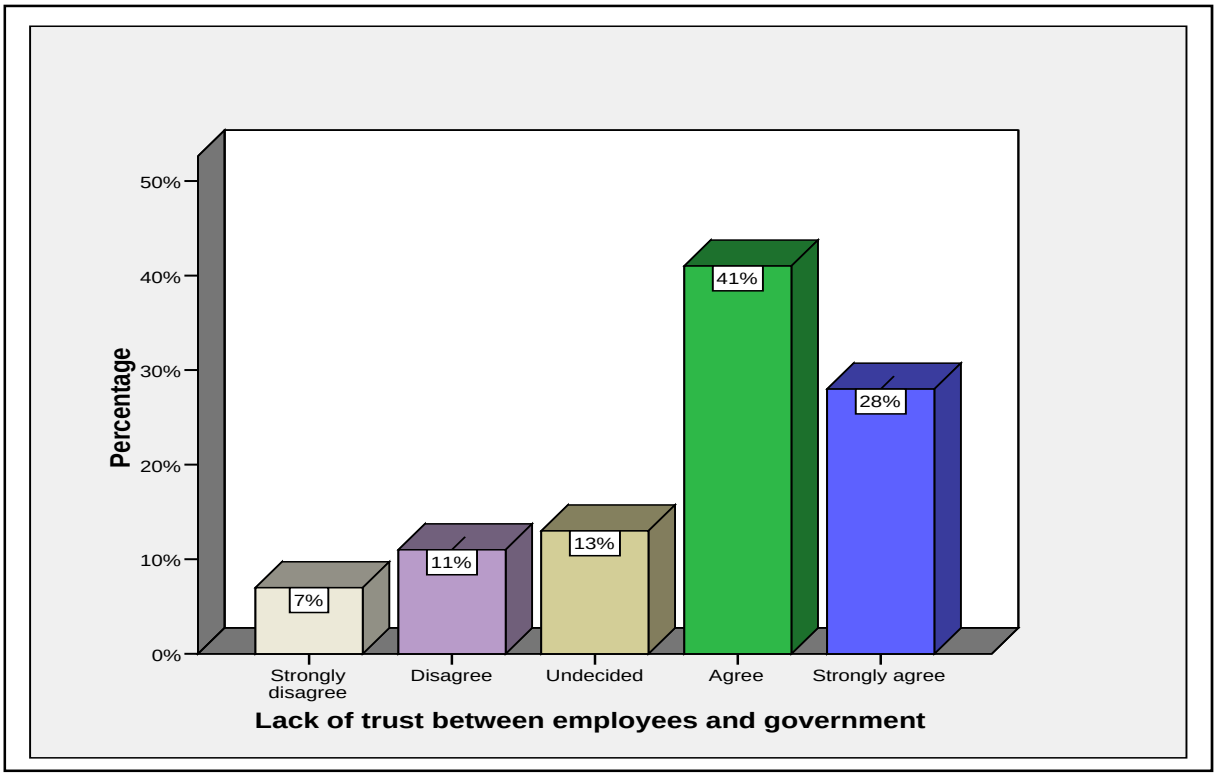

Figure 4.32: Lack of trust between employees and Government

It can be seen from Figure 4.32 above that sixty-nine (69%) of the respondents feel that there is a lack of trust between employees and the Government, which can hinder e-Government development. Eighteen (18%) of the participants disagreed or strongly disagreed with this assertion.

4.9.2 Lack of support from Parliament

This bar graph shows the distribution of the respondents according to their level of agreement as to the claim that there is a lack of support from Parliament.

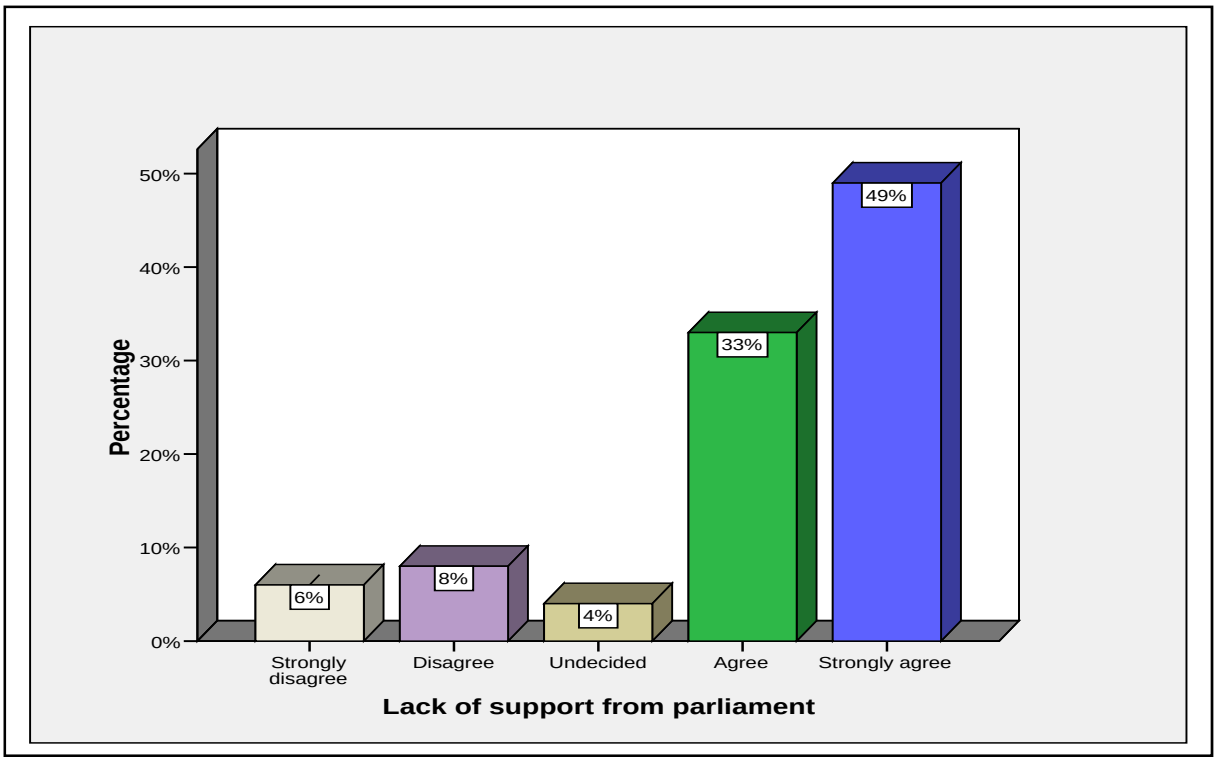

Figure 4.33: Lack of support from Parliament

It can be seen from Figure 4.33 above that eighty-two (82%) of the respondents agreed or strongly agreed that there is a lack of support from Parliament with regard to implementing e-Government and this can hinder the country's e-Government development. Only fourteen (14%) of the respondents disagreed or strongly disagreed that there is a lack of support from Parliament.

4.9.3 The absence of a strategic plan

This bar graph shows the distribution of respondents according to their level of agreement as to the claim that there is no strategic plan of in place for implementing e-Government in GB.

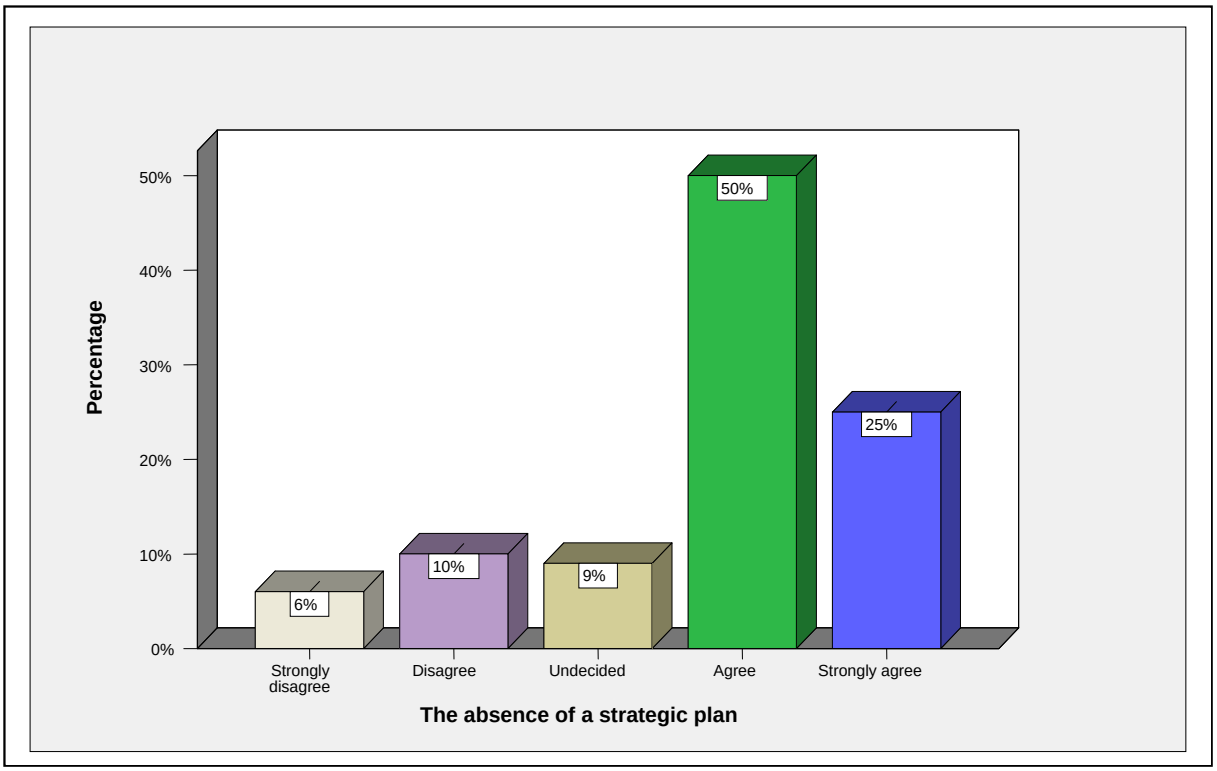

Figure 4.34: The absence of a strategic plan

It can be seen from Figure 4.34 above that seventy-five (75%) of the respondents agreed or strongly agreed that the absence of a plan of strategy for implementing e-Government can hinder the country's e-Government development. Sixteen (16%) of the respondents disagreed or strongly disagreed that the Government lacked a strategic plan for e-Government implementation.

4.9.4 Employees resisting change

This bar graph shows the distribution of the respondents according to their level of agreement as to the claim that ministry employees are hindering the country's e-Government development by resisting change.

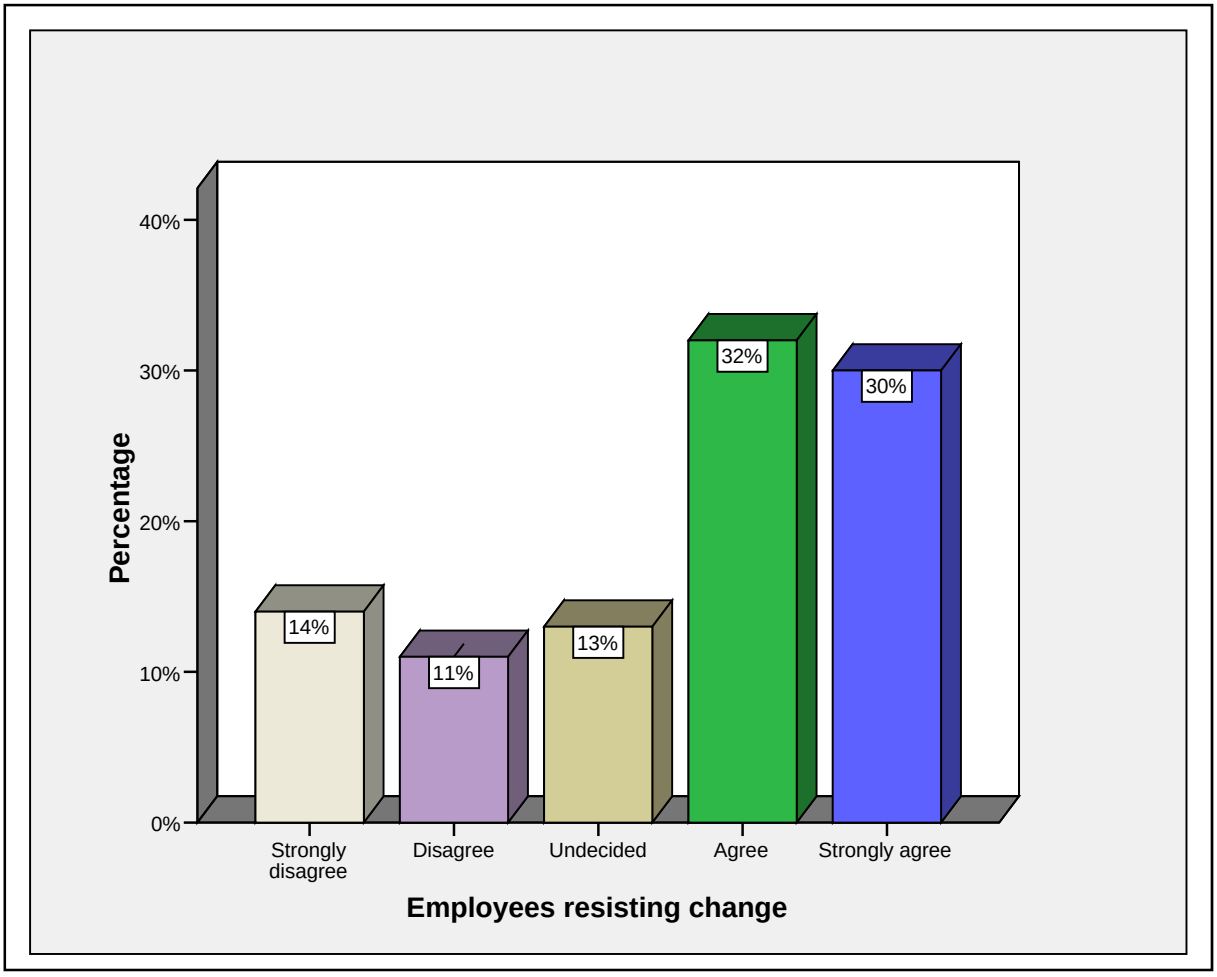

Figure 4.35: Employees resisting change

It can be seen from Figure 4.35 above that sixty-two (62%) of the respondents agreed or strongly agreed that ministry employees are hindering e-Government development in BG by being resistant to change. Twenty-five (25%) of the respondents disagreed or strongly disagreed that employees are resisting change.

4.9.5 Summary of the challenges of implementing e-Government

Figure 4.36 provides a bar graph summary of the challenges to implement e-Government.

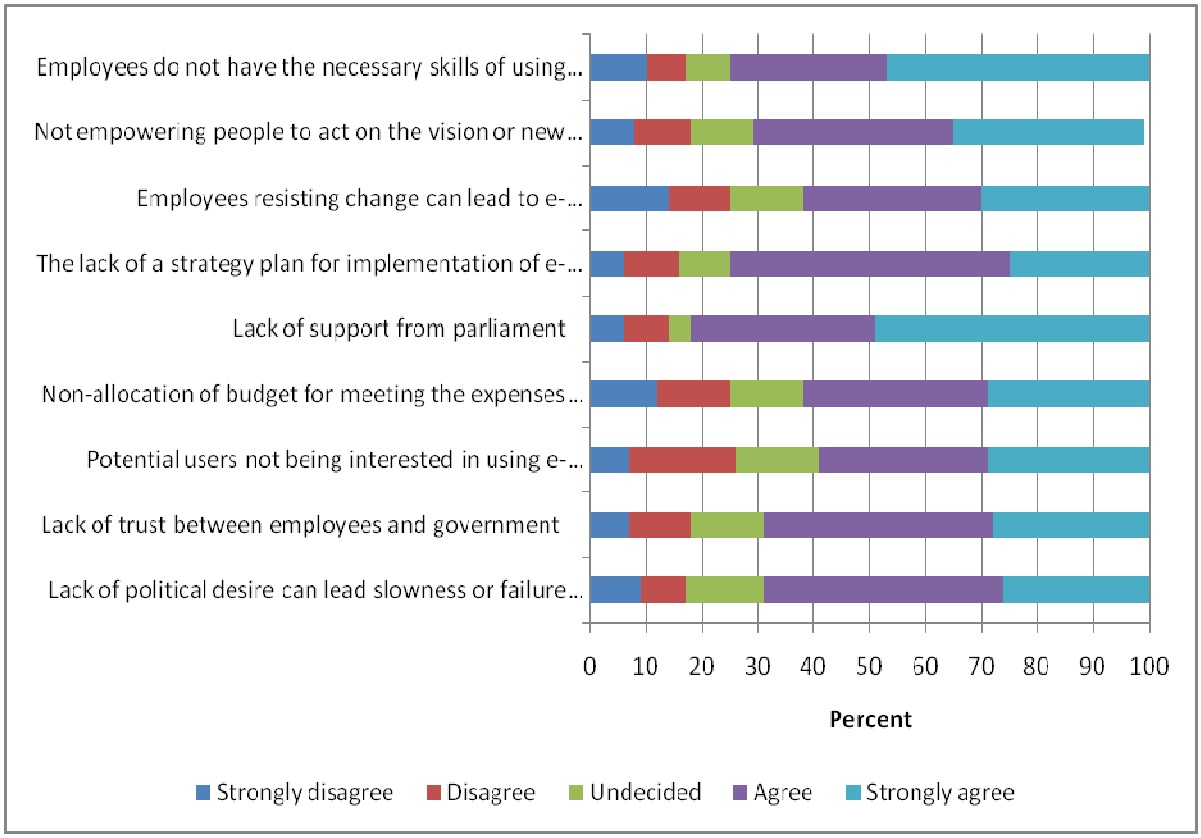

Figure 4.36: Challenges of implementing e-Government

Table 4.13: The combined category results from respondents regarding question 4.9.

	Agree or strongly agree	Disagree or strongly disagree
Employees do not have the necessary skills of using e-Government	75.0	17.0
Not empowering people to act on the vision or new project	70.0	18.0
Employees resisting change can lead to e-Government failure	62.0	25.0
The lack of a strategy plan for implementing e-Government	75.0	16.0
Lack of support from Parliament	82.0	14.0
Non-allocation of budget for meeting the expenses of commissioning	62.0	25.0
Potential users not being interested in using e-Government	59.0	26.0
Lack of trust between employees and Government	69.0	18.0
Lack of political desire can lead to slowness or failure of e-Government	69.0	17.0

Figure 4.36 and Table 4.13 above show that most respondents generally agreed with the challenges presented in the questionnaire, with the possible exception of potential users not being interested in using e-Government. This is a significant variation as user resistance is traditionally a major obstacle to successful implementation of new technology.

The challenges that may hinder e-Government implementation are a critical aspect of this study. Respondents were also asked to rank these challenges in order of importance.

4.9.6 The table of the challenges of implementing e-Government

In question 4.9, the respondents were asked to rate, on a five-point scale (as is indicated below), the challenges that may hinder the development of e-Government in Guinea-Bissau.

1 – Strongly disagree	**2** – Disagree	**3** – Undecided	**4** – Agree	**5** – Strongly agree

Table 4.14: Challenges – results of chi-square test

Question	Chi-square goodness-of-fit	
	p-value	Interpretation significantly more selected
Lack of political desire can lead slowness or failure of e-Government	<.0005	agree
Lack of trust between employees and Government	<.0005	agree
Potential users not being interested in using e-Government	.001	agree/strongly agree
Non-allocation of budget for meeting the expenses of commissioning	<.0005	agree/strongly agree
Lack of support from parliament	<.0005	strongly agree
The lack of a strategy plan for implementation of e-Government	<.0005	agree
Employees resisting change can lead to e-Government failure	<.0005	agree/strongly agree
Not empowering people to act on the vision or new project mandate	<.0005	agree/strongly agree
Employees do not have the necessary skills of using e-Government	<.0005	strongly agree

Table 4.14 above shows that there is significant 'agreement' for all the items because the corresponding p-values are all less than the level of significance, namely 0.05.

Figure 4.37 below provides the average score graphic of question 4.9

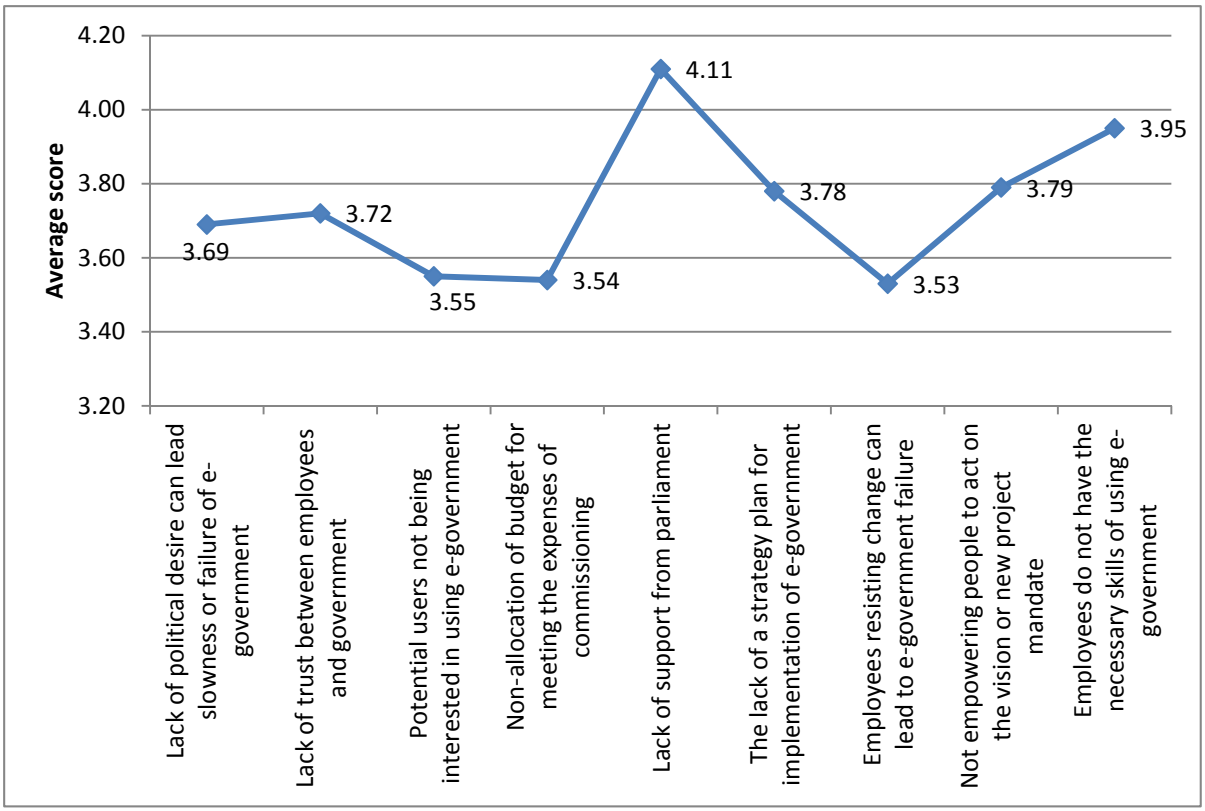

Figure 4.37: Average score graphic of the challenges that may hinder e-Government development

All of these items were reported as 'important' but 'lack of parliamentary support' stands out from the rest. The political dimension of implementing e-Government is emphasised. The need for 'e-Government skills' also received a high average score; it would seem that earlier questionnaire items on skills were too broadly stated and should have been more specifically detailed.

4.10 Results of the interviews

This section provides the results of the responses obtained from the interviews that were conducted with the respondents, who all work in GB ministries. The interviews were held with the General Directors and IT technicians from different ministries and discussed the implementation of an e-Government website. The main themes for each of the questions in the interviews are discussed below.

4.10.1 What is your opinion about the first attempt to implement IT, which took place between 2002 and 2004?

Five interviewees said that the 2002 – 2004 implementation of IT was a basic tool for implementing new technologies such as e-Government, modern telecommunications infrastructure and other technologies, which the country needed. It was planned particularly in that time (2002 – 2004) to improve Government administration, create a better environment and efficient delivery of Government services to private sectors.

Two interviewees reported that the first IT implementation attempt was not successful because there was a lack of material and human resources, the absence of a strategic plan for implementing e-Government in the country, a lack of financial resources for training IT technicians and ministry employees, a lack of finances for investing in telecommunications, and the technical IT infrastructure was limited. Three interviewees confirmed the following: that the Government officials did not have any knowledge of IT, these officials were not aware that the IT being implemented could change the life of the people in GB, and the people themselves did not realise the importance of e-Government. Unfortunately, between 2002 and 2004 the Government was unable to make the e-Government function very well and they could not manage to make the new IT technologies available in all the ministries. These were the main reasons for the failure to successfully implement e-Government in GB.

4.10.2 What do you think about the online security of e-Government in your Government department?

In this question, eight interviewees stated that the online security of e-Government is a concern for everyone in the country. GB is not well developed in terms of e-Government or online issues. In the twenty-first century, Governments all over the world are using e-Government for the sake of transparency in terms of public and private administration. The use of digital signatures is a highly effective method of online security that is available to e-Governments, as it protects Government officials' information documents. The Government of GB needs to follow in the steps of other Governments and employ e-Government in order to avoid people stealing Government information. The online security of e-Governments is a worldwide concern, no matter what the country, institution, organisation or department.

According to two interviewees, online security is a concern for every Government, as one has to have effective security IS. Developed countries as well as some developing countries are now 'on top of the game' in terms of their IT ranking and these countries are leading the way in terms of IT.

4.10.3 What can you suggest if e-Government is implemented in Guinea-Bissau?

Four interviewees expressed a similar opinion that an e-Government in GB would help improve certain Governmental services, for example, the processes surrounding identification documents (IDs), as there are currently many false IDs being produced within the country. In addition, an e-Government would help link all the GB embassies around the world to one another through the Internet. The interviewees said that GB nationals who live abroad sometimes need to replace their passports or obtain some kind of official document when they need to travel from one country to another, but some foreign countries do not have a GB consulate. If GB has a link to the embassies of all foreign countries, then GB nationals living or travelling abroad would be able to renew their IDs and obtain official documents through these consulates.

According to two interviewees, more Internet availability would mean that Government employees can make use of Internet banking systems, and they can perform online transactions with businesses and citizens. More Internet connections around the country would also mean that more people will learn about the advantages and uses of e-Government.

For example, four interviewees reported that the majority of GB's educated citizens are gaining their education at foreign universities, but the topics of their studies are seldom about their native country of GB. The interviewees argued that GB should depend upon its own academics to move forward, which means that in order to obtain a high level of education and have qualified technicians to help the Government manage and control its infrastructure GB nationals need to use their education and skills to enhance their own country. The Masters research of the present researcher is an example of a GB national using his foreign studies to help improve the Government of GB. The interviewees believed that the researcher's topic is a gateway for this country to modernise by helping it to govern and administer its affairs more effectively. The interviewees commented that if the GB Government decides to implement an e-Government, it will prove of great benefit to the country's administration.

4.10.4 What do you believe about the possible usage of new technology in Government?

A total of ten interviewees believe that the use of new technology in Government will be very useful for them and will benefit the country because new technology reduces the time of response of any Government and also allows citizens to send comments to Government by email. This will also help eradicate much of the country's bureaucracy-related issues. Despite this situation, the possible usage of new technology in the country will improve the productivity and efficiency of Government agencies, facilitate delivery of services and increase savings.

The use of new technologies will also help Government employees improve revenue collection in offices such as the tax offices department and customs office. New technologies can improve the ministries' internal networks, make Government information more readily accessible to public, and enable employees to make e-payments. E-Government would modernise all public administration.

4.10.5 What do you think about the utilisation of an e-Government website in your ministry?

Three interviewees argued that an e-Government website would promote information/knowledge sharing across ministries. Government ministries have too few phone-lines; sometimes employees within the same ministry cannot even communicate

between themselves because of the lack of phones. Employees frequently have to phone each other on cell-phones or leave their own offices and walk to the offices of others in order to talk with them. Information sharing is a big problem for GB ministries; for example, one respondent indicated that when someone is asked to provide information that employee will say that he/she does not have the paper or ink necessary to print out the required information.

Another seven interviewees commented that e-Government websites in ministries would also reduce not only paper costs but also the costs involved in income payment and make information flow more easily and faster around the world. If employees have e-Government website in the ministries they will be better able to connect to each other to share information.

Utilisation of an e-Government website in ministries would make the financial control of public resources easier and improve ministry employees' knowledge and understanding of Government rules. It would also help the Government to reduce the bureaucracy of ministries and departments. An e-Government website could be useful for information exchange between the Government, businesses and citizens. In today's world, an e-Government website is a great method of ensuring transparency in Government operations.

4.10.6 Can you summarize your expectations about an e-Government website in Guinea-Bissau?

Two respondents expressed the view that an e-Government website in GB would be a very good thing because it would help to reduce the bureaucracy in the country. It currently takes several weeks to open a business in GB, but if an e-Government website were available, businesses would be able to open for business within a few days or even a few hours. The image of GB would also be improved through its having an e-Government website. A great deal of the online news concerning GB is not generated from within GB; e-Government would be able to generate more news from the point of view of the Government of GB. People from other countries often look for sensational news and sometimes the online news about GB is overstated.

According to eight interviewees, an e-Government website in GB would help improve the overall transparency of the Government and the participation level of citizens in Government processes and decision-making would also improve. E-Government would allow the people

of GB to promote their own national image by showing what is really happening in GB (other sources do not always tell the truth about GB and they often focus on the war or some other problems from the past). GB has many positives in its favour, such as its potential natural resources and how the people of GB are a lovely people, and e-Government would help the country promote these positives to the rest of the world. It is known that some countries, like the Cape Verde Island, are using e-Government websites to deliver information to the public. An e-Government website could help GB to be on top of information delivery when compared with other countries that are not yet using it. Most of the respondents also have the expectation that an e-Government website would help ministry employees to provide solutions to citizens' problems as they would be able to respond to citizens' communications via email.

4.11 Conclusion

This chapter has presented the findings from the data obtained from the field survey. It has also provided some analysis of these findings. Though the advantages in terms of the implementation of an e-Government website were rated highly by all the ministries/departments, GB still has not managed to implement an e-Government. According to the survey results, the GB Government should train employees in computer use and implementing e-Government. In general, the GB Government also should appreciate the challenges that can face implementation of e-Government programme and should adopt the appropriate solutions to improve them.

5 CHAPTER FIVE: DISCUSSION AND INTERPRETATION OF RESULTS

5.1 Introduction

This chapter offers a discussion of the research findings obtained through the questionnaire and interviews. The main trends and patterns as found in the results are discussed with reference to the research questions outlined in section 1.7 of Chapter One. The general purpose of the study has been to assess the need and readiness for the implementation of an e-Government website in Guinea-Bissau with special reference to Government ministries and departments.

5.2 The respondents' information

The participants (questionnaire and interviews) in this study were Government ministry employees. All the participants have extensive work experience and some of them are general directors or IT technicians of different departments within their respective ministries. The majority of the respondents that had experience of the country's e-Government strategic plan and e-Government programme are from different ministries/departments.

The respondents were generally positive for an investigation to take place into the issue of implementing e-Government within the country, as they perceived that it could be of help to the Government of GB, which needs to sort out the many problems in its public administration by using new technologies for the delivering of Government information to businesses and citizens. The respondents also reported that they believed that the research would help them to plan better with regard to the implementation of an e-Government website within the country.

5.3 Implementing an e-Government website in Guinea-Bissau with special reference to Government ministries and departments

The survey questionnaire and interview schedule that were carried out enabled the researcher to establish the extent to which the Government of GB has responded to the challenges involved in implementing e-Government. These and other factors are discussed below.

5.3.1 Use of technology within GB

The use of technology within GB is still limited when compared with technology use in other West African Countries (WACs) like Cape Verde, Nigeria and Ghana. The evidence presented in section 1.3.1 of Chapter One shows that IT infrastructure between its various agencies and citizens is very limited. GB has a slow Internet connection located mainly in cities and this hampers any IT projects to do with Government services. However, through increased use of computers and increased availability of Internet infrastructures in Government agencies, most of the Government's employees would improve their proficiency in using the new technology and this would help the Government in its communications with businesses and citizens and thus make it more productive. For the potential of the new technology to be used most effectively, Government employees should be trained as to how to use the new technology in their offices and then relate it to their work (Cohen and Eimicke, 2002). The evidence, as shown in Figure 4.4 in section 4.2.5 of Chapter Four, shows that the participants rated the importance of using Internet services within GB's ministries as very high.

Koga (2003) suggests that e-Government can be defined as any Government's use of electronic technology, which basically involves web applications, such as using the Internet to allow for information delivery from the Government to its employees as well as to citizens, businesses and NGO partnerships. The use of such technology is aimed at increasing the transparency of public services and also reducing corruption within a Government's administration. Through an online website, a Government can make information available to its citizens, it can keep the public informed, and it can afford them the opportunity to follow the Government's decision-making processes (European e-Government, 2005-2007).

An e-Government website is not yet available in any GB ministries. As stated in section 1.8 of Chapter One, Heeks (2008) has suggested that an e-Government website is the main communication tool for simplifying the exchange of information between the public services and their users.

An e-Government programme has not yet been developed in GB. The research has established that an e-Government programme for GB is also an expected outcome of the ICT Master Systems Plan. An e-Government programme facilitates the full implementation,

monitoring and evaluation of e-Government in any given country. Trusler (2008) has stated that the implementation of South Africa's e-Government plan took ten years and followed six stages. These stages were (in chronological order): information provision, two-way transactions, multi-purpose portal, personalised portals, the clustering of services, and comprehensive corporate transformation. In order for GB to catch up with the rest of the WACs in terms of its e-Government implementation, it is imperative that it takes note of the experiences of some of the other countries in the region, such as Cape Verde. In this regard, the Government of GB should make an informed choice of an e-Government development approach that is appropriate to the country's political and socio-economic situation.

An e-Government strategic plan has not yet been developed in GB. Based on the data generated from the questionnaire and interviews, one can argue that the Government of GB has identified the need for a Government ICT Master Systems Plan as a priority for development once a national ICT policy and an e-Government strategy are in place. The absence of a coordinated e-Government strategy has been a major challenge with regard to the successful implementation of an e-Government in GB.

5.3.2 Government employees' usage of IT within their ministries

The employees generally reflected a positive attitude towards the use of IT. The use of IT in the ministries can also increase the Government's productivity and the degree to which citizens are empowered, and it can reinvigorate the processes of democracy. IT is the most important tool for the growing flow of information and it can also be a major contributor towards solving the problems of a Government (Brewer *et al.*, 2006). In section 2.2.5.6 of Chapter Two, it was discussed how Backus (2001), Gupta and Jana (2003) and Torres *et al.* (2005) have all suggested that IT becomes increasingly important in Government services with the implementation of e-Government. A professional IT department inevitably grows not only during the implementation period but also as a result of the need for maintenance of the software, hardware and infrastructure.

The above-mentioned question 5.3.2 helped the researcher to find out the degree to which the participants use IT in their ministries and also the extent of their computer-related qualifications and experience. The computer-related qualifications and experience of the ministry employees confirm that they are able to manage the necessary IT software (i.e.

Microsoft Word, Microsoft Excel, Microsoft Access, the intranet, the Internet and Skype) needed in their departments.

The kinds of computer courses that have been attended by the employees give an indication of the level of computer use by the GB Government's ministry employees. According to Joseph and Jeffers (2009), the use of IT is fundamental to the sustained enlargement of Government operations as well as to the development of the country. In section 4.4.1 of Chapter Four, Table 4.3 shows that the respondents attended courses in the following IT software: Microsoft Word (74%), Microsoft Excel (80%), Microsoft Access (83%), and Microsoft PowerPoint (81%). The respondents concluded that the use of Microsoft Office and its integration into the activities of the ministries is high. In section 4.4.1 of Chapter Four, Table 4.3 shows that 66% of the respondents did not attend the Skype courses. It seems reasonable that Skype courses are less well attended as the nature of Skype does not really fit the current workings of a Government department. It could be used in future to conduct G2G meetings, or even for citizens to have interviews with Government officials.

In section 4.4.3 of Chapter Four, Table 4.4 shows that the respondents have IT software skills that they attained through having attended courses on the following programmes: Microsoft Word, Microsoft Excel, Microsoft Access and Microsoft PowerPoint. Table 4.4 also shows the percentage of the participants who claimed that they make use of these skills in their jobs: Microsoft Word skills (79%), Microsoft Excel skills (83%), Microsoft Access skills (85%) and Microsoft PowerPoint skills (84%). In section 4.4.3 of Chapter Four, Table 4.4 indicates that 62% of the respondents did not have Skype skills, which are needed if ministry employees are to take part in inter-ministerial and Western Africa conferences. The computer skills that the participants use in their ministries as a result of the courses they attended have been advantageous for them and have enabled them to keep abreast of changing technological standards and possibilities of using new technology.

These results confirm that Government employees are using IT software in the workplace. The evidence in Table 4.3 and 4.4 shows that most of the respondents have attended IT software courses and that the courses have contributed to the development of skills in these packages/technologies. It is significant that few respondents reported attending Skype courses and the corresponding usage of Skype is low.

5.3.3 Experience of the first IT implementation of 2002 to 2004

The failure to implement the past IT project in GB has been largely associated with a lack of Government capacity (i.e. leadership). In section 2.6.1 of Chapter Two, it was noted that the failure of the IT project is linked with the inadequate use of ICT by the Government for delivering information to the public. There was also limited bandwidth Internet connection between the Government agencies and the country's citizens. Heeks (2008) has stated that the failure of an IT project in general may be due to poor project management, a lack of support from parliament, a lack of IT knowledge and skills among officials and employees, a lack of Internet connection and an insufficient number of computers in the departments.

From 2002 to 2004, five ministries attempted to implement IT in order to engage in the new IS being used elsewhere in the world. According to the respondents, all of these five ministries were, in the period 2002 to 2004, connected by Internet and intranet so as to enable their employees to share ministerial information and official documents via e-mail. The use of e-mail was intended to replace hardcopies, which are costly, time-consuming and can lead to information being lost. This application of e-Government in GB was focused on developing the management skills of all the Government ministries in terms of the new Information Systems. The assumption was that this would help improve the public administration of the country.

Over two years (2002 to 2004), the Government of GB invested in the adoption and use of Information and Communication Technology in the five ministries. The respondents reported that the first IT implementation was planned particularly with those qualified in Government administration in mind and it was implemented in order to accommodate e-Government, ICT and modern telecommunication infrastructure.

The reasons for the failure of the IT project, as interpreted by the respondents, was that the investment in telecommunication and technical IT infrastructure was limited, there was a lack of human and material resources, there was a lack of financial resources for training IT technicians within the ministries, and there was a lack of strategic planning for implementing e-Government in the country. These assertions are supported by the results presented in Figure 4.12 (section 4.5.1 of Chapter Four), where 75% of the respondents either agreed or strongly agreed that there was an insufficient number of computers in the ministries for

employees to use during the Government's first attempt at IT implementation. The respondents commented that because of the absence of computers in the departments they could not develop the software skills needed to use the new technology that was implemented in the ministries. In particular, officials were critical of the limited number of computers which restricted the possibility of building IT capacity in officials.

The results presented in Figure 4.13 (section 4.5.2 of Chapter Four) indicate that 78% of the respondents stated that during the first IT implementation the ministries did not have a website for delivering Government information to citizens, businesses and other partnerships (such as NGOs). According to the results presented in Figure 4.14 (section 4.5.3 of Chapter Four), 67% of the respondents confirmed that the first IT implementation suffered from a lack of funding in relation to ministry employee training courses and claimed that this was one of the reasons for the failure of the implementation. The respondents pointed out that because of all the above-mentioned reasons, the Government officials did not stand a reasonable chance of making the IT project successful and the project was thus aborted.

Backus (2001) has argued that the main reason for the failure to implement e-Government in developing countries is that the majority of the populations are uneducated with regard to the use of the Internet, and citizens in rural areas in particular seldom use electronic information as their access to the Internet is very limited. Heeks (2003) has argued that more than one-third of developing and transitional countries have failed in their e-Government projects; half of those who have tried have been partial failures, and approximately one-seventh have been successful. The evidence in Section 2.6.4 of chapter two shows that e-Government failure rates are higher in developing countries because of the limitations they experience in terms of their ICT infrastructure, a lack of monetary investment in equipment, the absence of clear new service facilities, and a lack of funding for employee's training programmes that would help practitioners discover the strengths and advantages that e-Government can afford a country.

5.3.4 Implementing an e-Government website

GB is a developing country and as such experiences many problems when it comes to its public administration. In order to implement an e-Government service, a Government should have the basic infrastructure in place in its ministries; this infrastructure includes computer

hardware, software and networks, as well as reliable telecommunications services, which are necessary for there to be a reliable Internet connection (Swedberg and Douglas, 2003).

West (2008) has stated that a large variety of services which Government agencies can offer citizens and businesses are already available online in different countries around the world. For example, in countries that are using e-Government, one can submit an income tax form online, register a new business online, and renew a driver's licence online. According to the respondents, the implementation of an e-Government website will be of great benefit to the country as it will improve its administration and will make many changes to its public services such as reducing bureaucracy within the ministries. Sakowicz (2005) has argued that the implementation of e-Government implies changes in administrative processes (i.e. it leads to e-administration). Broadly defined, e-Government can include all ICT required to support Government operations, engage citizens, and provide Government services. According to Schuppan (2009), implementing e-Government involves building a digital connection whereby Government information and public services are available to the country's citizens, who can access the information or services that they need by going online. The next sections discuss the implementation of e-Government in terms of perceived advantages, perceived requirements as well as the readiness to implement.

5.3.4.1 Advantages of implementing e-Government

The benefits behind the implementation of e-Government are the provision of information as part of the Government's public services and cost-reducing services for citizens and businesses (Torres *et al.*, 2005). Ndou (2004) has suggested that the major benefit of using e-Government is that it saves time and money and it also offers security to public information. Kaaya (2004) has argued that the benefits of implementing e-Government are: its application of ICT in Government administration (which reflects an advancing Government that uses new, improved methods for rendering its public services), improved democratic processes, and lower costs for administrative services. One of the most important advantages to implementing e-Government is that it increases transparency within Government administrations and reduces the bureaucratic power of Government offices.

In section 4.6.1 of Chapter Four, Figure 4.16 indicates that 80% of the respondents either agreed or strongly agreed that implementing e-Government in GB will have a positive impact

on the general population. The implementation of e-Government will require improved Internet infrastructure, which will improve other public operations, such as banking. In section 4.6.2 of Chapter Four, Figure 4.17 shows that 70% of the respondents argued that the implementation of e-Government will improve the overall transparency of the Government of GB and will also increase the participation level of the country in Government processes and decision-making.

In Chapter Four, Figure 4.18 shows that 50% of the respondents believe that implementing e-Government in GB will reduce the costs involved in Government information delivery. In section 4.6.4 of Chapter Four, Figure 4.19 indicates that 71% of the respondents confirmed that an e-Government website is a better method of distribution of policy and public information than are hardcopies. According to the respondents, the implementation of e-Government in GB will make a substantial change in Government administration, such as in the issuing of IDs. An e-Government can help prevent unauthorised people from manufacturing and selling false IDs. The high percentages supporting e-Government implementation (in section 4.6.5 of Chapter Four, Figure 4.20) indicates strong support from Government officials.

5.3.4.2 Requirements for implementing e-Government

ICT skills are important for ICT production and services. ICT skills have become a new general skill, like literacy or numeracy, and Governments have implemented a range of policies to promote the acquisition of basic and advanced ICT skills within the field of telecommunications. E-Government initiatives increase the importance of ICT-related skills required by public administration workforces (Lau, 2003).

Brewer *et al.* (2006) have stated that good governance is a requirement for twenty-first-century Governments, considering the demand that is placed on them for democratic, responsive, participative, and transparent policy-making. In implementing new technology, citizens can have easier access to Government information. In section 1.3.1 of Chapter One, it was observed that one of the major requirements for the envisaged governance Information Systems is that the system be implemented in all the ministries relating to administrative information.

Ojo *et al.* (2007) have suggested that there are many skills required for the implementation of e-Government and that these skills affect all Government employees. Signore *et al.* (2005b) have noted that IT skills help ministry employees gain work-related knowledge, improve the quality of employees' work, increase transparency and efficiency, and offer the possibility of using technology to improve Government operations.

In section 4.7.1 of Chapter Four, Figure 4.21 indicates that 70% of the participants stated that the requirement of implementing an e-Government means stakeholders need to find improved ways of participating in the e-Government strategy. In section 4.7.2 of Chapter Four, Figure 4.22 shows that 69% of the respondents confirmed that technical skills are important when it comes to improving the use of e-Government in both Government departments and the country in general. In section 4.7.3 of Chapter Four, Figure 4.23 indicates that 61% of the respondents either agreed or strongly agreed that a long-term budget plan is necessary to improve the use of e-Government in GB. In section 4.7.4 of Chapter Four, Figure 4.24 shows that 75% of the respondents indicated that IT education is important so that ministry employees will have a good working knowledge of IT.

In summary, it can be concluded that the respondents have confirmed support for meeting obvious implementation requirements – the level of support underlines widespread recognition of the need to meet these requirements.

5.3.4.3 Readiness for implementing e-Government

E-readiness is usually characterised as the degree to which a society has been organised so as to take part in the local and global digital economy. The idea of e-readiness also assumes that the digital economy can help to build a better society. The acceptance of new technologies is conditioned by the political and managerial factors that predict the 'readiness' of a Government for the implementation of e-Government (UNPAN, 2008).

E-Government readiness rankings are evaluated by assessing the progress of a country comparative to other countries in terms of the use of e-Government infrastructures by the Governments. The evaluation of e-Government readiness places citizens at the forefront, as it focuses on Governmental services and products that primarily affect them. UNPAN (2008)

has observed that the Global E-Government Readiness Index could change Government structure, leadership and Government management.

One of the key indicators of e-Government readiness is the extent that users perceive their privacy and security to be adequately protected. E-readiness is a measurement of the quality of ICT and the ability of consumers, business and the Government to use ICT for their benefit. Security is one of the most important factors for measuring e-Government readiness and the moderately positive perceptions of security technology usage that have been reported suggest only limited readiness at this stage.

5.3.4.4 Challenges that may hinder the development of e-Government within GB

All countries will face challenges when it comes to implementing a new technology. E-Government implementations thus have obstacles to overcome in order to be successfully implemented. UNPAN (2008) has observed that while Governments share common challenges, they each begin from different stages in relation to the implementation of e-Government and the development of administrative processes that are appropriate to requirements and that exist within the parameters of their own stated developmental objectives. Many developing countries, like GB, are still in the beginning phase in relation to their ICT services. It is thus important for GB's policymakers to reflect on a multiple-channel service delivery approach to Government services as large numbers of people are without Internet access.

One of the problems that the Government of GB is currently facing is the inefficiency of the use of pre-IT communication methods. However, implementing a technological solution creates a host of additional challenges that need to be addressed in order for success to be achieved. According to Corradini *et al.* (2007), the challenges involved in implementing e-Government hinge on the country's level of technological infrastructure, its human capital, and the quality of its Internet connection. The main challenge to implementing e-Government in developing countries is that most citizens cannot access the Internet.

Ciborra and Navarra (2005) argue that implementation of e-Government in many developing countries is hampered by the absence of laws regarding e-Government because administrative skills are weakly developed and management abilities/skills cannot accommodate new

technology. There is also the limited Government administrative support, citizens' resistance to change, or potential users are not interested in implementing e-Government. The low level of IT literacy in developing countries also has a negative impact on the development of e-Government processes. The opportunities for training citizens in such matters are limited and costly. E-Government readiness strategies and programmes cannot be effective when people are neither literate nor educated.

Wong *et al.* (2006) have noted that the absence of an ICT infrastructure is one of the principal challenges facing a Government when it comes to implementing e-Government. All Governments need to take precautions when using the Internet because it requires the sharing of information with the public. Ndou (2004) has argued that the disparity in computer access is one of the main challenges when it comes to establishing e-Government. A number of Government employees in developing countries will not receive ministerial encouragement, opportunities, and the necessary preparation for computer literacy. Grant (2008) has argued that the possible challenges to successfully implementing e-Government are insufficient funding for e-Government initiatives, a lack of administrative, technical and operational skill for planning the deployment and implementing of e-Government applications, high training and re-training costs for Government employees and a lack of resources for training citizens in the use of e-Government applications.

In section 4.9.1 of Chapter Four, Figure 4.27 shows that 69% of the respondents stated that a lack of trust between employees and the Government can hinder e-Government development. In section 4.9.2 of Chapter Four, Figure 4.28 indicates that 82% of the respondents confirmed that a lack of support from parliament can also be a hindrance to e-Government development. In section 4.9.3 of Chapter Four, Figure 4.29 shows that 75% of the respondents stated that the absence of strategic plans for the implementation of e-Government can hinder e-Government development. In section 4.9.4 of Chapter Four, Figure 4.30 indicates that 62% of the respondents suggested that employees resisting IT innovations can prove a hindrance to e-Government development.

In summary, the results of the survey highlight specific challenges that the Government of GB will need to take into account when implementing an e-Government website.

5.4 Conclusion

This chapter has presented a discussion and interpretation of the results of the research. This chapter has also integrated the results presented in Chapter Four with the information discussed in Chapters One and Two. The main trends and patterns that emerged in the results (which were discussed in section 5.1 of this chapter) have been discussed with reference to the research questions (as outlined in section 1.6 of Chapter One).

6 CHAPTER SIX: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The purpose of this study has been to assess the issues surrounding the possible implementation of an e-Government website in GB, with special reference having been paid to possible implementation within Government ministries and departments. In this chapter, the researcher indicates the extent to which the research goals and objectives have been achieved and also offers his conclusions and recommendations. A summary of the findings of the study is made and this is followed by the researcher's conclusions and recommendations.

6.2 Summary of the findings

This section presents a summary of the findings of the study in relation to the research questions that guided the study.

6.2.1 Policies regarding the implementing of an e-Government in Guinea-Bissau

This research has confirmed the fact that GB has not yet developed a national ICT policy. Such a policy is a necessary component in creating a favourable climate for developing an e-Government in GB. However, the Government of GB has not debated and formulated an e-Government policy, an e-Government strategic plan, or an e-Government programme. These different areas of e-Government development are necessary in that they contribute towards the success of the implementation process by doing the following: addressing the expansion of ICT applications (information services) in Government, ensuring equity in the provision of Government services, and improving the economic and political environment. In terms of improving the economic and political environment, this is achieved through the creation of: representative and participatory democracy, greater transparency, open and collaborative decision-making, new infrastructure, and integrated and seamless Government services that can cut across departmental boundaries and thereby provide a convenient and timely service to citizens. This assertion relates to the objectives of the research that were highlighted in section 2.8.3.6 of Chapter Two.

6.2.1.1 Implementation of an e-Government in Guinea-Bissau

- This research has established that the country has not developed an e-Government strategic plan and e-Government programme. These kinds of levels of e-Government can create a favourable climate that should enhance the development and implementation of e-Government in Guinea-Bissau;
- However, the country is still lacking an e-Government strategic plan and e-Government programme;
- Use of technology in GB is increasing in Government ministries to support the Government services for citizens, organizations and foreign nationals to facilitate Government contact such as provincial departments, citizens' complaints and news on website;
- Government employees usage of various IT software/technology in Government ministries are growing constantly such as Microsoft word, Excel, Access, PowerPoint, Intranet and Internet, only Skype inter-ministerial and Western Africa communication still on bottom of use because of no development of telecommunication infrastructure.

6.2.2 Government employees' perceptions of implementing e-Government

The key perceptions are as follows:

- The Government employees that were surveyed were of the opinion that there is a general willingness to pursue e-Government within the country, but that there is no plan or strategy for actually turning that willingness into reality.
- The employees were also of the opinion that the Government has to form strategic partnerships with other West African Countries that have been successful in implementing e-Governments as well as with the service providers in order for e-Government to be a success in the country. These service providers include GB's telecommunication infrastructures.
- The employees consider e-Government to be a phenomenon that could increase the Government's productivity and lower the costs associated with Governmental service delivery within the country.
- The participants were also of the opinion that the Government of GB should be, by way of an e-Government website, moving beyond providing just information about

Government ministries/departments and services to providing interactive services via the Internet.

- Lastly, some Government employees suggested that e-Government activities should not be centralised as this makes it very difficult for ministries/departments to improve and upgrade their own websites.

6.2.3 E-Government prerequisites

According to the respondents, the Government of GB requires the following if it is to be able to successfully implement e-Government within GB:

- The development of an appropriate e-Government strategy, and an e-Government programme;
- The establishment of an e-Government website on which different categories of Government information can be posted and availability of e-Government website can reduce the bureaucracy in Government administration;
- The establishment of a Ministry of Information and Communication Technology;
- The establishment of assistance programmes for the less privileged (i.e. 'special initiatives' need to take place that will meet the needs of those citizens that are uneducated and those that live in rural areas (provincial departments) as this will help to close the digital divide); and
- The population register, the criminal justice systems, the personal identification systems and the Public Sector Management Programme (PSMP) are ongoing programmes and projects that qualify to be considered as e-Government initiatives.

6.2.4 Level of e-Government in Guinea-Bissau

GB's low level of e-readiness in terms of implementing e-Government is compounded by the fact that the Government has not undertaken to develop its ICTs. As was discussed in Chapter Two, GB's rating in the Global E-Government Readiness Index stands at 0.1561, which puts it in 179th position (as was reflected in section 1.8 of Chapter One). GB is still without an e-Government website, a situation that has negatively impacted the Government administration's desire to realise the full benefits of implementing e-Government. One of the

primary reasons for the absence of an e-Government website is the unsatisfactorily slow Internet access due to the country's limited bandwidth.

The researcher argues that for e-Government to be successfully realised in GB, the e-Government programme has to be developed in advance of the e-Government implementation phase. This programme would focus on ICT education and training, building infrastructure, improving connectivity between Government agencies, businesses and citizens. It is also necessary for the Government to afford Guinea-Bissauans access to ICT as only then will they be able to cooperate with the e-Government from any geographical point within the country.

6.3 Conclusions

In conclusion, the implementation of e-Government in GB will stand a proper chance of development in Government services if the above-mentioned suggestions are accepted and put into action. As has been argued by some of GB's respondents, in order to increase the demand for e-Government services, it is necessary that the country reach a critical mass of active Internet users.

The major pre-condition for e-Government utilisation is the readiness of the country's citizens to use its services. The readiness of citizens can be estimated from their desire and aspiration to take advantage of the e-Government. In order to increase the computer literacy levels of GB's citizens, it is necessary to consider their social status. Most Guinea-Bissauans are poor and thus cannot afford an Internet connection, let alone a computer. The charges involved in using the Internet need to be reduced (subsidised by the Government) and citizens need to be provided with affordable computers so that this problem can be solved. It is also necessary for the best computer skills training methods to be used to teach Guinea-Bissauans how to use computers and the Internet. The Government of GB needs to be innovative in seeking ways to sponsor and support these e-readiness capacity building programmes.

This study has shown that the main issues requiring attention are the Government's lack of a plan or strategy and the lack of support from parliament with regard to the implementation of e-Government in the country. Another challenge is the low speed and level of Internet connectivity in the country, which substantially decreases the possible effectiveness of the

Government's services. The issue of e-Government security is also one of the challenges involved in the implementation of e-Government. In many developing countries, there is a lack of long-term strategies to implementing e-Government. One of the principal challenges for implementing e-Government is the need for a context adapted strategy and the establishment of an appropriate implementation of e-Government in country.

6.4 Recommendations

The researcher thus makes the following recommendations with respect to improve a platform for the implementation of e-Government services within GB:

- The Government should improve the IT infrastructure in preparation for the e-Government website by increasing the speed with which it operates, which would prevent it from collapsing as the result of an overload;
- Increase Government agencies' and citizens' knowledge about how to make use of e-Government. This can be done by increasing the number of advertisements that are placed on TV and in newspapers as well as by holding free seminars and workshops that will highlight the benefits of e-Government and will persuade people to use these services.
- Increase the public's knowledge about the security issues involved in e-Government. Some of the possible ways of doing this is to include such information in school textbooks, in newspapers, and on the e-Government website.
- Provide citizens with high-speed Internet at reasonable prices. A high Internet speed will encourage more citizens to use e-Government services because they will see for themselves the difference between performing certain tasks manually (i.e. using hardcopies) and performing them online via the e-Government website, which would only take a few minutes. Clearly, wireless possibilities should be adopted.
- Must include training of officials, but more importantly large scale training programmes for citizens.

6.4.1 Recommendation for ICT development

Considering the current situation of ICT in GB, the following steps are proposed:

- The Government of GB should finance e-Government programmes that focus on the creation of internationally recognised and quality telecommunication networks throughout all of GB's territories. The slow Internet connection is a result of poor infrastructure, the crisis in the national economy, and the challenge of providing the necessary capital for network development. Foreign investors need to be attracted to GB in order to develop the country in these areas.
- The Government should provide more points of access to information resources throughout all of the country's territories. The steep differences in levels and ease of access can be sharply reduced if access to ICT is granted to the various strata of society. It is necessary to carry out programmes that will increase the number of electronic terminals that are available in public places.
- Wireless possibilities should receive priority.

6.5 Suggestions for further research

The present study has noted that GB has the requisite political will for e-Government to be successful. Further research could explore the extent to which e-Government is being developed and implemented in the country as a result of this political will.

This study has focused on the most crucial challenges facing GB in terms of its efforts to implement e-Government. The challenges that were deemed most crucial in this regard were the development of an ICT policy, readiness of the Government leaders and employees in ministries and the development of the country's information services. There is a dire need for further research that will assess the extent to which the Government of GB is responding to the challenges not covered by the present study. These challenges include: the development of an inclusive ICT infrastructure, information and knowledge management, research and development, and security and risk research into the readiness and perceptions of citizens in the community. Comparative case studies with other West African countries that are in a similar position or e-Government success stories would also contribute to the body of knowledge in the arena of e-Government in developing countries.

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APPENDICES

APPENDIX A

QUESTION 1

USE OF TECHNOLOGY IN GUINEA-BISSAU

1.1 In which ministry do you work?

_____

1.2 Does your ministry have internet services? | **Yes** | **No** | (**Please tick**)

1.3 Does your ministry have an e-Government website? | **Yes** | **No** | (**Please tick**)

1.4 Supposing the ministry had a website, how important would the inclusion of the following be?

	Very important	**Important**	**Neither important nor unimportant**	**Unimportant**	**Very unimportant**
1.4.1 – Government services for citizens					
1.4.2 – Government services for organizations					
1.4.3 – Government services for foreign nationals					
1.4.4 – Key issues					
1.4.5 – Government programmes					
1.4.6 – National departments					

1.4.7 – Provincial departments					
1.4.8 – Government contacts					
1.4.9 – Complaints					
1.4.10 – Government vacancies					
1.4.11 – News on website					

1.5 Which **ONE** of these statements **best** describes your ministry in terms of promoting an e-Government website and Internet development?

a) No one is responsible for promoting e-Government in the ministry ☐

b) Several or many different units play a role in promoting e-Government and it is not clear which, if any, has overall charge ☐

c) E-Government is mainly an IT issue and so the computer department has the primary responsibility for promoting website and Internet development ☐

d) Website and Internet development are coordinated by the computer department with the involvement of others ☐

1.6 Does the Government have an e-Government programme? **Yes** ☐ **No** ☐ (**Please tick**)

1.7 Has the Government developed an e-Government strategic plan? **Yes** ☐ **No** ☐ (**Please tick**)

1.8 Rate the importance of internet services for efficient running of your ministry, on a scale of 1 to 5 **(1 = Very low; 2 = Low; 3 = Neutral; 4 = High; 5 = Very high)**

Rating: ☐

QUESTION 2

GOVERNMENT EMPLOYEES USAGE OF IT

This question is about usage of new technology. Please **tick** the answer that most closely represents your use of technology.

2.1 Which of the following skills do you use:

Never = not used at all; **Rarely** = used once or twice a year; **Sometimes** = once a month; **Regularly** = several times a month; **Often =** at least 5 time a week.

Computing qualification and experience	**Never**	**Rarely**	**Sometime**	**Regularly**	**Often**
2.1.1 – I use Microsoft Word for writing documents					
2.1.2 – I use Microsoft Excel for work involving calculating					
2.1.3 – I use Microsoft Access for managing data					
2.1.4 – I use Microsoft Power Point for presentations					
2.1.5 – I use intranet for inter-ministerial communication					
2.1.6 – I use the internet to gather information for our ministry					
2.1.7 – I use Skype for inter-ministerial Video-Conferences					
2.1.8 – I use Skype for inter-Western African Video-Conferences					

2.2 Have you ever attended a computer course(s)?

Yes	No

2.3 Which of the following course(s) did you attend?

Attended course(s)	Yes	No
2.3.1 – Microsoft Word		
2.3.2 – Microsoft Excel		
2.3.3 – Microsoft Access		
2.3.4 – Microsoft Power Point		
2.3.5 – Intranet		
2.3.6 – Internet		
2.3.7 – Skype		

2.4 Tick all the skills that you use as a result of the course(s) you attended.

Skill	
2.4.1 – Microsoft Word	
2.4.2 – Microsoft Excel	
2.4.3 – Microsoft Access	
2.4.4 – Microsoft Power Point	
2.4.5 – Intranet	
2.4.6 – Internet	
2.4.7 – Skype	

QUESTION 3

EXPERIENCE OF FIRST IT IMPLEMENTATION 2002 – 2004

This section seeks your opinion on the reasons for the failure of the previous IT project.

Please **tick** the box that most closely represents your opinion.

Factors hindering IT usage in your ministry	**Strongly disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly agree**
3.1 – No accessibility to internet connection in ministries					
3.2 – Insufficient of computers in ministries					
3.3 – The ministries did not have a website					
3.4 – Low speed network in ministries					
3.5 – Low level of network security					
3.6 – No possibility to exchange information through internal network (intranet)					
3.7 – The low level of employees IT knowledge in ministries					
3.8 – Inadequate understanding of employees regarding advantages and usage of e-Government					
3.9 – Lack of funding for employee training courses					
3.10 – No skilled person to manage the IT project					

QUESTION 4

IMPLEMENTING E-GOVERNMENT

This question is about **ADVANTAGES** of implementing e-Government in Guinea-Bissau.

Please tick the answer that most closely represents your view.

Advantages	**Strongly disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly agree**
4.1 – Implementing e-Government in the country will have a positive impact on the general population					
4.2 – It will improve overall transparency and participation level in Government processes and decision making					
4.3 – It will enable employees to use new technology					
4.4 – It will improve public service efficiency					
4.5 – It will reduce the cost of Government information delivery					
4.6 – It will promote electronic document processing in ministries					
4.7 – It will promote information/knowledge sharing across ministries					
4.8 – It will improve employees' opinion collection and reflection					
4.9 – Use of an e-Government website motivates employees					
4.10 – E-Government website is a better distribution of policy and public information than traditional methods (hardcopy)					
4.11 – There is greater overall effectiveness of work in the ministries					

QUESTION 5

IMPLEMENTING E-GOVERNMENT

This question is about **REQUIREMENTS** of implementing e-Government in Guinea-Bissau. Please tick the answer that most closely represents your view.

Requirements	**Strongly disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly agree**
5.1 – Stakeholders' participation in e-Government strategy development process is fundamental for ministries					
5.2 – Right technical skills are important to develop/use e-Government					
5.3 – Long-term budget plan for e-Government is necessary					
5.4 – IT education for employees is important					
5.5 – It is essential that data and information protection be safe from unauthorized people					
5.6 – Employees in my ministry need to be equipped with the right skills to develop/use e-Government					

QUESTION 6

IMPLEMENTING E-GOVERNMENT

This question is about **READINESS** of implementing e-Government in Guinea-Bissau.

Please tick the answer that most closely represents your view of the current state of readiness.

Readiness	**Strongly disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly agree**
6.1 –Technical employees of the organization are acquainted with issues concerning network security					
6.2 – Employees feel that our personal data is secure					
6.3 – We utilize different security facilities including filtering, logging and authentication					
6.4 –We utilize up to date software for fighting viruses					
6.5 – Employees have the skills to capture and update data					
6.6 – Digital signatures are used in ministry					
6.7 – Network systems development is available					

QUESTION 7

CHALLENGES THAT MAY HINDER THE COUNTRY'S E-GOVERNMENT DEVELOPMENT

This question is for **CHALLENGES** that may hinder the Guinea-Bissau e-Government development. Please **tick** the answer that most closely represents your opinion.

Challenges	**Strongly disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly agree**
7.1 – Lack of political desire can lead to slowness or failure of e-Government					
7.2 – Lack of trust between employees and Government, and between ministries					
7.3 – Potential users not being interested in using e-Government					
7.4 – Non-allocation of budget for meeting the expenses of commissioning and the purchase of hardware and software to the ministries					
7.5 – Lack of support from parliament					
7.6 – The lack of a strategy plan for implementation of e-Government					
7.7 – Employees resisting change can lead to e-Government failure					
7.8 – Not empowering people to act on the vision or new project mandate					
7.9 – Employees do not have the necessary skills of using e-Government					

THANK YOU VERY MUCH FOR YOUR TIME

APPENDIX B

INTERVIEW QUESTIONS

1. What is your opinion about the first IT implementation during 2002 – 2004?

2. What do you think about the online security of e-Government in your Government department?

3. What can you suggest if e-Government is implemented in Guinea-Bissau?

4. What do you believe about the possible usage of new technology in Government?

5. What do you think about the utilization of an e-Government site in your ministry?

6. Can you summarize your expectations about an e-Government site in Guinea-Bissau?

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12 FEBRUARY 2010

MR. A Gomes Ca
Faculty of Management Studies
School of Information Systems & Technology
PIETERMARITZBURG

Dear Mr. Gomes Ca

PROTOCOL TITLE: "Challenges in implementing an e-government web site in Guinea-Bissau"
ETHICAL APPROVAL NUMBER: HSS/0075/10M

In response to your application dated 4 February 2010, Student Number: **207529612** the Humanities & Social Sciences Ethics Committee has considered the abovementioned application and the protocol has been given **FULL APPROVAL.**

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Professor Steve Collings (Chair)
HUMANITIES & SOCIAL SCIENCES ETHICS COMMITTEE

cc Supervisro (Prof. B McArthur)
cc Mrs G Ponsford