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Assimilation of E-government Systems at the Ministry of Trade and Industry in Botswana

BY

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DECLARATION

I hereby declare that this dissertation: "**Assimilation of E-government Systems at the Ministry of Trade and Industry in Botswana"** is my own work and sources used that have been acknowledged by means of complete references. It has not been formally submitted for the award of a degree to any other university.

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DEDICATION

This is dedicated to my parents and my siblings for their continued support.

ABSTRACT

A lot of research has been done on the multitude of benefits of the use of information and communication technologies for businesses, citizens and governments, the impact of which improved service delivery, reduced corruption, increased national competitiveness and promoted citizen participation in the democratic process (Cho & Choi, 2004; Moynihan, 2004; West, 2004; Von Haldenwang, 2004). However, there has been little research and empirical studies on exploring factors that determined the assimilation of e-government systems in developing countries, hence this study.

Using the structuration theory, this study investigated the assimilation of the e-government system at the Ministry of Trade and Industry (MTI) in Botswana in order to ascertain its impact and benefits. A theoretical framework, E-Government Systems Assimilation Framework (EGAF), was applied to examine the assimilation of the e-government system in MTI through the structuration of its organisational factors. A case study approach was used to get an in-depth insight into the comprehensive interactive factors that affect the assimilation of the e-government system. Data was collected using semi-structured questionnaires and interviews from sixty-one (61) purposefully selected respondents that implemented and used the e-government system at the MTI. These are classified as follows: thirty (36) action officers; fifteen (15) MTI clients; five (5) departmental leaders/supervisors; four (4) IT officers and one (1) officer at the e-government co-ordination office. The researcher also observed the e-government assimilation processes at the research sites. Items that were observed were guided by the observation protocol.

The findings show that the implementation of e-government at the MTI has been affected by several structuration organisational factors namely: meta-structure of signification, domination and legitimization. Consequently, while there is some on-going review of the current regulatory e-environment, challenges such as the lack of awareness of the e-government campaign; the lack of implementation of policies on rules and standards for information security; unreliable internet infrastructure and a lack of top management support, still persist. The study recommends that a deeper reflection on these structuration

organisational factors is essential to any strategic efforts that would ensure the successful assimilation of the e-government system at the MTI in Botswana. This study was limited to the assimilation of e-government systems at MTI. There are other possible areas of study related to this study. A much broader study covering more government ministries can be conducted to study the assimilation of e-government systems across government as a whole. Another possible area of study would be to investigate the role of culture in the assimilation of e-government systems.

Key words: **E-Government, Ministry of Trade and Industry, Assimilation, Botswana, E-Government Systems Assimilation Framework (EGAF), Records management, Structuration Theory**

TABLE OF CONTENTS

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

LIST OF ABBREVIATIONS AND ACRONYMS

AU	African Union
BOFINET	Botswana Fibre Network
EDD	Economic Diversification Drive
EGAF	Organisational E-Government Systems Assimilation Framework
G2B	Government-to-Business
G2C	Government-to-Citizen
G2G	Government-to-Government
ICT	Information Communication Technology
ID	Identity Document
IDT	Innovation Diffusion Theory
IS	Information Systems
IT	Information Technology
ITU	International Telecommunication Union
MDAs	Ministries, Departments and Agencies
MM	Motivational Model
MTI	Ministry of Trade and Industry
MTIMIS	Ministry of Trade and Industry Management Information System
OAU	Organisation of African Unity
OECD	Organisation for Economic Co-Operation and Development
PADIS	Pan African Development Information System
PC	Personal Computer
PDA	Personal Digital Assistants
SADC	Southern Africa Development Community
SCT	Social Cognitive Theory
SPSS	Statistical Packages for the Social Sciences
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UN	United Nations

UNPAN	United Nations Public Administration Network
US	United States
USA	United States of America
UTAUT	Unified Theory of Acceptance and Use of Technology
WAN	Wide Area Network

CHAPTER 1: INTRODUCTION TO THE STUDY

1.1 Background to the Study

Governments around the world are introducing e-government and are enabling the delivery of information and services using information and communication technologies (ICTs) in the bid to reduce costs and increase effectiveness and competence in the public sector. More often than not, working with inadequate resources to accomplish smooth transition from manual to automated systems has made e-government systems adoption, implementation and assimilation a very complex and difficult undertaking. To ensure effective and successful introduction of e-government systems, governments must not only be resourceful, it is necessary for issues that affect the introduction of e-government systems to be well understood in order to achieve the objective.

High-income nations are in the top ranking of the 2014 world e-government leaders as in previous years. Among the top five countries in the 2014 United Nations e-government survey, are Republic of Korea, ranked the highest with a score of (0.9462), while the others are Australia (0.9103), Singapore (0.9076), France (0.8938) and Netherlands (0.8897) (United Nations 2014:15).

Several developing countries have also taken up the challenges of exploiting the potential of the internet to disseminate information and be accessed for the benefit of their citizens. This is especially so in Asian countries (Holliday & Yep, 2005; Hossain et al., 2011) and to a lesser extent in African countries (Bwalya, 2011; Nkwe, 2012). However, the developing countries are facing a number of challenges and are lagging behind in e-government rankings.

Botswana is not an exception on the itinerary of introducing e-government. For almost a decade now since 2004, the Botswana government has been planning to deploy e-government. In that regard, Botswana has put in place the essential platform for the development of an excellent e-government programme guided by the national e-government strategy. The strategy is premised on the fact that government ministries and

directorates understand the value of e-government and are eager to deliver high quality public services online. Moreover, the government has implemented much of the technical infrastructure to support e-government with more being added every day (Botswana's National e-Government Strategy 2011-2016, 2011). In the same vein, it has been asserted that the citizens have become more knowledgeable about the internet and are experiencing good electronic services from the private sector such as banks (Botswana's National e-Government Strategy 2011-2016, 2011). Consequent upon this, it can be argued that the government, through the national strategy, has set a momentum for e-government, thus actively working to accelerate the online delivery of information and services to its citizens. In order for Botswana to effectively implement e-government there is a need to investigate factors that will enable or hinder her efforts. Equipped with that knowledge, the country will be in a position to take advantage of and nurture enablers, as for drawbacks she will counter fight them. Investigating factors that will enable or hinder successful e-government implementation will help Botswana climb up higher to be in the e-government top-ranking index as other countries.

Literature is replete with theories that explain the adoption and assimilation of technologies in many organisations, more especially the private sector. However, as Hossain et al. (2011a:23) ably contend, although lessons can be learnt of how other organisations have assimilated prior technologies, extending this to governments could be more challenging than in the private sector "because of the different natures and dynamics of these entities". It is in this context therefore, that this study sought to evaluate factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana using the structuration theory; based on the assessment of the implementation of the Ministry of Trade and Industry Management Information System (MTIMIS), which is part of the Botswana government's e-government initiative and roll out. The assessment was done using assumptions derived from the E-Government Systems Assimilation Framework (EGAF). The assessment examined the meta-structures domination, signification and legitimisation. This was done to ascertain the factors that enable or hinder the assimilation of MTIMIS at the MTI in the context of

e-government adoption and assimilation requirements so as to suggest recommendations for successful e-government uptake.

The Botswana government has invested heavily in e-government initiatives since its adoption in 2004. From literature reviewed, no empirical research has been conducted on e-government systems assimilation in Botswana particularly using the structuration theory. Several studies have been conducted regarding the progress of e-government adoption and implementation in Botswana (Moloi & Mutula, 2007; Nkwe, 2012; Moatshe, 2014). However, there is a lack of empirical studies regarding the current stage of e-government systems assimilation in Botswana. In that respect, this study fills the vacuum of scarce literature that exists in this specific area of study. This study could provide information to the Botswana government for future planning purposes and to enhance the assimilation of e-government systems in Botswana. The knowledge acquired from Botswana's experience in the assimilation of e-government systems could also be used by other nations which aspire to go on board with similar initiatives. Similarly, this study is important to the government officials, IT experts, drivers, and public servants for acquiring hardware and software that could enhance the effectiveness and efficiency of e-government service deliveries that will indirectly drive the uptake of e-government systems among concerned stakeholders. The study will also serve as a scholarly contribution and reference for upcoming researchers who are interested in e-government investigation, not only in Botswana but also beyond. Conducting research in this field has therefore added to the existing inadequate knowledge of e-government.

1.1.1 Contextual Setting

This study follows a case study approach. One ministry was selected for the study. This is the Ministry of Trade and Industry in Botswana. The case study ministry was selected following a number of reasons. Firstly, this Ministry was selected because the ministry has boarded on a computerisation venture and has fully implemented the Ministry of Trade and Industry Management Information System (MTIMIS). This is by way of

replacing the existing manual systems with a new, integrated management information system. Finally yet vitally, this ministry is one of the ministries that have a government of Botswana's ministry website, which is a step towards the deployment of the e-government initiative in Botswana. There is immobile content with links for other websites on the website. There are no online services but downloadable documents, for instance forms. However, there are neither e-mail services nor support for online transactions. Forms are downloaded online and submitted manually.

The Ministry of Trade and Industry (MTI), was established in September 2002, following a rationalisation of portfolio responsibilities and functions of all ministries and departments. The ministry has seven departments, namely: Cooperative Development, Corporate Services, Economic Diversification Drive (EDD), Industrial Affairs, International Trade, Registrar of Companies and Intellectual Property as well as Trade and Consumer Affairs.

The main mandate of the Ministry is to attract investment to the country and diversify the economy. In order to eliminate the delays experienced and improve service to clients, the Ministry's computerisation is ongoing. The computerisation of the ministry is thus a move towards the implementation of e-government systems by the ministry. The computerisation drive was meant to enable the ministry to meet the strategic needs of the Ministry vis-à-vis:

- Coordination and enhancing communication within and between departments and stakeholders of the Ministry;
- Easy communication with regional sites;
- Provision of an efficient and reliable IT service to the Ministry;
- Aligning Information Technology (IT) services in order to support the national ICT vision's goals and objectives;
- Improving data collection and monitoring facilities;
- Enhancing report writing facilities;
- Enhancing support for research projects; and

- Online retrieval and analysis of data to reveal business trends and statistics not directly visible in the data directly retrieved from a data warehouse.

The objective of the computerisation at MTI is to implement an appropriate IT solution that will enable the ministry to support its core business functions. This is by way of replacing the existing manual systems with a new, integrated Management Information System (MTIMIS). The following core functional modules will be computerized:

- Trade Licensing;
- Policies and Programme Coordination;
- Industrial Support Services;
- Registration, investigation and resolution of consumer complaints;
- Inspection and Compliance Checking;
- Research and Monitoring Projects;
- Issuing Rebate Certificates;
- Issuing Import Permits;
- Document Management System; and
- Work Flow Management and Finance and Accounting Integration.

During the MTIMIS pilot stage, MTI clients could download forms and make applications for trade licenses; industrial licenses; liquor licenses; import permits; rebate certificates; EDD certificate and registration of consumer complaints. The forms were then submitted manually to MTI offices and processed using MTIMIS. Through this system, the organisation is looking forward to allowing citizens and businesses to apply online without any paperwork. It is this system that the study examined to gain insight into the assimilation of e-government systems at MTI. The system has passed the piloting stage. In June 2014 it was fully implemented, there is no opportunity for turning back to manual systems. However, no online transactions are being carried out; the ministry is withholding online transactions as a precaution against cybercrimes. In Botswana, laws that qualify and support online transactions are fresh; they have been recently passed. Such laws include Electronic Communications and Transactions Act along with Electronic Records (Evidence) Act; these laws were passed in 2014. As such MTI

personnel and leadership are not satisfactorily familiar with them. Moreover, law enforcers; police force, are also not acquainted with them. The ministry is not familiar with cases that include computer generated crimes. It is on this basis that MTI is withholding online transactions as a precaution. Figure 1-1 shows the MTIMIS screen shot for import permit application. Figure 1-2 shows a screen shot for rebate certificate for donated goods form.

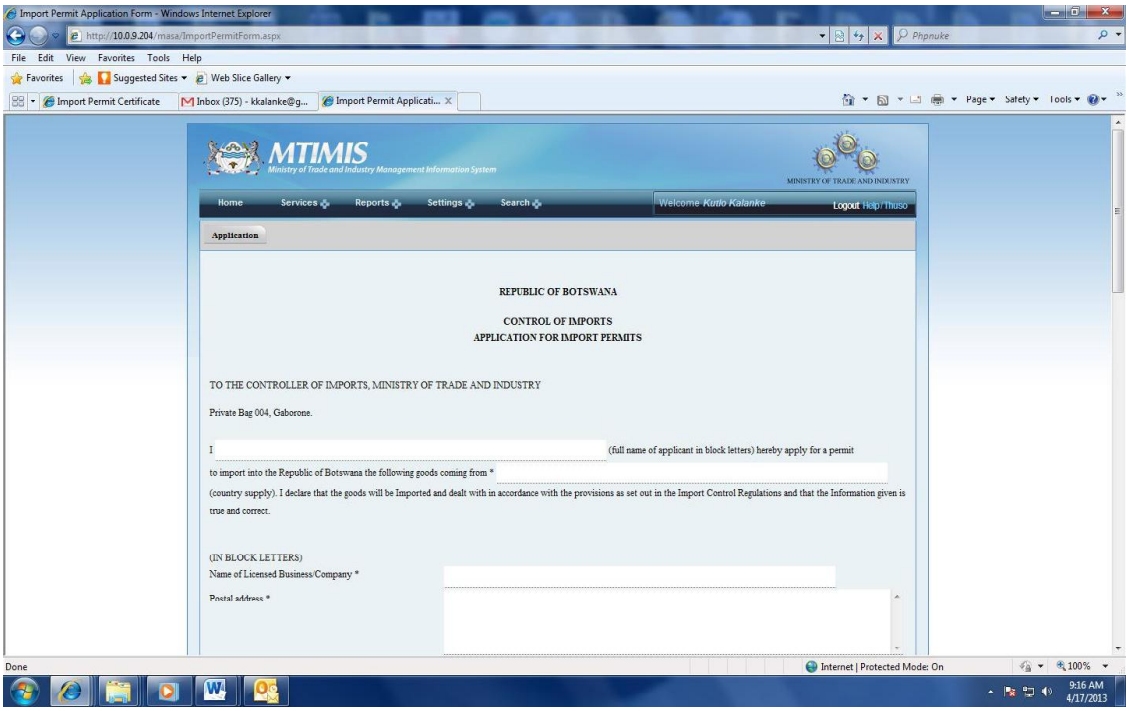

Figure 1-1: MTIMIS screen shot for import permit application [Field Data, 2013]

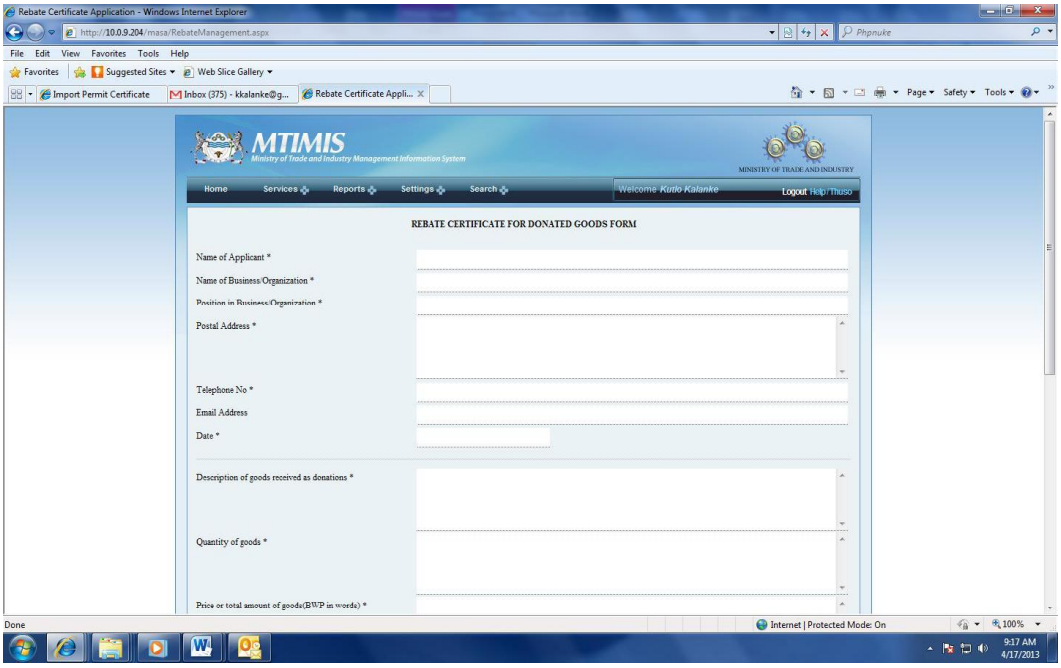

Figure 1-2: Screen shot for rebate certificate for donated goods form [Field Data, 2013]

Figure 1-3: Screen shot for import permit for bread products

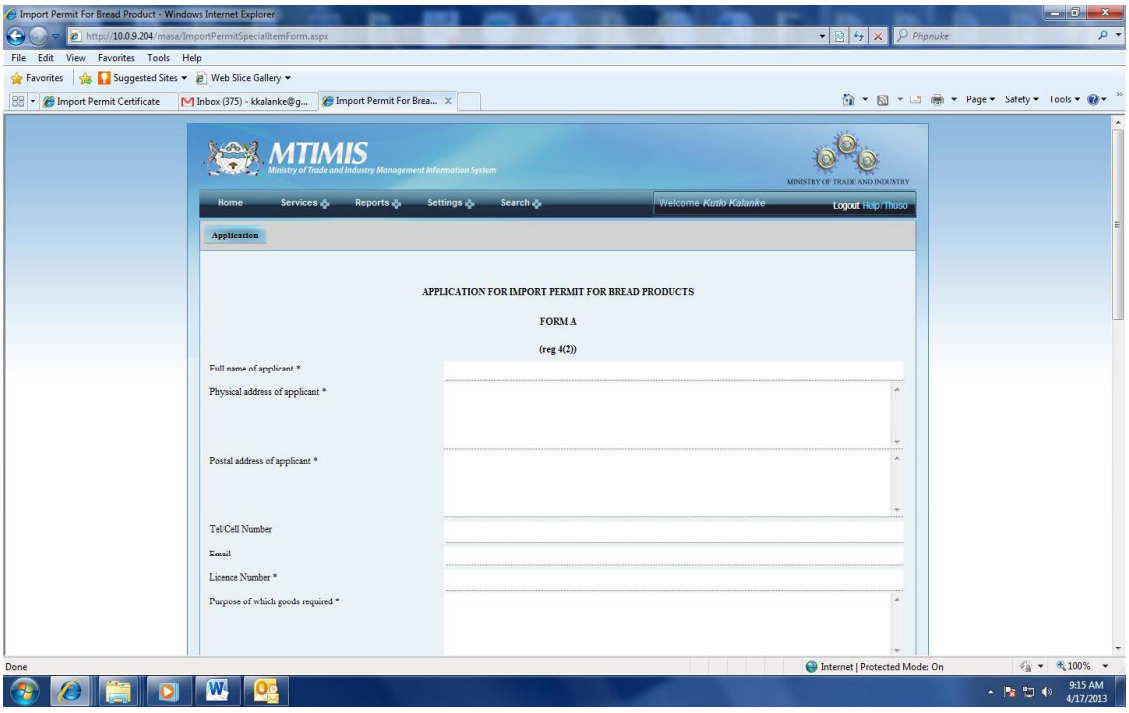

Figure 1-3: MTIMIS screen shot for import permit for bread products [Field Data, 2013]

1.1.2 E-Government in Botswana

Muir and Oppenheim (2002) define e-government as the delivery of government information and services through the use of information and communication technologies such as the internet or other digital means. On the other hand, Kumar et al. (2007) defined it as the delivery of improved services to businesses, citizens and other societal members through drastically changed management of information by government. The government of Botswana has over the years embarked on e-government implementation initiatives that started with undertaking e-government readiness assessments in 2004, enactment of the National ICT Policy (Maitlamo) in 2007 and the approval of the e-government strategy in 2012 (Moatshe, 2014; Government of Botswana, 2007). The National ICT Policy provided a policy framework for entrenching e-government services while the e-government strategy outlines steps to be undertaken in the years to come when implementing e-government services.

1.2 Statement of the Research Problem

This study investigated factors that determined the assimilation of e-government systems at the Ministry of Trade and Industry (MTI) in Botswana. MTI implemented MTIMIS as part of the e-government agenda. A lot of research has been done on the multitudes of benefits of the use of information and communication technologies for businesses, citizens and governments, the impact of which improved service delivery, reduced corruption, increased national competitiveness and promoted citizen participation in the democratic process (Cho & Choi, 2004; Moynihan, 2004; West, 2004; Von Haldenwang, 2004). However, there has been little research and empirical studies on exploring factors that determined the assimilation of e-government systems in developing countries, hence this study.

Research conducted by Nkwe (2012) confirms that Botswana faces a number of challenges in her implementation of e-government initiatives. This is an indication that there are hurdles in adopting and assimilating e-government systems in Botswana. However, to the best of the researchers' knowledge, there is limited empirical research

reported on the evaluation of e-government systems assimilation, particularly using the structuration theory. Therefore, it is not clear which factors or challenges affect the assimilation of e-government systems in the Ministry of Trade and Industry (MTI) in Botswana. This study sought to address this deficit in the historical documentation of e-government systems assimilation in MTI, Botswana. Therefore, research during this study examined the factors affecting the assimilation of e-government systems at MTI. To achieve that, the EGAF framework was used to map and investigate several factors. Although these prominent factors are well analyzed in the literature on e-government, there is a need to understand and evaluate them in the context of MTI, Botswana. This will enhance the quality of the evaluation process.

As e-government implementation takes root in Botswana, there is a need to understand and deal with the challenges of the assimilation of e-government systems. Unfortunately, none of the contemporary literature studies the evaluation of assimilation of e-government systems in Botswana hence there is a dearth of literature in this area. For that reason, this study sought to evaluate factors that affect the assimilation of an e-government system at the Ministry of Trade and Industry in Botswana.

1.3 Objectives of the Study

This study sought to evaluate factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana in order to understand the factors that affected the assimilation of e-government systems. The specific objectives of the study are to:

1. Examine factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana.
2. Identify factors that enable and inhibit e-government assimilation at MTI.
3. Determine the role of e-government assimilation factors at MTI.

4. Establish how the drivers of e-government are dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana.
5. Suggest possible solutions in dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana.

1.4 Research Questions

The following are the research questions that guided the study and they were directly derived from the study objectives:

1. What are the factors affecting the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana?
2. What are the factors that enable and inhibit e-government assimilation at MTI?
3. What is the role of the factors that drive e-government assimilation at MTI?
4. How are the drivers of e-government dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana?
5. What are the possible solutions in dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana?

1.5 Scope and Limitations of the Study

The samples investigated from this study were from Ministry of Trade and Industry (MTI); hence a case study. As such, conclusions drawn from this study might not relate to other departments in Botswana other than MTI. This study primarily focused on determining factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana. The research focused on all e-government domains: government-to-government (G2G), government-to-business (G2B) and the government-to-citizen (G2C) domains.

1.6 Significance of the Study

This study will be of assistance to the government officials, IT experts, e-government

drivers and public servants in Botswana. Government officials will learn the views of officers on the ground and have the opportunity to know what the public expect and their preparedness in regard to e-government uptake. E-government drivers will gain insight to help them draw relevant strategies, policies and initiatives for the uptake of e-government in Botswana. They will be aware of enabling and inhibiting factors and as such come up with solutions for e-government implementation obstacles. IT experts will discover IT challenges and learn what to expect as the country embarks on e-government implementation. The findings of this study revealed factors that affect the assimilation of e-government systems in Botswana. The factors that affect the assimilation of e-government systems in Botswana were investigated and recommendations are provided to help the concerned stakeholders to uptake e-government systems to improve efficiency in the public service through the use of ICTs.

This study will benefit future researchers as their guide. Furthermore, only a few researchers have explored and reflected on factors that can affect e-government assimilation using well founded theoretical models or frameworks. From the literature reviewed, no empirical research has been conducted on e-government systems assimilation in Botswana using the structuration theory. In that regard, this study fills the gap that exists in the literature in this specific area of study. The study also serves as a scholarly contribution and reference for upcoming researchers who are interested in e-government investigation, not only in Botswana but also beyond. Conducting research in this field has therefore added to the existing inadequate knowledge of e-government. This may also open new avenues for further research on e-government.

1.7 Assumptions of the Study

Based on the researcher's observation and literature review, three assumptions were made regarding this study. The first assumption of this study is that the introduction of a new technology or innovation; in this case e-government system, have a changing impact on an organization and work processes. With the introduction of technology, changes are

anticipated which organisations need to embrace to enable transformation in the way government operates to deliver results for Botswana and streamline citizen-to-government transformations. Secondly, the effect by three categories of factors of organizational meta-structures and e-government system assimilation as identified by the E-Government Systems Assimilation Framework (EGAF) is moderated by organizational absorptive capacity, such that assimilation is made probable by those factors that have stronger organizational absorptive capacity. Adoption and assimilation of e-government systems is impacted and influenced by different factors that need to be considered and treated carefully to ensure smooth assimilation into the organisation. Lastly, the theory or model used to guide this study has the capability to help unearth factors that affect the assimilation of the e-government system at MTI but other factors outside the scope of the model may emerge from the study findings. E-Government assimilation is important undertakings which will help the government achieve its e-government goals and objectives.

1.8 Definition of Key Terms and Concepts

The fields of e-government and structuration theory are full of terminology, which may be unfamiliar to the layperson. In addition, many of the terms and definitions vary widely depending on the nature of the source and the period in which they were compiled. The following is a list of the terminology as they are used in this dissertation.

Assimilation: is defined by Cho and Kim (2001-2002:133) as "the process spanning from an organisation's first awareness of an innovation to its potential acquisition and widespread deployment. The process consists of awareness, interest, evaluation, trial, commitment, and finally, deployment of the new technology." Then again, it is the extent to which the use of technology diffuses across the organisational projects or work processes and becomes routinized in the activities of those processes (Purvis et al., 2001:121). Assimilation refers to the integration of technical systems into everyday work processes.

E-government: a way for governments to use the most innovative information and communication technologies, particularly web-based Internet applications, to provide citizens and businesses with more convenient access to government information and services, to improve the quality of the services and to provide greater opportunities to participate in democratic institutions and processes (Fang, 2002:1). In this setting e-government means the delivery of information and services by government over the internet using electronic devices.

E-government systems assimilation: the extent to which an organisation uses e-government systems to facilitate business strategies and activities (Hossain et al., 2011a:577). In this reading, e-government systems assimilation refers to the integration of e-government systems into everyday work processes of government administration such that they become part of it.

Information Communication Technologies (ICTs): ICT encompasses all digital computing and communication. Aside from computers ranging from servers to palm or handheld devices, ICTs include mobile (cellular) telephones and digital television (ed. Bell & Loader, 2004:110). This refers to all technological devices and systems that are used to deliver information and conduct everyday processes in the organization.

Structure: the medium and outcome of the conduct it recursively organizes; the structural properties of social systems do not exist outside of action but are chronically implicated in its production and reproduction (Giddens, 1984:374). In this setting, structure is a dialectical process in which what people practice is also what they create.

Structures: "rules and resources, organized as properties of social systems" that exist only as structural properties (Giddens, 1984:25). Kuper and Kuper (1996:804) assert that social structures have no real existence, except in the minds of actors who give them meaning. This means that structural properties are conceived as having validity only when they are experienced by actors. Structures therefore are what actors say they are.

Structures of Domination: focuses on the production of (and exercise of) power, originating from the control of resources. According to Rose (2001: 220), "the facility to allocate resources is enacted in the wielding of power, and produces and reproduces social structures of domination". For the purpose of this study, the term is used to imply the distribution of resources.

Structures of Legitimation: "the final structure is that of legitimation, emerging from the inherently normative aspect of action, and the relevant modality here is the norms of a society or community (Craib, 1992:48). Structures of Legitimation convey communication of power relations, arrangements of moral rules or values.

Structures of Signification: the structure of signification is produced by and enables people to communicate with each other" (Craib, 1992:48). This signifies communication of meaning in interactions, hence systems of semantic rules.

Structuration: Conditions governing the continuity or transformation of structures, and therefore the reproduction of systems (Giddens, 1979:66). Therefore, in this study as asserted by Kuper and Kuper (1996), structuring practices are always partly rooted in people's encounters which are mediated and affected by resources that already have social and cultural significance.

Structuration Theory: Structuration theory posits that the structure of social systems and human actions are mutually dependent and recursively related in which structure is constituted by human actors, and yet at the same time structure serves as the medium of human interaction (Sumilo & Hee-Woong, ny:2).

1.9 Outline of the Dissertation

This dissertation is divided into 6 chapters and has an appendix section. The chapters are

outlined as follows:

Chapter 1 Introduction

The first chapter describes the background of the study, background of the Ministry of Trade and Industry, statement of the research problem, research questions, scope and limitations of the study and significance of the study followed by an outline of the of dissertation.

Chapter 2 Review of Related Literature

This chapter presents a comprehensive review of the literature. Specifically the chapter provides an overview of the concepts of e-government adoption and e-government assimilation, the current situation of e-government in the world, benefits and challenges of e-government adoption, theoretical approaches to the study of e-government adoption and e-government assimilation, theoretical approaches to study e-government, theoretical background for the study: and a summary of literature review.

Chapter 3 Research Methodology

Chapter three describes the research methods. These include the research paradigm, research design, study population, sampling, forms of data collection, data analysis and ethical considerations.

Chapter 4 Presentation of Research Findings

Chapter four reports the findings of the study on the assimilation of e-government systems at the Ministry of trade and Industry in Botswana. This chapter explains the response rate, biographical information of the respondents and presents empirical findings of the study.

Chapter 5 Discussion and Interpretation of Results

This chapter presents the discussion and interpretation of the study findings. It is organised logically according to the findings of the study.

Chapter 6

Chapter 6 presents a summary of the findings, conclusions and provides recommendations. Also, the chapter identifies possible areas of further study in the area.

1.10 Summary

Chapter 1 provides the rationale, context and location of the study. It thus describes the background of the Ministry of Trade and Industry in Botswana in the milieu of the e-government strategy. The Chapter outlines the statement of the problem; aim and objectives of the study; research questions; justification of the study; scope and limitations of the study; significance; and assumptions of the study. It also defines the key concepts used such as assimilation, e-government, e-government assimilation and structuration theory. The structure and organisation of the dissertation is also outlined. The next chapter discusses the literature review.

CHAPTER 2: REVIEW OF RELATED LITERATURE

2.1 Introduction

Chapter 1 discussed the background to the study, formulated the problem statement, outlined the objectives of the study and research questions, described the scope and limitations, gave significance of the study, assumptions of the study and defined key terms and described the outline of the dissertation. This chapter describes the literature review. (Bless, Higson-Smith & Ashraf, 2006:183), define literature review as "an integrated summary of all available literature relevant to a particular research question." The objective of the literature review is to place this study in the context of what has already been done, identify the appropriate theory, the research methods and strategies that will be used in the study. Aina (2004) posits that literature review is the guide that assists researchers to accomplish their research tasks in that it enables the researcher to choose an appropriate research topic, prepare an adequate research plan and formulate reliable objectives, research questions and hypotheses.

This chapter reviews the literature in order to provide a clear view of the e-government concept, theories used to study e-government, its benefits and challenges as well as factors that affect its assimilation. Empirical findings from other studies in context are also presented. The literature review focused on the following areas:

- Drivers of e-government
- Overview of the concepts of e-government and e-government assimilation
- Current situation of e-government in the world
- Evidence of the benefits and challenges of e-government adoption;
- Factors affecting e-government assimilation;
- Theoretical approaches to e-government research;
- Theoretical background for the study: structuration theory
- Demonstration of the e-government framework
- Legal framework
- Summary

2.2 Drivers of E-Government

Review of literature has revealed that there are drivers and obstruction forces that stimulate or impede the development of e-government initiatives (Khasawneh-Jalghoum, 2011; Seifert, 2003). Ngulube (2007) reported that the major drivers of e-government have been sketched as technological, organisational and environmental. According to Khasawneh-Jalghoum, (2011) e-government drivers can be classified into eight core categories: political forces, economical forces, socio-cultural forces, technological forces, legislative and regulatory forces, environmental forces, organizational forces and administrative forces. Similarly, Seifert (2003) outlines potential drivers and opportunities of e-government as improved efficiency, new better services, increased citizen participation in government and, an enriched national information infrastructure. These four possible benefits are catalysts of the drive to implement e-government initiatives with the aim of improving service delivery in the public sector.

While e-government is fast becoming of prime importance, there are challenges and barriers that hinder its development (Ndou 2004; Nkwe, 2012). However, the development of e-government initiatives are dependent on a country's development such as its ICT infrastructures.

2.3 Overview of the Concepts of E-government Adoption and E-government Assimilation

Governments around the world have the optimism of networking citizens and businesses to receive a wide range of government information and services electronically via e-government. There are various definitions of e-government. Asogwa (2011:43) defines e-government as "the creation of government website or portal where information and other internal processes about a government are posted. It is the use of ICTs to transform the internal and external operations of government so as to optimize government service delivery". Jin-fu (2009) is of the view that an e-government system provides access to government services expediently over open networks at any time. Botswana's National e-Government Strategy 2011-2016 (2011:9) describes e-government as "the access and

delivery of government information and services using modern day ICT – primarily the internet, computers, landline telephones and mobile devices such as cellular phones, and Personal Digital Assistants (PDA's)." Thus, when designed and implemented effectively, e-government could provide citizens, businesses and visitors with electronic access to a large suite of government services. Gordon (2002) posits that e-government is not only or even primarily about reforming the work processes within and among governmental agencies, but is rather about improving its services to, and collaboration with citizens, businesses and other stakeholders. The National Information and Communications Technology Policy of 2007, also known as Maitlamo, provides Botswana with a roadmap to leverage Information and Communications Technology (ICT) to drive social, economic, cultural and political transformation in the country (Government of Botswana, 2007). The policy thus is national commitment to utilize ICTs in the delivery of public services in order to uplift the prospects of every citizen of Botswana. The e-government Strategy thus implements the ideals of the ICT policy.

The definition of e-government above, therefore, conforms to the observation that the description of e-government should be seen from a broader perspective. Given this context, the definition considered most suitable for the purpose of this research is the World Bank (2011) definition, which views e-government as the use by government agencies of information communication technologies (such as Wide Area Networks (WAN), the Internet, and mobile computing) for the transformation of relations with citizens, businesses, and other arms of government. In order for e-government to be successful, its assimilation has to take place. Assimilation of technology refers to the process within organisations starting from initial awareness of the innovation, to potentially, formal adoption and full-scale deployment (Pudjianto & Hangjung, 2009).

The study of Innovation Assimilation has roots transplanted from the Innovation Diffusion Theory as espoused by Rogers (1995), a multidisciplinary field with contributions from the field of academics, researchers, sociologists, economists, engineering researchers, communication researchers and many more. It is of paramount importance to differentiate between diffusion and assimilation in order to put this study

into context. According to Fichman and Kemerer (1999), diffusion refers to the process whereby an innovation spreads across a population of potential adopters and ends when the population becomes saturated with adoptions, while assimilation is broader and refers to the process within an organization from initial awareness of the innovation, its formal adoption and eventual full scale deployment. Assimilation is used in this study in the same context as defined by Cho and Kim (2001-2002:133) who state: "Assimilation of innovation is the process spanning from an organisation's first awareness of an innovation to its potential acquisition and widespread deployment. The process consists of awareness, interest, evaluation, trial, commitment, and finally, deployment of the new technology." The success of any e-government efforts lies with the extent to which such systems that are deployed are assimilated in organisations. For that reason, this study sought to analyse the assimilation of the e-government system at the MTI in Botswana.

2.4 The Current Situation of E-Government in the World

E-government holds tremendous potential to improve the way that governments deliver public services and enhance broad stakeholder involvement in public service (United Nations, 2014). As observed by Abdalla (2012), public services have focused on enriched delivery of public services through e-government. Governments across the world have understood the potential offered by ICTs to enhance efficiency in public service delivery. For that reason, most African countries are also pursuing e-government applications to attain efficiency in the administration of their governments (Heeks, 2002; Hafkin, 2009; Nkwe, 2012; Nkohkwo & Islam 2013). The African Union (AU) first recognized the concept of e-government in the 1980s through the establishment of the Pan African Development System (PADIS) (Asogwa, 2011). AU recognized the importance of access to government information in solving Africa's development problems. Many countries around the world have implemented e-government and they have experienced mixed fortunes with regard to the assimilation of e-government. According to An (2009) e-records management is fundamental in e-government. Developed countries such as Australia, Canada, the United States and Britain excel in the management of e-records (Kayumbe, 2014). Such countries have enacted e-records management policies,

programmes and systems for efficient management of e-records. On the other hand, developing countries, especially those in Africa, are lagging behind in the area of e-records management due to lack of e-records policies and scarce expertise in the field. In line with Mnjama and Wamukoya (2007) with the speedy production of information and communication technologies electronic records are being generated in many public sectors in Africa which creates many challenges. Mnjama and Wamukoya (2007) further state that many governments have systems and procedures for managing paper based records but it is not the case for electronic records and other digital images. Mnjama and Wamukoya (2007) recommended that laws, policies and procedures that are necessary for implementation of e-records programmes be examined. Consistent with Asogwa (2011), a drawback which characterized e-government readiness in all the African governments was lack of continuity, as they failed to update their websites, high level of poverty, and low level of literacy. These automatically lead to poor provision of government services and underutilisation of ICTs facilities in Africa which might result in the widening of digital divide between the rich and the poor. Mnjama and Wamukoya (2007) advised that African countries re-evaluate their e-records preparedness as they move towards implementing e-government initiatives. Sound e-records management, resources and infrastructures are a necessity to e-government assimilation. Developed countries are already enjoying the benefits of e-government while developing countries are still struggling with implementation and assimilation.

2.4.1 E-government Adoption in Africa

In recent years, there has been growing pressure on government to deliver services in a more efficient accessible manner. These applications have been referred to as e-government. Safeena and Kammani (2013) state that e-government is considered as a tool for easy administration of government activities. This brings about a good number of online services.

To capitalise on the benefits of e-government, some African countries have embarked on the adoption of e-government. Kitaw (2006) observed that the adoption of e-Government in Africa was taking place at a very fast pace. This is in agreement with the United

Nations, 2014 rankings which has shown growth in most African countries readiness for e-government. The United Nations rankings are illustrated in Table 2-2.

Table 2-2: Top 20 countries in e-government readiness rankings in Africa [United Nations, 2014: 22]

Country	Level of Income	EGDI	2014 Rank	2012 Rank	Change in Rank
		High EGDI			
Tunisia	Upper Middle	0.5390	75	103	↑ 28
Mauritius	Upper Middle	0.5338	76	93	↑ 17
Egypt	Lower Middle	0.5129	80	107	↑ 27
Seychelles	Upper Middle	0.5113	81	84	↑ 3
Morocco	Lower Middle	0.5060	82	120	↑ 38
		Middle EGDI			
South Africa	Upper Middle	0.4869	93	101	↑ 8
Botswana	Upper Middle	0.4198	112	121	↑ 9
Namibia	Upper Middle	0.3880	117	123	↑ 6
Kenya	Low	0.3805	119	119	-
Libya	Upper Middle	0.3753	121	191	↑ 70
Ghana	Lower Middle	0.3735	123	145	↑ 22
Rwanda	Low	0.3589	125	140	↑ 15
Zimbabwe	Low	0.3585	126	133	↑ 7
Cape Verde	Lower Middle	0.3551	127	118	↓ 9
Gabon	Upper Middle	0.3294	131	129	↓ 2
Algeria	Upper Middle	0.3106	136	132	↓ 4
Swaziland	Lower Middle	0.3056	138	144	↑ 6
Angola	Upper Middle	0.2970	140	142	↑ 2
Nigeria	Lower Middle	0.2929	141	162	↑ 21
Cameroon	Lower Middle	0.2782	144	147	↑ 3
Regional Average		0.2661			
World Average		0.4712			

Kitaw (2006) reports that the government of Gambia has vigorously promoted an e-government initiative that stores government information and transactions, and includes the integrated Financial Management Information System (IFMIS), the Public Service Commission Website and the Official Government Web Portal (OGWP). These online services benefit citizens and government, as well as increase government accountability, by making its operations more transparent and reducing opportunities for corruption. The goals of its initiative include better and more efficient delivery of government

information and services to all citizens, increased productivity among public servants, the encouragement of citizens' participation in government, and the empowerment of all Gambians in line with the development priorities outlined in Gambia's Vision 2020 development plan (Islam & Okuda, 2005).

Similarly, Bwalya (2009) points out that the Gambia e-government has been implemented by the Gambia government in collaboration with the immigration authority as part of its agenda to provide services efficiently and therefore contribute a substantial amount of tax returns to the Gambia. The reason for the authority to introduce this computer-based application was specifically to improve immigration service delivery; reduce the time it takes the department to issue Permits and Visas and Clearing of persons at the ports of entry by about 50% ultimately reducing the cost of doing business for the applicants in the country. Gambia's e-government initiative creates a paperless environment, encourages efficient processes, and increases the public's convenience in contacting government agencies. This system enables citizens to purchase goods and services, obtain and distribute information, print forms, and submit bids and proposals on the internet (Carter & Bélanger, 2005).

Together with Jordan, Egypt and Morocco were among the pioneers in establishing e-government services in the Arab region (Dammak & Boujemi, n.d). Their e-government services are modelled after Jordan, which was the first Arab country to establish an e-government strategy, called REACH. REACH was an e-government programme for Jordan and its aim was to maximize the abilities of the Kingdom of Jordan in various fronts. Its objective was to propel Jordan to economic and social development by providing access to e-government services and information to everyone in the kingdom irrespective of location, economic status, computer skills or education (Dammak & Boujemi, n.d).

In Morocco, UNDESA (2012) reports that an e-government committee was created by the Prime Minister in 2003. Its main objective was to set up a strategic plan which

encompassed four main sectors: e-finance, e-justice, "e-foncier" (land administration and management), and "e-Wilaya" (e-municipality).

In Tanzania, the e-government strategy aimed to develop a national Wide Area Network (WAN), using the military hub to link all Ministries, Departments and Agencies (MDAs), regional offices, municipal offices and remote areas and later on to have a central server whereby users could share applications, data and information (IRMT, 2007). The draft strategy document provided a situational analysis of strengths, weaknesses, opportunities and threats. The weaknesses identified included not only a lack of a supportive legal framework such as the protection of intellectual property rights, database protection, informational privacy and electronic transactions, and inadequate coordination of ICT development in the country, but also an inadequate standards and guidelines for ICT in general, including training, career development, information and equipment.

In 2001, after an extensive two-year consultative process with key stakeholders, the Department of Public Service and Administration (DPSA) outlined a ten-year plan for South Africa's e-government rollout. The plan claims to have drawn on lessons from around the world and hopes to avoid the mistakes and improve on the successes of other governments (DPSA, 2001). Trusler (2003) believes that the post-apartheid South Africa government using a customer-orientation philosophy coined the term Batho Pele, Sesotho phrase which means 'people first'. This philosophy requires a transformation in delivery modality that is just, transparent, economic, realistic, reasonable, and transformative. DPSA (2007:11) states that "Batho Pele is supported by four pillars, namely:

- Re-engineering and improving the back-office operations of government;
- Re-engineering and improving the front-office operations of government;
- Internal communication; and
- External communication."

The e-government Batho Pele Gateway Project, launched in 2004, aimed at creating a single online government portal that would provide South Africans with access to government information and services anytime and anywhere.

The Batho Pele initiative presents the blueprint for the selection, planning and management of e-government projects. The Department of Public Service and Administration (DPSA) (2001) defines the parameters for the value or collective benefits the government's IT-based strategy must deliver, namely: (1) improved service delivery – achieving the Batho Pele principles by delivering information and services that are of a higher standard and are equally accessible to all. (2) increased productivity – better quantity and quality of traditional results and; (3) cost effectiveness – reduction in time and complexity of tasks. The vision also seeks to move South Africa beyond being an ICT consumer to become a major force in the production and development of these services. The e-government strategy is part of a broader programme to modernise government, and ICT is seen as a key tool to facilitate this process.

The adoption of e-government by African countries such as South Africa, Gambia, Morocco, Egypt and Tanzania signaled attempts to use ICTs to deliver improved public services in the respective countries. One of the main reasons for deploying e-government by developed countries has been their endeavor to reform government and improve government – citizen interaction, including realizing efficiency in public service delivery. It is notable that African countries referred to in this section also deployed e-government for similar purposes (United Nations, 2014).

2.4.2 E-Government Assimilation in Developed Countries

The United States government recognized the ability of e-government to meet business and citizen expectation with government, and consequently developed and implemented an e-government strategy to significantly improve service and reduce operating costs (Forman, 2002). The successful deployment of e-government systems will enable government business to be easier, and it will provide privacy and security for it.

According to Fraser (2009), the government of Canada just like other countries realised the need to deploy ICTs to deliver public services and demonstrated its commitment by

coming up with a proposal to "make Canada a centre of excellence for electronic commerce and encourage its use throughout the economy, re-introduce legislation to protect personal and business information in the digital world and to recognize electronic signatures," and to "become a model user of information technology and the Internet" (Fraser, 2009:2). Fraser (2009), further points out that the targets set by the government of Canada for its e-government programme were expected to reduce costs, improve dissemination of government information and service retrieval, make information and services more accessible (anytime, anywhere), in the manner users demanded and in a secure fashion. The reality of the situation over time showed that although the government of Canada made some strides in making e-government a success, it was not able to achieve the full potential for online government in terms of meeting the criteria of cost reduction, accessibility, retrieval, and security.

The United States (US) government developed an e-government strategy in order to provide guidance for public agencies who implemented e-government projects (Office of Management and Budget, 2002). The strategy has initiatives whose target was to improve the quality of services to citizens, businesses, governments and government employees, including the effectiveness and efficiency of the federal government. The vision of the president of the United States of America (USA) was to reform government, e-government assimilation was seen as a vehicle to drive the reforms (Office of Management and Budget, 2002). The vision was guided by three principles being:

•Citizen-centered, not bureaucracy-centered;

•Results-oriented; and

•Market-based, actively promoting innovation.

Through a successful e-government programme, the presidency was convinced that e-government was critical in meeting citizen and business expectations for interaction with government. It would also allow public sector agencies to reduce costs, significantly improve service, and reduce operating costs. The effective deployment of e-government initiatives would make conducting business with government easier, protect privacy and enhance security provided (Office of Management and Budget, 2002). This resulted in high assimilation of e-government in the USA; as asserted by Asogwa (2011), in the

2004 survey report, it was found that in the global ranking, the USA was the world leader followed by Denmark, the UK and Sweden. The presidency commitment led to high assimilation.

2.4.3 E-Government Assimilation in Developing Countries

According to Khanh (n.d), the Vietnam government embarked on providing e-access to citizens for the delivery of public services in order to derive benefits from shifting from the conventional methods of paper work to the digital age. The e-government agenda was encouraged by the efficiencies and effectiveness associated with e-government, being cost and time efficiencies from the supplier's perspectives and the satisfaction of recipients of the quality services. E-government efforts are supported by the Information and Electronic Transactions (ITE) Act Number 43 of 2010. It should be noted that e-government in Vietnam is yet to yield significant results. The United Nations (2010) rankings on e-government in Vietnam show that it is low when compared to other nations in South East Asia. This is illustrated in Table 2-1.

Table 2-1: Vietnam's position in the E-Government Readiness in both Southeast Asia and the world [Khanh, n.d:5-6]

Country		**Global rank**				
		2004	**2005**	**2008**	**2010**	**2012**
1	Singapore	8	7	23	11	10
2	Malaysia	43	42	34	32	40
3	Brunei	63	73	87	68	54
4	Vietnam	112	105	91	90	83
5	Philippines	47	41	66	78	88
6	Thailand	50	50	64	76	92

7	Indonesia	85	86	106	109	97
8	Lao	147	147	156	151	153
9	Cambodia	129	128	139	140	155
10	Myanmar	123	129	144	141	160

Asogwa (2011) surveyed the level of preparedness of selected African governments in using ICTs to enhance the range and quality of services provided to the citizen; and determined the extent of, and continuous improvement efforts of African leaders towards the attainment of connected government. The study established that in Africa, ICTs were underutilised for the provision of efficient government services and as a result, the digital divide gap has been widening between developed regions and Africa. Compared to America and Europe, Oceania and Asia, Africa is behind other regions with regard to e-government rankings (United Nations, 2014). Progress in Africa remains relatively slow and uneven. Tunisia and Mauritius are the two highest-ranked countries in Africa, with Egypt, Seychelles, Morocco and South Africa following closely behind. Figure 2-1 presents rankings of e-government by region.

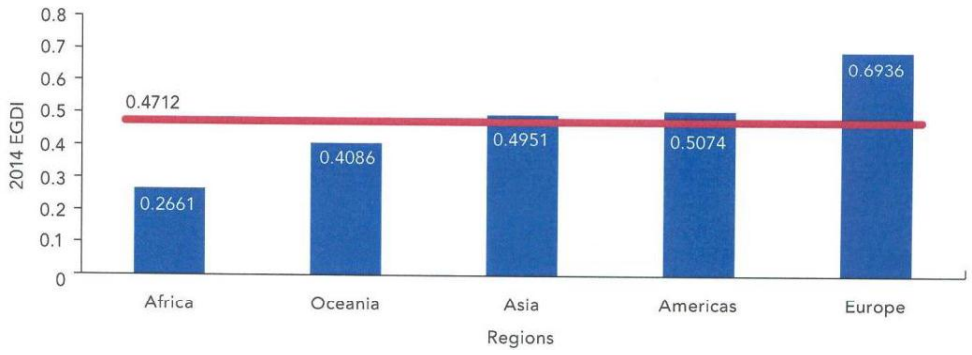

Figure 2-1: 2014 Regional Averages of E-Government Development [United Nations, 2014:20]

The EGDI is a composite measure of three important dimensions of e-government, namely: provision of online services, telecommunication connectivity and human capacity (United Nations, 2014:13). Figure 2-1 illustrates the regional averages as compared to the world median of 0.4712 in 2014. In 2014, Europe (0.6936) continues to lead with the highest regional EGDI, followed by the Americas (0.5074), Asia (0.4951), Oceania (0.4086) and finally Africa (0.2661). Examining previous trends, there has been no change in regional positions since 2003 (United Nations, 2014).

The United Nations (2014) further reports that some countries like Tunisia, Morocco, Sychelles, and Mauritius have made significant improvement in their e-government readiness. These countries are reported to have institutionalised a regulatory environment for promoting competition in the telecommunications sector. In effect, they have made great strides in levelling the playing field for private operators to enter and succeed in the market. For instance, the report indicates that as early as 1999, in Morocco, a national strategy was developed to lay out the country ICT vision which later became the foundation for subsequent plans such as e-Morocco and now Digital Morocco. Botswana is ranked in the upper middle EGDI, just below South Africa. However, despite this growth, there are challenges for strategic e-government development especially in a landlocked country such as Botswana.

To reverse this uneven trend in Africa, the United Nations (2014) reports that countries in the region need to focus on building human capital, including ICT literacy and on bridging infrastructure gaps to provide an enabling environment for e-government development. The United Nations also proposed that visionary strategies and practical implementation plans should follow for effective deployment of sustainable online services.

2.5 Benefits and Challenges of E-Government Adoption

Successful e-government initiatives offer tangible opportunities that include transformation of cumbersome public administration and service delivery processes; empowerment and participation of citizens; increased transparency and accountability

and stimulation of the usage of ICT applications in other development sectors (Kitaw, 2006). Introduction of ICT-based services creates prospects to identify flawed processes and re-engineer them; improve efficiency by launching projects that seek to reduce errors and improve consistency of outcomes by automating standardised tasks; and improve the quality of services offered to citizens. (Kitaw, 2006; Seifert, 2003). Seifert, 2003 further states that "some of the potential opportunities of e-government include new services, increased citizen participation in government, and an enhanced national information infrastructure".

Gulati and Yates (2011) assert that the major concern about the promises of global e-government is that of a technological divide that has emerged between nations thus creating groups of 'information-rich' and 'information-poor' societies. Kitaw (2006) confirms that African countries face numerous challenges in fully adopting and adapting e-government applications and in getting hold of the opportunities offered by ICT applications. These include: the improvement of overall literacy rate, the development of telecommunication infrastructure, the commitment of governments to genuine transformation towards a more transparent and citizen-centered governance as well as the formulation of new regulations and policies. Seifert (2003) affirms that there are challenges that could prevent the realization of the anticipated benefits of e-government. These include: information security and privacy; disparities in computer access; management and funding requirements such as government information technology worker recruitment, retention, and reward systems. Lack of trust on e-government services is another challenge that can be a barrier to e-government take-up by citizens. Heightened fears about inadequate security and privacy safeguards in electronic networks can undermine confidence in applications of e-government that might pose risks, such as through unwarranted access to sensitive personal information or vulnerability to online fraud or identity theft (European Union, 2006:207). Such anxieties can be a major barrier to the take-up of e-government services. This is a drawback because for e-government objectives to be realised, citizens ought to make use of it. This is maintained by Safeena and Kammani (2013) who state that e-government is considered as a tool for easy

administration of government activities and that its success depends on its vast usage and management of its infrastructure.

Bwalya (2012) carried out a study on the implementation of e-government in Zambia and the study revealed that e-government implementation has benefits both for government and businesses. Similarly, Li and Abdalla (2014) undertook a study on the challenges, barriers and prospects of e-government in Sudan and the study revealed similar benefits of e-government. The benefits for government were listed as:

- Improved competitiveness
- More efficient processes and functioning of government
- Higher productivity
- Cost reduction
- More trust in government
- More innovative and competitive economy
- Higher data quality
- Economy of scale when targeting higher volume services
- Increased accountability by government
- Improved quality of decision making due to availability of accurate information and
- Increased capacity of government.

Bwalya (2012) also mentioned the following as the benefits of e-government implementation to businesses:

- Reduction of compliance burden
- More efficient integration with government
- Cost reduction
- Online access to detailed information
- Improved transparency of interaction with government
- Greater flexibility, for example, in the ability to submit returns 24/7

The implementation of e-government has been beneficial for those countries which have fully embraced it. However, the deployment of e-government has faced some challenges (Bwalya, 2012: Nkwe, 2012: Nkohkwo & Islam, 2013: Li & Abdalla, 2014). These challenges were revealed by studies undertaken in Sub Saharan Africa. Abdalla (2012) summarised the challenges of e-government adoption at Figure 2-2. Some of the challenges of e-government are listed below:

a) Inadequate manpower in the area of computing and information technology in the public sector.

b) Resistance to ICTs in public service delivery platforms.

c) Lack of well defined, robust, documented and or comprehensive e-government strategy.

d) Lack of security and privacy of information

e) Lack of consistent electricity supply which makes creating an enabling environment for e-government difficult

f) Shortage of financial resources

g) Illiteracy

h) Costly internet services

i) Low citizen participation

j) Inadequate legislative and policy framework

k) Inadequate ICT infrastructure

l) Lack of change management (Bwalya, 2012: Nkwe, 2012: Nkohkwo & Islam, 2013: Li & Abdalla, 2014).

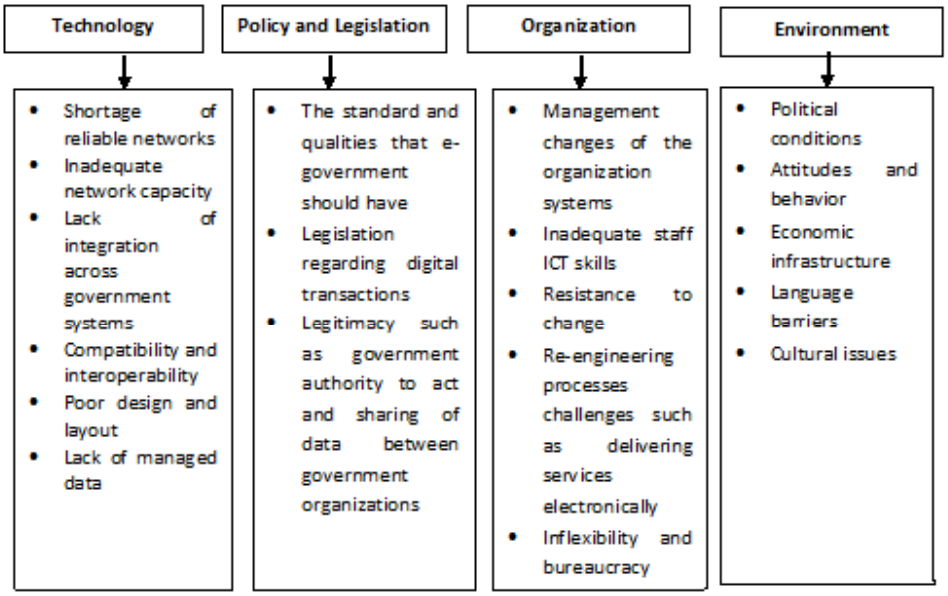

Figure 2-2: E-government Challenges [Abdalla, 2012:43]

2.6 Empirical Studies on Factors affecting E-government Adoption and Assimilation

E-government requires more than technical facilities for developing and operating successful online services. Government organisations encounter many obstacles in developing and providing e-government services because of the complication of technology, deep-rooted organisational customs as well as varied reactions of individuals towards technology (Gant, 2008). This calls for organisations to develop strategic approaches for organizing and assembling tangible resources such as computers, and intangible resources such as employee skill and knowledge as well as organisational processes. These factors can facilitate smooth assimilation or they can hinder it.

Assimilation refers to the process within organisations stretching from initial awareness of the innovation, to potentially, formal adoption and full-scale deployment (Felix, 2011:152 citing Fichman (2000)). Hossain et al. (2011a:23) define e-government systems assimilation as "the extent of organisational use of e-government systems in facilitating business strategies and activities". E-government assimilation is therefore more than

adoption as it makes technology and e-government systems part of government administration. E-government systems assimilation is intended to customize public sector operations into digital operations and make it a routine in organisations to work more with technology. Pudjianto and Hangjung (1999:3) define the terminology of e-government assimilation as "a series of stages from initial evaluation of e-government at the pre-adoption stage (initiation), to its formal adoption, to its full-scale deployment in which e-government becomes an integral part of the operational activities (routinisation)." This entails making e-government systems part of government agencies, as their activities will be embedded in the systems.

With regards to Botswana, Nkwe (2012) states that the government of Botswana faces many challenges in deploying e-government. According to Nkwe (2012), the following factors are barriers to e-government implementation in Botswana: low level of internet penetration, telecommunications infrastructure constraints; lack of institutional framework supporting e-government; lack of allocated budget for e-government deployment; digital divide; privacy and security concerns; limited IT skills and training; culture and lack of citizen awareness and participation. These factors can be applied to organisational contexts. As observed by Bwalya and Healy (2010), countries in the Southern Africa Development Community (SADC), a region where Botswana is, have lately come up with e-government initiatives. They assert that the implementation of such projects either fail or thrive. Bwalya and Healy (2010) recommend that a properly tailored strategy be put in place to facilitate e-government implementation and help overcome the challenges that come along with the adoption of e-government systems such as citizen trust. Other studies investigate the status of e-government implementation in Botswana such as Bwalya, Plessis, and Rensleigh (2011); who examine different initiatives that have been employed to promote e-government development and deployment in Botswana, Mozambique and Malawi showing the impact of such initiatives on overall e-government agenda.

2.6.1 E-Government and Electronic Records Management in Botswana

According to Moloi and Mutula (2007: 290) E-records management and e-governance are closely and inextricably intertwined. E-government and sound e-records management collectively enhance transparency, accountability and good governance. The infrastructure for managing official electronic records in Botswana is currently limited to computer systems. Keakopa et al. (2009: 22) state: "An electronic record is a record that is created, generated, sent, communicated, received, or stored by electronic means and that requires some form of computer technology to access and use." Electronic records need hardware and software to access them. In keeping with Keakopa (2008: 13-14) "The use of computers has enabled organizations to create databases that now handle huge amounts of data on-line, which is made accessible anywhere and anytime. This has raised concerns that if the information is not properly managed, it may be made available too easily, resulting in lack of protection for the citizen's individual rights." As stated by Keakopa et al. (2009), despite the fact that information technologies have brought many benefits to organizations, they have also introduced a number of challenges and difficulties, including technological obsolescence, technological dependence, increased risk of lost data and records, risks to reliability and authenticity, loss of security and privacy, increased costs, decentralization of information and the increased need for information technology specialists.

Research in e-government deployment suggests that research, planning, monitoring and evaluation are important factors in its uptake (Muhammad, 2013; OECD, 2007). Moloi and Mutula (2007) undertook a study to investigate the management of e-records in an e-government setting in Botswana. A two-stage research design strategy involving a case study of government ministries and a survey of the respondents within government ministries was used. The population of study consisted of: Director, Botswana National Archives and Records Services (BNARS), representative of the Director, Department of Information Technology (DIT), records staff, IT specialists, and action officers. The findings showed that whereas e-records management in developed countries is receiving great attention, the same cannot be said of Botswana. E-records management in government in Botswana is at its infancy and fairly new. Botswana lacks an e-records management policy, which makes it difficult to identify, maintain and preserve e-records.

Key recommendations include the need for Botswana government to consider benchmarking against best practices of developed countries with regard to the systematic management of e-records. Moatshe (2014) undertook a study to examine stakeholder factors that can facilitate or impede the implementation of e-government in the context of Botswana. The author used a mixed method research which combines the use of qualitative and quantitative paradigms. The case study of Botswana was used to conduct this research and the triangulated data collection methods and processes. The results of the study revealed lack of citizens' engagement and involvement, low readiness levels, unrealistic targeting, financial constraints, access issues and lack of necessary legislation as impeding factors. Further empirical research also revealed lack of awareness campaign. The interviews confirmed that citizens have not been consulted on e-government, they are not informed and involved. Government employees are reported as classifying e-government project as an IT project which is there to increase their work load. The levels of ICT and computer utilisation within government and generally across the population is till very low. Lack of strategy in place to bring government employees on board and a need for a tangible change management. Even though the Botswana government has made tremendous progress for both national and international connectivity, significant challenges are still revealed around the last mile. Similarly little attention has been paid to e-government systems assimilation.

Mosweu (2012) assessed the usage of the Court Records Management System (CRMS), an electronic system implemented by the Department of Administration of Justice (AOJ) to deliver justice in the Gaborone Magisterial District. Using a research survey and employing questionnaires, interviews and observation to collect data, the study revealed that even though CRMS brought improvement in case file management, the full benefits of CRMS implementation were not realized due to challenges related to the security of case files, records preservation and disposition, records appraisal, training, inadequate bandwidth and shortage of computers and absence of archives and records management standards and guidelines. However, despite the noted challenges, CRMS was generally successful as the findings also revealed that the system archived its intended objectives as successfully captured and managed case files, produced reports, and hence provide

management with information and statistical data and this led to some improvements case management.

2.7 Theoretical Approaches to the study of E-government Adoption and E-Government Assimilation

There are several theoretical approaches that have been used to address issues related to the adoption and implementation of e-government. These approaches have, no doubt, guided decision makers in the management of developing technical infrastructure, advancing management systems, values and strategies. This section of the study will succinctly discuss two of these theoretical approaches. It will also state their limitations. These limitations, however, inform the non-application of these theoretical models to this present study. The two models are Institutional Theory and Unified Theory of Acceptance and Use of Technology (UTAUT).

2.7.1 Institutional Theory

Institutional Theory is a change theory that has historically explained why organisational structures and values endure (Robey & Boudreau, 1999). However, researchers have not come up with a universally acceptable definition of what an institution is. Hence, the word 'institution' has remained contentious. However, several attempts have been made, but no consensus definition has been reached. For instance, Lohnman and Lohnman (2002:160 citing Scott 1995) attempt to define institutions and state that "Institutions consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behavior. Institutions are transported by various carriers—cultures, structures, and routines—and they operate at multiple levels of jurisdiction." In the same string of thought, Zenger, Lazzarini and Poppo (2001:2) define formal institutions as "rules that are readily observable through written documents or rules that are determined and executed through formal position, such as authority or ownership, informal institutions, in turn, as rules based on implicit understandings, being in most part socially derived and therefore not accessible through written documents or necessarily sanctioned through formal position." These two approaches of an institution are related

and each draws support from the other. They both underscore that an institution is a structure. Another element of the approaches is that an institution provides stability, control, or support to social behavior. Björk (2004) asserts that in institutional theory, the concept of 'institutions' does not mean 'organisations'. Björk (2004:1) goes on to state that "institutional theory is not really a coherent system of rules -it is rather a collection of ideas that together form a somewhat consistent, perspective of the mechanisms supporting and restricting social behavior". It is in this realm that institutional theory will be referred to as a collection of ideas that control behaviours of actors in social settings.

For the structures of an institution to be controlled and sustained, there must be rules. To that effect, Scott (2001:117) argues that modern societies have many institutionalised rules, which "provide a framework for the creation and elaboration of formal organisations".

DiMaggio and Powell (1991) argue that institutional theory has numerous roots and has been adopted and applied to many areas of study. For instance, it has been prominent in sociology (Jepperson, 2001) and economics (Hodgson, 2006). In view of the preponderance of the application of the Institutional Theory in the Social Sciences, this study does not consider it an appropriate theoretical approach. Furthermore, institutional theorists are more interested in factors that shape behaviors within institutions. They focus on the role of values in defining institutions and implicitly and sometimes explicitly.

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

Unified Theory of Acceptance and Use of Technology (UTAUT) is a unification and integration of various models of IT acceptance. It is made up of elements of eight well-known models (Theory of Reasoned Action (TRA); Technology Acceptance Model (TAM); Motivational Model (MM); Theory of Planned Behaviour (TPB); the combined TAM-TPB; model of Personal Computer (PC) utilization; Innovation Diffusion Theory (IDT); and Social Cognitive Theory (SCT) (Venkatesh et al., 2003). UTAUT provides improvement to the understanding of user acceptance. The early UTAUT study focused

on large organisations. Venkatesh et al., (2003) tested the unified theoretical model in four different organisational settings for a period of six months and the study showed significant predictions of intention (performance expectancy, effort expectancy, social influence and facilitating conditions), whereas attitude towards using technology, self-efficacy and anxiety were theorized not to be direct determinants of intention. Similarly, Al-Shafi (2009) used it to study the political factors that affect the implementation and adoption of the e-government in a system. This study differs from the present study in one significant way; Al-Shafi (2009) looks at both the external and internal factors that either hinder or promote e-government implementation and adoption. Due to the complexity of the composition of this model, researchers are confronted with a choice among a multitude of models to study e-government.

2.8 Theoretical Framework: Structuration Theory

(Borgatti, 1999) A theoretical framework is a collection of interrelated concepts, like a theory but not necessarily so well worked-out. A theoretical framework guides your research, determining what things you will measure, and what statistical relationships you will look for. In essence, a theoretical framework outlines the types of variables that you will examine in your study. This study used the structuration theory to assess the assimilation of e-government systems at MTI. Theory is defined as "A set of assumptions, propositions, or accepted facts that attempts to provide a plausible or rational explanation of cause-and-effect (causal) relationships among a group of observed phenomenon" (Business Dictionary, 2015). Structuration theory can be used to study structures on how organisations assimilate technology in organisations. This theory of late has been applied and used to explain the assimilation of e-government systems. One notable framework by Hossain et al. (2011a) relevant to this study; the Organisational E-Government Systems Assimilation Framework (EGAF), is discussed in the next section.

The theory of structuration is a social theory of the creation and reproduction of social systems that is based in the analysis of both structure and agents, without giving priority to either. Further, in structuration theory, Gauntlett (2003:93) asserts that Giddens suggests, human agency and social structure are in a relationship with each other, and it is

the repetition of the acts of individual agents which reproduces the structure. This means that there is a social structure - traditions, institutions, moral codes, and established ways of doing things; but it also means that these can be changed when people start to ignore them, replace them, or reproduce them differently. Kuper and Kuper (1996:804) remark that "social structure is produced and reproduced in the practices of people in everyday activities."

According to Giddens (1984), structuration means studying the ways in which social systems are produced and reproduced in social interaction. Giddens (1984) further argues that structuration theory comprises of three main concepts: a) social structure, b) structuration and c) human agents and that social structure consists of rules and resources, recursively implicated in the reproduction of a social system. Giddens (1984:374), states that "Structure as the medium and outcome of the conduct it recursively organizes; the structural properties of social systems do not exist outside of action but are chronically implicated in its production and reproduction." This is supported by Heinze and Hu (2005). In line with the theory of Heinze and Hu (2005), the recursive influence between an organisation's structure and member behavior entails a relationship in which the introduction and implementation of new technology triggers change. Information technology is an integral element of social structures, as it enables some actions, holds back others, and is itself shaped by those same actions over time.

Orlikowski (1992) proposed a structurational model of technology extending the concept of the 'duality of structure' to the 'duality of technology'. The structurational model of technology comprises three components. First human agents refer to technology designers, users, and decision-makers. Technology refers to material artifacts mediating task execution while properties refer to organisational dimensions such as structural arrangements. Orlikowski (1992:405) affirms that "technology is created and changed by human action, yet it is also used by humans to accomplish some action." Technology, then again, is the product of human action as it is both physically constructed by designers and socially constructed by users at a certain time and shapes an organisational context. On the other hand, technology is the medium of human action, containing rules

and resources that both enable and constrain different sorts of use. Orlikowski's (1992) model consists of four phases as depicted in Figure 2-3.

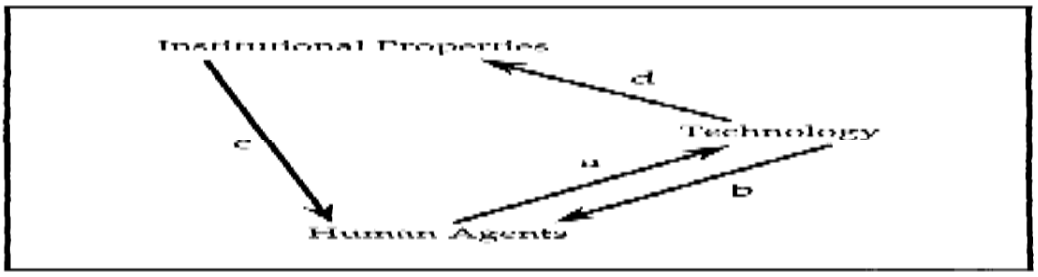

Figure 2-3: Structurational Model of Technology (Orlikowski, 1992:410)

The first phase describes technology as a product of human action (arrow a). As a human artifact, technology comes into existence through creative human action. The second phase considers information technology as a medium for human action (arrow b). Because workers use technology, it mediates their activities. The third part entails that the nature of human action in organisations is shaped by organisational contexts (arrow c). The final stage reflects the influence of interaction with technology on institutional properties (arrow d), either by reinforcing or transforming them.

The structuration theory can be further explained as illustrated in Figure 2-4. In this case, three dimensions inform interaction of human action and organisational properties as mediated by the three modalities of structuration in the first row, signification, domination and legitimation. According to Bryant and Jary (1991:10) "structure as signification involves semantic rules; as domination unequally distributed resources; as legitimation, moral and evaluative rules. In all cases, 'rules and resources' are properties of communities or collectivities rather than of actors." These dimensions interact with other dimensions of human action that is, meaning, power and moral sanctions respectively through the structurational modalities of interpretive scheme, resources and norms.

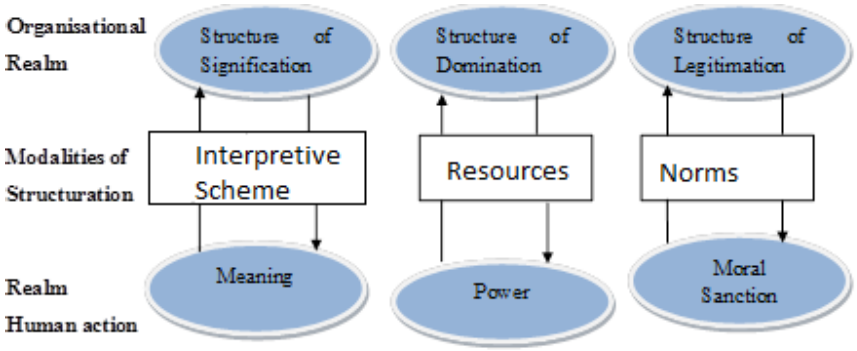

Figure 2-4: Interaction of Human Action and Organisational Properties as Mediated by the Three Modalities of Structuration [Adapted from Hossain et al., 2011a:26]

Structuration theory offers the basis for a conceptual model that relates with organisational and technological issues. It offers a frame for conducting this empirical study. It further offers an overall structure and guidance on key issues of inquiry which border on adoption and implementation of e-government in the Botswana Ministry of trade and Industry.

2.9 E-Government Systems Assimilation Framework (EGAF)

This section describes the E-Government Systems Assimilation Framework (EGAF) adopted from Hossain et al. (2011a) and is illustrated in Figure 2-5. The study by Hossain et al. (2011a), grounded on structuration theory proposes a framework for e-government systems assimilation through the structuration of its organisational factors. It contains three organisational meta-structures along with the factors through which they operate to inform e-government systems assimilation behavior.

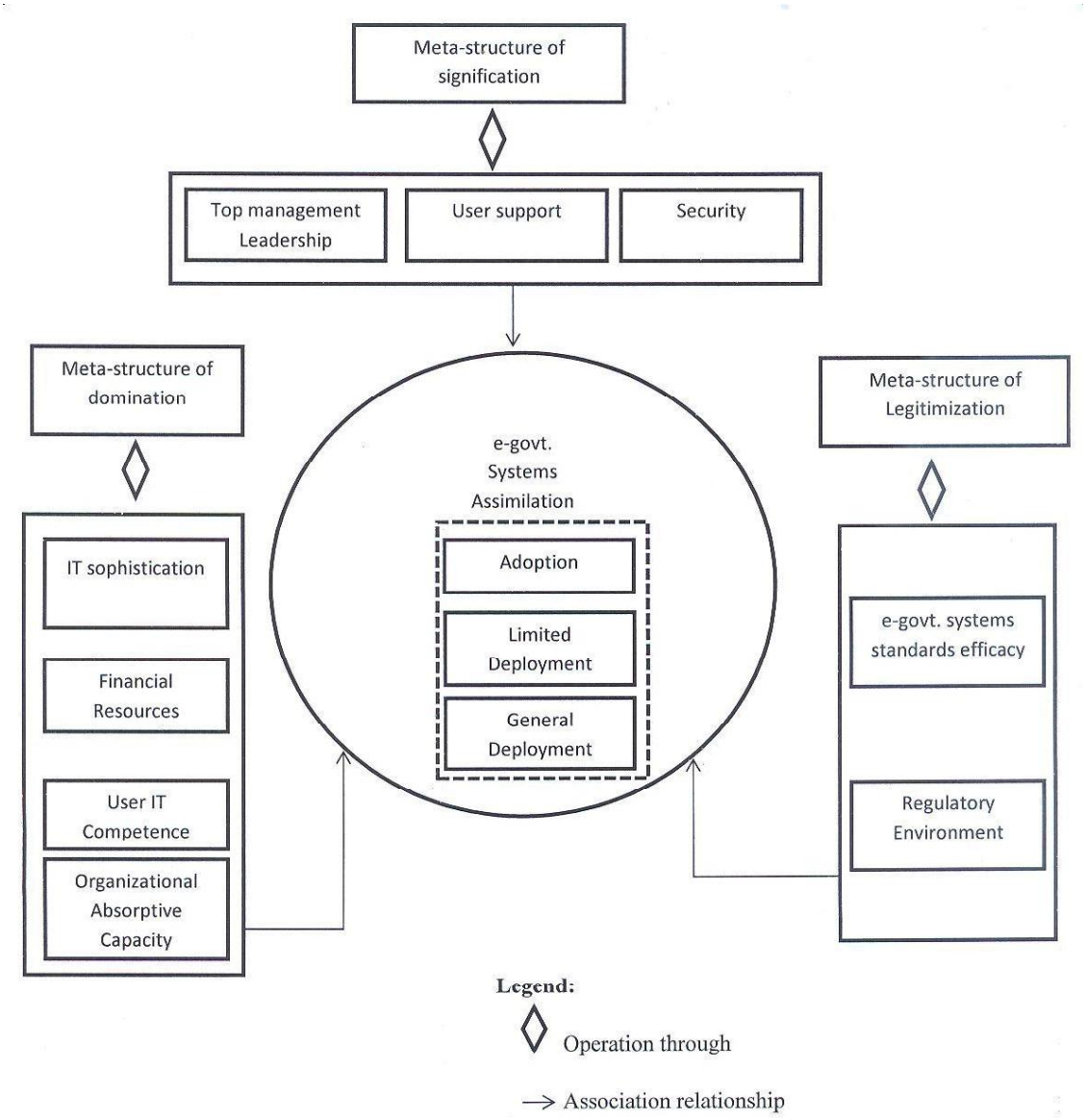

Figure 2-5: Organisational E-Government Systems Assimilation Framework (EGAF) [Adapted from Hossain et al., 2011a:22]

As suggested by Hossain et al. (2011a), the hypothetical foundation of the three organisational meta-structures of EGAF is structuration theory in conjunction with a structuration theory of technology assimilation. To come up with this framework, the structuration theory was customised to study e-government systems assimilation by mapping factors of e-government systems assimilation with the organisational meta-structures of signification, domination and legitimation. Hossain et al. (2011a) used

EGAF to study e-government systems of Korean government. This study adapts EGAF to study e-government systems assimilation at MTI. This framework is deemed pertinent to this study because factors that affect e-government systems assimilation can be categorised in the same manner universally although the actual factors can differ from one country to the other. This is because organisations have human agents who are social beings and their actions towards an innovation have similarities.

From the EGAF framework, factors that affect e-government assimilation can be categorized into meta-structures of signification, domination and legitimation. As maintained by Craib (1992:48), "the structure of signification is produced by and enables people to communicate with each other". This implies that in communicating with, understanding each other, people draw upon interpretive schemes, which in turn depend upon structures of signification. Whenever people, interpret; they do not only draw upon these schemes and structures but also alter them. The second structure stems from the inherent capacity of action to transform, from the exercise of power, which Giddens calls the structure of domination whose modality he calls facility (Craib, 1992). One view, expressed by Rose (2001:220), is that "the facility to allocate resources is enacted in the wielding of power, and produces and reproduces social structures of domination". Structures of domination are therefore based on resources that facilitate the uptake of e-government. As observed by Craib (1992:48), "the final structure is that of legitimation, emerging from the inherently normative aspect of action, and the relevant modality here is the norms of a society or community". These factors would be based upon authorised actions that human agents can do basing on the policies of the organisation.

2.10 Legal Framework

The government of Botswana has committed to developing and integrating e-government systems that will build upon recent government initiatives and assist in the speedy delivery of services to the public. This initiative will position Botswana for sustained

growth in the digital age by serving as a key catalyst for achieving social, economic, political and cultural development by the country.

Botswana realises that in order to effectively implement e-government, a legal framework must be put in place to identify, drive and support the initiatives to be undertaken. This part of the paper serves to review the existing legal environment in Botswana with emphasis on how enabling it is for an e-governance system. In that regard, Security of Information Systems and Networks, Personal Privacy laws, e-Commerce Legislation, Electronic Signatures law, Consumer Rights in e-Commerce and Cyber Crime laws shall be discussed to determine the legal atmosphere in place.

2.10.1 Security of Information Systems and Networks

To begin with, for effective implementation of e-government Botswana requires not only an enabling Information Communication Technology infrastructure but an up to par information security system to ensure the integrity of the whole ICT framework and to instill confidence in the general public and organisations that are to use e-government services. In that regard, it is apparent that in her venture into e-governance, Botswana must have in place a legal framework in the form of legislation and policies to protect – from violation, misappropriation and misuse of- (1) information systems and networks, (2) personal data and privacy as well as other sensitive and significant data of herself and that of her clients and stakeholders.

In her pursuit to protect the e-government information systems and networks Botswana has enacted a number of legislations and reviewed some to ensure the integrity, sustainability and protection of her information systems and networks from any form of hardware damage and software corruption. In light of this view, Section 12 of the Cybercrime and Computer related Crimes Act makes it an offence for anyone to cause damage to a computer or computer system. In consort with this, section 7 (1) (a) read together with (b) of the same Act respectively protects e-government information systems and networks by criminalising the unauthorised destruction of, and interference with data by way of deleting, suppressing, altering or modifying it and rendering it meaningless, useless or ineffective. However, it goes without saying that all these legal provisions are

not enough especially when they are not coupled with a fully trained and technologically equipped police unit to enforce them.

It is worth noting that Botswana has made significant strides through the Cybercrime and Computer related Crimes Act and the Electronic Communications and Transactions Act to protect and ensure the privacy and the security of personal and sensitive data of herself and that of her clients and stakeholders from violation, misappropriation and misuse. Section 4 of the Cybercrime and Computer related Crimes Act in its entirety provides for the security of personal and sensitive information by making it a criminal offence for anyone to accesses the whole or any part of a computer or computer system, knowing that the access he or she intends to pursue is unauthorised.

In the same spirit, part VII of the Electronic Communications and Transactions Act criminalises the unsolicited distribution of electronic marketing content, (this is technically a breach of the right to privacy of the any recipient of such unsolicited content). Sections 4, 7 and 12 of Cybercrime and Computer related Crimes Act read together with part VII of the Electronic Communications and Transactions Act and Section 5 (1) (b) of the former respectively fully provide for the privacy of all stakeholders and for the security of all personal and sensitive data of all parties in their use of the e-government services infrastructure. It is in this regard that it can be argued that Botswana provides for the security and privacy of all stakeholders that use e-government.

However, it needs be noted that law does not compel action or inaction. Therefore, the problem of privacy violations is eminent despite it being provided against by the law. This leaves users of e-government systems vulnerable to possible privacy violations and data theft. Hence more needs to be done in the form of establishing standards, procedures and processes and rules and regulations to guide the conduct of government officers and other stakeholders in the use of e-government services so as to ensure full adherence to the law. Furthermore, Botswana is currently experiencing a low supply of law

enforcement officers who are skilled in the art of investigating cybercrimes, hence the need for up-skilling or training specialised police units to undertake cybercrime investigations. Failing this shall render privacy violations and sensitive data theft guaranteed (Molokomme, 2012).

2.10.2 e-Commerce Legislation

Secondly, effective e-government systems can only exist where there is a good legal atmosphere conducive for conducting business in the cyberspace. E-commerce legislation is paramount in this regard in that it legitimises business transaction not only in e-commerce but also in e-government and gives them equivalence to those transactions undertaken in the traditional commerce environment. It is in that regard that Botswana has recently enacted legislations such as the Electronic Records (Evidence) Act and the Electronic Communications and Transactions Act to provide for the recognition and acceptance of electronic documents in commerce, government transactions and for personal use, and amended the Criminal Procedure and Evidence Act together with the Civil Procedure and Evidence Act to provide for the enforceability of electronic contracts in the Botswana courts of law.

Chief among these enactments is the Electronic Records (Evidence) Act No. 13 of 2014. This Act was enacted primarily to provide for the admission of electronic records as evidence in legal proceedings and to provide for the authentication of electronic records so that they be viewed and admitted in the same equivalence as original records by the courts of law. Given the fact that the framers of the "pre-information age" legislations drafted laws in a language blind to the electronic environment, the main contribution of the Electronic Records (Evidence) Act has been its ability to neutralise this selective/blind language by recognising and authenticating electronic records and transactions conducted in the cyberspace.

Section 5 read together with section 6 of the Electronic Records (Evidence) Act gives electronic records some legal recognition and equivalence to traditional records by

providing that information given in electronic format should not be denied legal effect merely on the basis that it is in electronic form and that a reliable electronic record should be legally valid and enforceable subject to reasonable exceptions.

This recognition of electronic documents and transactions by law further empowers Botswana to fully integrate e-government and encourage other stakeholders to fully take part in e-government because its transactions are not only provided in law but protected by law. It is in light of this legal framework that one may argue that Botswana has successfully created an atmosphere that is conducive for the practice of e-commerce and execution of e-government systems at large.

2.10.3 Electronic Signatures

Thirdly, e-government requires an environment that technically and legally recognises electronic communications and electronic signatures. Thus, in an environment where transactions take place in the cyberspace stakeholders need the ability to produce and use electronic signatures as and when need be. It is in light of this need that Botswana has to provide a legal environment that recognises electronic signatures and also provide legislations, policies, mutual recognition agreements and institutional arrangements that will allow users of e-government the ability to communicate electronically in an atmosphere of trust and privacy.

Following the enactment of the Electronic Records (Evidence) Act electronic signatures gained the legal equivalence of handwritten signatures. Section 8 of the same Act provides for the recognition and admissibility of electronic signatures. This Act generally promotes a technology-neutral legal framework by recognising e-signatures while sections 6 (4) (5) and (6) give legal recognition to certificates of authentication created or issued locally or externally. All in all it promotes equivalence of traditional governance to e-governance and supports e-commerce practices by giving them legal coverage. Thus, it has neutralised the effects of the former legal position and it prohibits discrimination against electronic signatures.

2.10.4 Enforcement of Consumer Rights in e-Commerce

Fourthly, it is apparent that the introduction of e-government must provide for the protection of the rights of e-commerce consumers against any form of abuse. That is to say, e-commerce consumers should not be disadvantaged by the use of e-commerce and must be guaranteed access to the same remedies and protection that they would have in traditional commerce transactions.

To further ensure the protection of e-commerce consumer rights, the Electronic Communications and Transactions Act gives the country a foundation from which to start capitalising on the opportunities offered by electronic commerce and electronic governance. Giving weight to this Act is the Electronic Communications and Transactions Regulations which provide for, among others, the administration of take-down notifications in accordance with Section 44 of the Act, the issuance of compliance orders in the event of a breach of the Act or the proposed Electronic Communications and Transactions Regulations and other general matters in relation to electronic transactions and e-commerce.

Section 44 of the Electronic Communications and Transactions Act tasks the Botswana Communications Regulatory Authority (BOCRA) with the administration of take-down notices. The take-down notices are notices issued to cause the revocation of any published content because it is illegal or breaches a third party's rights. BOCRA administers this notices by ensuring that the take-down notifications complies with the requirements of Section 44 of the Act, sending the take-down notification to the service provider identified by the complainant in the take-down notification and requesting information as to the action taken by the service provider following take-down notification and imposing a penalty if such report is not received. However it need be noted that BOCRA does not have power to legally bind service providers to act in accordance with the notice.

Botswana has through the Cybercrime and Computer related Crimes Act, the Electronic Record (Evidence) Act and the Electronic Communications and Transactions Act guaranteed the protection and enforcement of consumer rights in e-commerce. More to

that, the Consumer Protection Office of Botswana is empowered by Regulation 24(1) of the Electronic Communications and Transactions Regulations to administer part VI of the Act and to take cognisance of any complaint made by a consumer in relation to an alleged breach of this part of the Act. It is in that spirit that the Botswana legal framework guarantees the enforcement of e-commerce consumer rights in equivalence to the enforcement of consumer rights in the traditional commerce.

Part VI of the Act further offers e-commerce consumers protection regarding purchases they made online. The Act requires online sellers to provide detailed information regarding their products and services and in an event that they are selling goods that are subject to a cancellation and return policy, the Act obliges them to provide a seven days cooling period during which the consumer can cancel the sale without reason and without penalty.

2.10.5 Cyber Crime

Fifthly, it is worth noting that despite the numerous benefits of e-government, it does not only make lives easier but it also creates new problems such as cybercrime. Cybercrime manifests in a number of ways including unauthorised access to data, identity theft, and distribution of obscene data and so on. It is in this regard that Botswana needs to ensure that criminal behaviour perpetrated through electronics and the cyberspace is managed and kept minimal in order for the e-government to run effectively and deliver on target goals.

Thus, her legislations must provide the necessary framework to deal with all forms of cybercrime and the distribution of inappropriate content. Legal arrangements together with policies must be put in place to deal with extradition and jurisdiction issues such as extra-territorial criminal behaviour. To curb the problem of cybercrime Botswana will not only need a competent legislative framework but capacity in terms of skills and resources to deal with new types of cybercrime.

In response to the above need for cybercrime legislation, Botswana has enacted the Cybercrime and Computer Related Crimes Act and has recently reviewed it to make it at

par with the international standards. This piece of legislation was enacted to specifically combat cybercrime and computer related crimes, to repress criminal activities perpetrated through computers and the cyber space. Section 3(a),(c),(d) and (e) of the Cybercrime and Computer related Crimes Act gives the Botswana courts of law jurisdiction or powers to try any person who wholly within or partly without the territory of Botswana acts in contravention with any provision of this Act.

Sections 4, 7, 8 and 9 of the same Act respectively provides for the protection against unauthorised access and interception of computers/computer systems and personal data contained in computers and computer networks. Section 4 criminalises unauthorised access to computers; Section 7 criminalises an unauthorised interference with data. This will ensure that users of e-governance services are protected against possible identity theft and privacy violations. Section 8 criminalises interference with computers/computer systems while Section 9 criminalises the interception of data by anyone without lawful excuse. These provisions will not only protect e-governance users against privacy violations but will ensure and instill confidence in stakeholders that engaging and participating in e-governance is safe and that confidentiality of users is highly regarded.

In accordance with Section 12(1) read together with subsection (2) of the Cybercrime and Computer related Crimes Act, anyone who intentionally (a) modifies, destroys, records or transmits any data or programme residing within a computer or computer system; (b) usurps the normal operation of a computer or computer system; or (c) destroys, damages, degrades or adversely affects the performance of a computer or computer system or attaches itself to another computer resource and operates when a programme, data or instruction is executed or some other event takes place in that computer or computer system, commits an offence.

Thus, anyone who destroys or causes to be destroyed, the Botswana's e-governance ICT infrastructure is guilty of an offence and is liable to a penalty ranging from a fine of P40, 000 but not exceeding P100, 000 or to imprisonment of two years but not exceeding three years, or to both. It is in this regard that it can be argued that the Botswana e-governance ICT infrastructure is by law protected.

When read together, Sections 13(1) (c) and 13(2) makes it an offence for anyone who in the commission of an offence under this Act, obtains access to a computer or computer system or programme or data used directly in connection with, or necessary for the provision of services directly related to communications infrastructure, banking and financial services, public utilities, public transportation or public key infrastructure. A fine of P40,000 but not exceeding P100,000, or an imprisonment for a minimum term of two years but not exceeding three years, or both are sanctions attached to this offence. In essence, anyone who access the Botswana's e-governance ICT infrastructure for purposes of, or with intent to commit an offence has acted contrary to sections 13(1) (c) and (2) of the Cybercrime and Computer related Crimes Act and is guilty of an offence.

Moreover, Section 15 of the Cybercrime and Computer related Crimes Act establishes and sanctions the offence of cyber fraud, while section 15 of the Electronic Records (Evidence) Act makes it an offence for any person to provide to the court or certify to be true, electronic records they know to be false or they do not believe to be true. This legal framework does not only ensure a smooth operation of the Botswana e-governance system but also helps to ensure that Botswana is not a weak link or safe haven for cyber criminals.

Lastly, in an event where an offence under the Cybercrime and Computer related Crimes Act has been committed, Section 29 of the same Act makes such an offence extraditable, for which extradition may be granted or obtained under the Extradition Act of Botswana.

2.11 Summary

Regarding prior research into understanding the assimilation of e-government systems, most existing literature centre on either the implementation or adoption of e-government. Currently there is dearth of empirical studies that have focused on the examination of assimilation of e-government systems in Botswana. Structuration theory is one of the theories that can be used to study e-government systems. Structuration means studying the ways in which social systems are produced and reproduced in social interaction. Hossain et al. (2011a) proposed EGAF basing on structuration theory and used it to study

e-government systems assimilation in Korea. From the EGAF framework, factors that affect e-government assimilation can be categorised into meta-structures of signification, domination and legitimation. The framework can be applied in government organisations to best evaluate the assimilation of e-government systems. Most literature on e-government on Botswana such as Nkwe (2012) alludes to challenges of e-government adoption but do not empirically focus on e-government assimilation. Bwalya, Plessis and Rensleigh (2011) have studied factors that affect e-government adoption and implementation in Botswana, Mozambique and Malawi. Although these studies examine e-government in Botswana, none of them has focused on the assimilation of e-government systems, particularly using the structuration theory. Because of that gap in the literature, this study examines the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana. This is with the view that understanding changes and challenges that the government has undergone owing to the implementation of e-government will generate possible strategies to move towards a successful assimilation of e-government systems at the Ministry of Trade and Industry in Botswana. The next chapter discusses the research methodology.

CHAPTER 3: METHODOLOGY

3.1 Introduction

The previous chapter discussed the literature review. This chapter presents the research methodology. "Research methodology is a way to systematically solve the research problems (Kumar, 2008:5)." This chapter presents the research methodology used in this study. It discusses the following topics:

- Research Paradigm
- Research Design
- Study Population
- Sampling
- Data Collection Tools
- Data analysis
- Validity and Reliability of the Research Findings
- Ethical Considerations

3.2 Research Paradigm

According to Johnson and Christensen (2012:31), "a research paradigm is a perspective about research held by a community of researchers that is based on a set of shared assumptions, concepts, values and practices." It is an approach to carrying out research. Three major research paradigms or traditions now do currently have an influence on the conduct of research and to a larger extent, shape the type of research design. These are the quantitative, qualitative and mixed methods. Bell (2000) defined a quantitative research as an inquiry into an identified problem, based on testing a theory, measured with numbers, and analyzed using statistical techniques. The quantitative method uses measurements, which are usually in the form of numbers or statistics to compare and analyse a variety of factors studied. By contrast, the process of inquiry in a qualitative research is aimed at understanding a social or human problem from multiple perspectives (Bell, 2000). He further defined a qualitative research as research that seeks to obtain in-

depth responses about what people think and how they feel about a problem at hand. It also gains insights into the attitudes, beliefs, motives and behaviours. Lastly, it uses words or descriptions to record aspects of the phenomenon being studied.

The mixed method has also gained credence in the last decade. Ngulube (2010:254) defines the mixed method as one that involves, "collecting, analyzing, integrating and interpreting qualitative and quantitative data concurrently or sequentially in a single study or a series of studies investigating the same problem irrespective of which research methodology is dominant in order to exploit the benefits of combining them and to enhance the validity of the findings". Creswell (2009:230) defines mixed methods research as "an approach to inquiry that combines or associates both qualitative and quantitative forms of research. It involves philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing of both approaches in a study". In essence mixed methods research focuses on collecting, analyzing, and mixing both qualitative and quantitative data in a single study. The mixed method was preferred for this study as it offers a better understanding of research problems than either approach alone (Creswell, 2009).

This study is largely qualitative but utilises methodological triangulation of quantitative and qualitative data collection methods. Methodological triangulation involves using more than one quantitative or qualitative data sources or methods in a single research (Jack & Raturi, 2006). Triangulation is defined by Lee (2000:143) as "the use of multiple data collection methods with the aim of compensating for the weakness of particular methods by drawing on the strength of others". Maxwell (1994) posits that qualitative studies generally rely on the integration of data from a variety of methods and sources of information, a general principle known as triangulation. In his discussion on triangulation, Maxwell (1994:93) further states that "triangulation reduces the risk of systematic distortions inherent in the use of only one method, because no single method is completely free from all possible validity threats." It was an advantage for this study to employ data triangulation as through the use of various data collection instrument, the validity of the instrument is enhanced (Maxwell, 1994). Data for the study was obtained

by means of face-to-face interviews and questionnaires. Observation on the subjects was done alongside the administration of interviews and questionnaires. Observation was used to confirm the findings from both interviews and the questionnaires. The use of triangulation gives a more comprehensive picture of the factors affecting the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana. Results obtained were integrated to form a single analysis.

3.3 Research Design

(Bless, Higson-Smith & Ashraf, 2006:183), define a research design as "the set of procedures that guide the researcher in the process of verifying a particular hypothesis and excluding all other possible hypotheses or explanations. It allows the researcher to draw conclusions about the relationship between variables." Aina (2004) defines research design as a general framework for the collection of data. He further states that if the research design is faulty, the whole study will fail. It is a map, which gives the researcher some guidelines. The aim of this study is to employ a structuration analysis of the assimilation of the e-government system at the Ministry of Trade and Industry in Botswana. This necessitated the adoption of a case study approach. A case study design is largely associated with the qualitative paradigm. Aina (2004:347) defines a case study as a method that involves an in-depth study of an individual, institution, organisation or community. Yin (2003:4), adds that, "the case study method is the method of choice when the phenomenon under study is not readily extinguishable from its context".

According to Murray and Lawrence (2001), the main advantage of case studies is that they can be excellent for uncovering unique patterns and features of social interaction within small groups. Therefore, this study uses the case study approach in order to get a comprehensive understanding and evaluation of subject interactions and factors that affect assimilation as the ministry deploys e-government systems. In this study, one ministry, that is the Ministry of Trade and Industry was selected as a case study. In this particular instance, the case study was beneficial as it enabled the researcher to examine e-government assimilation in detail within a specific context and explored possible

challenges and solutions. Out of the seven departments of the ministry, only five were selected. The five departments were selected because they use a management information system; MTIMIS. This ministry was selected for a number of reasons. Firstly, preliminary document review indicates that this ministry has functionally deployed e-government projects and has acquired a system, MTIMIS, to automate their business processes. Secondly, it has a working website or portal.

It is important to note that the research findings will not be generalised to other ministries, rather, they will be used to build upon few studies conducted on e-government in Botswana. This concurs with Aina (2004) who states that findings obtained from a case study cannot be used to generalise a population.

3.4 Study Population

As defined by Babbie (2010:199), study population is "that aggregation of elements from which a sample is actually selected". The total population of this study includes all the 408 employees in the ministry of MTI from departments that were selected for the study. The Ministry has seven departments. The sampling frame from which the population of the study was selected was the staff list of the Ministry of Trade and Industry. The target study population was officers who use MTIMIS, leadership, IT officers and MTI clients. Discussing target population, Barnett (1991:8) states that "this is the total finite population about which we require information." It is the group that the researcher wants to study. Hair (2003:209) defines target population as "the complete group of objects or elements relevant to the research project". These are objects or elements that have the potential of providing information that the research project is designed to collect. This study targeted MTI employees, e-government office and MTI clients. MacMillan and Schumacher (2006), refer to a population of study as a group of elements or cases, whether individuals, objects or events that conform to a specific criterion and to which the researcher wants to generalise the results of the research. According to Barnet (1991:8) study population "is the basic finite set of individuals we intend to study". As Bhattacherjee (2012:66) posits, this is "the group that you want to generalize to". This

study sought to study all MTI staff that use MTIMIS, as well as MTI IT officers and leadership. Because MTI is seeking to provide their services to the public using e-government systems, this study also sought to study MTI clients who have accessed the MTI website. In Botswana, e-government implementation is driven by e-government office hence this study sought to study the e-government office as well.

Only five departments out of the seven in the MTI were studied. These are Corporate Services; Trade and Consumer Affairs; International Trade; Industrial Affairs; and Economic Diversification Drive. Economic Diversification Drive is not a fully-fledged department; it is still operating combined with Corporate Services. The five departments were selected for the study because they use MTIMIS. However, MTIMIS is a pilot project and therefore it has not rolled out to be used by all staff. It is used by few individuals who were selected to pilot it to help spot any problems before it is fully rolled out. Two departments namely Cooperative Development and the Registrar of Companies and Intellectual Property were omitted from the study because they do not use MTIMIS.

The distribution of the study population through the different categories is shown in Table 3-1.

Table 3-1: Outline of the Study Population

Category	**Number of Staff**
Corporate Services + EDD	152
Industrial Affairs	95
International Trade	66
Trade and Consumer Affairs	91
E-government Office	4
MTI Clients	15
Total	**408**

Source: Field data

3.5 Sampling

According to Aina (2004), sampling involves selection of an unbiased and representative sample from the study population. Purposive sampling was used to select the study participants and only those respondents who used MTIMIS to transact organizational business were selected. According to Babbie (2010:193) "purposive or judgmental sampling is a type of non-probability sampling in which the units to be observed are selected on the basis of the researcher's judgment about which ones will be the most useful or representative". Nation (1997:157) affirms this by defining a sample as "a subset of a population; each member of the sample is included in the larger population." According to Bhattacherjee (2012:66) sampling is "the statistical process of selecting a subset (called a "sample") of a population of interest for purposes of making observations and statistical inferences about that population.''

3.5.1 Sample Size of the Study

According to Retzer (2011:2), a sample is a "selection of a small subset of a population". Although it is desirable to get everybody's view when doing research; it is not always possible to study the whole population due to time and cost constraints. Non-probability sampling was used to select participants for this study. Non-probability sampling does not allow you to identify members of the population nor does it provide estimates of the probability of any particular member being included in the sample. Due to the nature of qualitative research linking interactions and incidences and understanding why and not how many, non-probability sampling is the most commonly used technique (McMurray et al., 2004:234). Merriam (1988) also affirms that the needs of qualitative research are best met by non-probability sampling. (McMurray et al. (2004:234), further state that "the most popular type of non-probability sampling is the simple purposive sample". This study employed the purposive sampling approach to select participants. According to Babbie (2010:193) "purposive or judgmental sampling is a type of non-probability sampling in which the units to be observed are selected on the basis of the researcher's judgment about which ones will be the most useful or representative". A foundation of

non-probability sampling techniques is that samples are selected based on the personal judgment of the researcher, rather than random selection of any sort. Babbie (2010) further posits that sometimes it is appropriate to select a sample based on knowledge about a population, its elements and the purpose of the study.

In this study, the sample was chosen on the basis that respondents had knowledge about the subject of the study and that they could have had different ways of interacting and experiences with the assimilation of e-government systems in the MTI. These were officers from management (leadership), IT officers and action officers who use MTIMIS. These people were chosen because they have influence on the assimilation of MTIMIS. IT officers service action officers who use MTIMIS in different ways like connecting and linking them to the network and hardware. Leadership has an influence on the assimilation of the system. They bargain for their needs and source resources that they may need.

One officer from e-government office also participated in the study. The e-government officer was purposively selected because he possesses the information relating to the government strategies and policies. The e-government officer was interviewed to get E-Government Office views, strategies, accomplishments and challenges facing the development of e-government in Botswana which assisted in answering the research questions of this study.

MTI clients who have accessed and used the MTI website were purposively chosen to participate in this study because they are the consumers of e-government services; particularly from MTI.

The study population is outlined in Table 3-2.

Table 3-2: Outline of the Sample Population

Category	**Total Action Officers**	**Users of MTIMIS**	**No. Of Leadership**	**No. Of IT Officers**	**MTI Clients**	**E-Government Office**
Corporate Services + EDD	152	13	2	1		
Industrial Affairs	95	10	1	1		
International Trade	66	3	1	1		
Trade and Consumer Affairs	91	10	1	1		
E-government Office	4					
Total	**408**	**36**	**5**	**4**	**15**	**1**

Source: Field Data

In this study, data was collected from a purposive sample of MTI employees, particularly consisting of top management leadership, IT specialists and action officers who use MTIMIS. For qualitative data collection, respondents were purposively chosen because of their leadership positions and their role in the implementation of e-government systems. The following people were interviewed: 1 officer at e-government office, 4 IT officers in MTI departments and 5 people holding leadership positions in MTI departments.

Quantitative data was collected from application users of MTIMIS through questionnaires. A census was carried out on MTIMIS users. According to Retzer (2011:2) census is "gathering information about every individual in a population". They are a small number because it is a pilot project. For businesses who are MTI's clients, a

questionnaire was administered to businesses and individuals selected conveniently. Convenience sampling could be called a 'take-them-where-you-find-them' method of obtaining participants. Convenience sampling is defined by Hair (2003:414) as "selecting sample elements that are most readily available to participate in the study and who can provide the information needed." A convenience sample involves selecting participants in a random manner, normally on the basis of accessibility. As such, a sample that is usually drawn is not a representative sample of the population being discussed.

Purposive sampling for the case of e-government implementers, leadership and IT personnel was used in this study. Respondents for the questionnaire were also purposively chosen. These are officers who have access to and use MTIMIS. Census was used for action officers who use MTIMIS. According to the pilot plan, 46 people should be using MTIMIS. However, 10 officers have not been given access details so they do not have access hence they have not started using the system. Moreover, there is no activity for them to start using the system. As such, only 36 questionnaires were distributed.

The sample size breakdown is as follows: thirty-six (36) action officers who work with MTIMIS; fifteen (15) MTI clients; five (5) departmental leaders/supervisors; four (4) IT officers and one (1) officer at the e-government co-ordination office as shown in Table 3-3:

Table 3-3: Sample Size

Categories	No of Targeted Participants/Respondents Per Group
E-government Office	1
Leadership	5
IT Officers	4
Action Officers (MTIMIS users)	36
MTI Clients	15
Total study population	**61**

Source: Field data

3.6 Data Collection Tools

No scientific research can be conducted without the collection of raw/primary data. Primary data is information collected for the purpose of completing the current research project (Hair, 2003:72). Raw data is unanalyzed data that was collected at research sites for a research study before that information has been transformed or subjected to analysis. Primary data can be collected through different methods.

Data collection was done at the Ministry of Trade and Industry departments over a period of two months. Aina (2004:351) says when two or more instruments are involved in data collection in one study, the process is called triangulation. Methodological triangulation involves the use of both qualitative and quantitative data collection methods to study the same phenomenon within the same study (Tashakkori & Teddlie, 1998). According to Aina (2004:351), "the major advantage of triangulation is that it helps validate data that are collected from various sources". A parallel/simultaneous study was conducted where the researcher conducted qualitative and quantitative phases at the same time (Tashakkori & Teddlie, 1998:18).

Specifically, this study employed interviews and observation to collect qualitative data. Questionnaires were used to collect quantitative data. These data collection instruments are presented and linked to specific research questions in Table 3-4.

Table 3-4: Research Objectives, Research Questions and Possible Sources of Data

Research Objectives	**Research Questions**	**Possible Sources of Data**
1. Examine factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana.	1. What are the factors affecting the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana?	Observations, questionnaires and interviews.
2. Identify factors that enable and inhibit e-government assimilation at MTI.	2. What are the factors that enable and inhibit e-government assimilation at MTI?	Observations, questionnaires and interviews.

3. Determine the role of e-government assimilation factors at MTI.	3. What is the role of the factors that drive e-government assimilation at MTI?	Observations, questionnaires and interviews.
4. Establish how the drivers of e-government are dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana.	4. How are the drivers of e-government dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana?	Observations, questionnaires and interviews.
5. Suggest possible solutions in dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana	5. What are the possible solutions in dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana?	Observations, questionnaires and interviews.

3.6.1 Face to Face Interviews

As defined by Schwab (2005:48) interviews are "measuring instruments in which another individual (the interviewer) asks the questions verbally and is responsible for recording responses." This means that the interviewer voices out the questions verbally and it is the researchers' duty to record what the interviewee says. In essence, interviews solicit information verbally (Schwab, 2005:41). Face to face interviews have the distinct advantage of enabling the researcher to establish rapport with potential participants and therefore gain their cooperation; thus, such interviews yield the highest response rates - the percentages of people agreeing to participate in survey research (Leedy & Ormond, 2005:184).

Kajornboon (2005) posits that the drawbacks of semi-structured interviews are that inexperienced interviewers may not be able to ask prompt questions and as such, some relevant data may not be gathered, additionally, inexperienced interviewers may not probe into a situation. In this study, interviews were used to assess how the key drivers in MTI are dealing with factors that affect the assimilation of e-government systems. The

time spent in each interview included the introduction of the purpose of the interview along with the reassurance of confidentiality of the interviewees' responses.

3.6.1.1 Advantages of Face to Face Interviews

According to Neuman (2000), face-to-face interviews have the highest response rates and permit the longest questionnaires. They have the advantages of the telephone interview and interviewers can also observe the surroundings and can use non-verbal communication and visual aids. Neuman (2000) further posits that well trained interviewers can ask all types of questions can ask complex questions and can use extensive probes. As Babbie (2010) states, probing is a technique involved in interviewing to solicit a more complete answer to a question. It is a non-directive phrase or question used to encourage a respondent to elaborate on an answer. The interviewer can ask the interviewee to explain further.

According to Harrell and Bradley (2009:27), "in semi-structured interviewing, a guide is used, with questions and topics that must be covered." An interview guide used here is not structured; the interviewer can ask more questions to get explanations. Leedy and Ormond, (2005:184) allude to this and state that "in a semi-structured interview, the researcher may follow the standard questions with one or more individually tailored questions to get clarification or probe a person's reasoning." Conferring to Cohen (2006) the benefits of semi-structured interviews include the fact that questions can be prepared ahead of time allowing the interviewer to be prepared and appear competent during the interview. This can give the interviewer confidence and thus improve the data collection process. Cohen (2006) further states that semi-structured interviews also allow informants the freedom to express their views in their own terms and they can provide reliable, comparable qualitative data.

3.6.1.2 Disadvantages of Face to Face Interviews

As Neuman (2000:273) put forward, "high cost is the biggest disadvantage of face to face interviews. The training, travel, supervision and personal costs for interviews can be high." Interviewer bias is also greatest in face-to-face interviews. The appearance, tone of voice, question wording and so forth of the interviewer may affect the respondent. In

addition, interviewer supervision is less than for telephone interviewers, which supervisors monitor by listening in.

Interaction between the interviewer and interviewees also poses dangers for interviews. There is a greater risk that the administration of questions differs from interview to interview. Furthermore, because there is interaction, interviewee responses may be influenced by the particular individual conducting the interview. The importance of uniformity in questions and response coding favors questionnaires. When interviews are used, it is important that they be conducted as systematically as possible (Schwab, 2005:42).

Three interview protocols were developed for this study. Interviews were used to solicit information from leadership at the ministry and IT managers as well as e-government office. The researcher collected data through qualitative semi-structured interviews.

3.6.2 Observation

According to Babbie (2010:47) observation is "looking at the world and making measurements of what is seen." It is the gathering of primary data by the researcher's actual observation of pertinent people, actions and state of affairs without inquiring from respondents. According to Neuman (2000:361), "A great deal of what researchers do in the field is to pay attention, watch and listen carefully. They all use the senses, noticing what is seen, heard, smelled, tasted or touched." The researcher becomes an instrument that absorbs all sources of information. Non- participant observation is when the researcher remains outside the focus of study but looks on and records activities, verbal and non-verbal interactions and consequential happenings (Davies, 2007:30). The purpose of observation was to gain additional information with reference to the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana. The observation allowed documenting of activities that are carried out in the ministry's departments to aid the assimilation of e-government systems as the ministry endeavors to assimilate these systems into work processes.

Observation was conducted by the non-participant observer (researcher) and took place during the data collection phase; interviewing and administering of questionnaires. Data gathered from observations was used to supplement data from interviews and questionnaires. In this study, the researcher observed the views and attitudes of the participants towards e-government systems. It was carried out at the departments' sites based on the observation protocol. Observed data was transcribed, the researcher took notes during observation. The researcher observed how MTIMIS is used to replace some of the manual systems such as processing of clients' applications for trade licensing.

3.6.3 Self-Administered Questionnaires

According to Schwab (2005:39), "Questionnaires are measuring instruments that ask individuals to answer a set of questions." In a questionnaire, respondents read the questions themselves and mark answers on a questionnaire. A questionnaire seeks the opinions of individuals in a sample or a population on issues directly related to the objectives of the research study, it consists of a set of questions to be answered by respondents (Aina, 2004). In this study, the researcher used both open ended and closed ended questionnaires. Babbie (2010:256) defines "close ended questions survey questions as a survey in which the respondent is asked to select an answer from among a list provided by the researcher". Close-ended question surveys are popular in survey research because they provide a greater uniformity of responses and are more easily processed than open-ended questions.

Babbie (2010:256) discussing open-ended questions states that these are "questions for which the respondent is asked to provide his or her own answers. In depth, qualitative interviewing relies almost exclusively on open-ended questions. In these questions, respondents were allowed to express their opinions with no restraint. The researcher distributed the questionnaires and collected them when they were filled in.

3.6.3.1 Advantages of Questionnaires

Assuming the same care in construction, questionnaires usually are less expensive to administer (Schwab, 2005:41). According to Aina (2004), questionnaires have a number of strengths: anonymity is guaranteed hence respondents are not biased. Questionnaires facilitate collection of large amounts of data; the researcher can distribute a lot of them because this kind of instrument does not require the researcher to be available at all times to gather information. They are also cheap to administer, one just has to distribute and explain certain things such as instructions. According to Neuman (2000), researchers can give questionnaires directly to respondents who read instructions and questions then record their answers. This type of survey is by far the cheapest and it can be conducted by a single researcher. The respondents can complete the questionnaire when it is convenient and can check personal records if necessary.

3.6.3.2 Disadvantages of Questionnaires

Reading abilities of some members of heterogeneous populations may make the use of questionnaires problematic (Schwab, 2005:41). However, the major disadvantages are that some confusing and misleading questions cannot be clarified because the researcher may not be available to address them, and also, some questions may not be easily comprehensible to some people in the sample and as such the questionnaires may return with some of the questions unanswered (Aina, 2004). Neuman (2000) was also of the view that since no one is present to clarify questions or to probe for more information, respondents may give incomplete or ambiguous answers. In addition, different respondents may complete the questionnaire weeks apart or answer questions in a different order than that intended by researchers. In this study, self-administered questionnaires were used to examine the key factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana. The researcher did not experience many of these challenges cited above since the questions were carefully worded. The respondents were all fairly well educated and study population was also relatively easy to handle since the researcher was very familiar with the location of the study having worked previously at the MTI previously as Intern.

3.7 Validity and Reliability of the Study

Hernon and Schwartz (2009) define validity as the extent to which study findings are generalisable to a population; whether the instrument accurately measures what it, purports to measure and several other related constructs. Murray and Lawrence (2000) posits that reliability is the much sought after measurement condition in which instruments used consistently produce similar or the same results over time with standardized computerisation survey populations. Reliability seeks to establish the extent to which the data or measurement is consistent.

If the reliability and internal validity of the data is limited, so too is the extent to which the findings can be generalised, even within a particular setting. Hernon and Schwartz (2009) further state that investigators might ask some individuals, ones not appearing in the actual study, to review the wording on questions and ensure that their meanings are clearly understood. In this study, the researcher piloted the study by interviewing some employees at the ministry and distributing a few copies to people who have not been selected to be part of the sample.

3.8 Data Analysis

The data gathered from the research instruments was subjected to analysis. The analysis was characterized by descriptive approaches and the researcher merged quantitative and qualitative data in order to provide a comprehensive analysis of the research problem. The qualitative data that was gathered from interviews and observations was presented in text formats. The quantitative data collected through questionnaires was coded and analyzed using Statistical Packages for the Social Sciences (SPSS). The analysis of quantitative data included running descriptive statistics of the responses. The summary of the quantitative data from the study was converted to percentages and presented in graphs.

The qualitative data collected from interviews, and observation was organized according to research questions, categorised into related themes and presented in a narrative form.

The two sets of results were merged to produce a single comprehensive interpretation and then conclusions were drawn. In the analysis of data, the researcher sought to find out whether the data collected through fieldwork corresponds or tallies with the literature reviewed.

3.9 Data Collection Procedure

To study the e-government office, the researcher received a research permit letter signed by the permanent secretary from the Ministry of Transport and Communications (MTC), and was thus introduced to respondents. The researcher addressed the respondents, briefing them on their role in the study, that is, to fill the questionnaires. After that, the questionnaires were distributed and collected after some time. With regards to interviews, appointments were sought from the respondents after which interviews were conducted. In the session; data was recorded by hand as the interview session progressed.

3.10 Ethical Considerations

The researcher adhered to all the rules and regulations of the population of study as stipulated in their organizational policies. The researcher sought permission from both the Ministry of Trade and Industry and the Ministry of Transport and Communications (mother body for the E-Government Office) prior to undertaking the study. This was for purposes of undertaking a study that was ethical. It is the responsibility of the researcher to explain the importance of the subject of the study to obtain consent from the population. The researcher guaranteed all participants confidentiality. All factual and literary work consulted for conducting and compiling this research has been acknowledged.

3.11 Summary

The purpose of this chapter was to describe the research methodology of this study, explain the sample selection, describe the procedure used in designing the instrument and collecting the data, and provide an explanation of the statistical procedures used to analyse the data. A mixture of qualitative and quantitative data collection instruments was used for validation purposes. In terms of analysis, data was categorised according to research themes.

CHAPTER 4: PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter reports the findings of the study on the assimilation of e- government systems at the Ministry of Trade and Industry in Botswana. The study set out to establish factors that affect the assimilation of e-government systems. The following were the research questions that guided the study;

1. What are the factors affecting the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana?
2. What are the factors that enable and inhibit e-government assimilation at MTI?
3. What is the role of the factors that drive e-government assimilation at MTI?
4. How are the drivers of e-government dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana?

5. What are the possible solutions in dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana?

4.2 Response Rate

Fifty one (51) questionnaires were distributed to respondents who included Action Officers who use MTIMIS in the Ministry of Trade and Industry Departments and MTI clients who use e-government services. Forty five (45) were returned. This translated into a response rate of 88.2%. The respondents came from MTI's Department of Corporate Services + EDD, Department of Industrial Affairs, Department of International Trade and the Department of Trade and Consumer Affairs. Out of the ten (10) officers that were targeted for interviews, one (1) was an officer at E-government Office, five (5) were employees who hold leadership positions in MTI Departments while four (4) were IT officers in MTI Departments. The e-government officer and all the four (4) IT officers were interviewed as well as five (5) out of the five targeted management personnel. Scholars do not agree as to which response rate is acceptable in research. Babbie and

Mouton (2001) on assert that a response rate of 50% is considered adequate for analysis, while 60% is good and 70% is considered excellent. However, it is safe to argue that the response rate as presented in Table 4-1 is adequate

Table 4-1: Study Response Rate

Category	**Targeted**	**No. of respondents**	**Responses in percentages**
Corporate Services + EDD	16	12	75%
Industrial Affairs	12	10	83%
International Trade	5	5	100%
Trade and Consumer Affairs	12	12	100%
E-government Office	1	1	100%
MTI Clients	15	15	100%
Total	**61**	**55**	**90%**

Source: Field Data (2013)

4.3 Biographical Information of Respondents

The gender of the study participants shows that 19 out of 45, (42.2%) were male while the rest, 26 (57.8%) were female. Most of the study participants were female. In terms of the level of education attained by participants, 34 out of 45 (75.5%) possessed a Degree qualification, 3 (6.67%) had a Cambridge Overseas School Certificate (COSC)/Botswana General Certificate of Secondary Education (BGCSE) qualification, 1 (2.22%) had a Certificate, 6 (13.3%) had a Diploma while 1 (2.22%) had a Master's Degree. The majority of participants had a Degree qualification. As for age, 14 out of 45 respondents, (31.1%) were aged less than 30 years, 25 (55.5%) had their ages ranging from 30 – 40 years while the rest, 6 (13.3%) were over 40 years. In terms of job experience, 2 out of 45, (4.44%) had worked for less than a year, 26 (57.7%) had worked for 1 – 5 years, 9 (20%) had 6 – 10 years of work experience, 4 (8.88%) had worked for 11 – 15 years while the rest, 4 (8.88%) had worked for more than 16 years.

4.4 Empirical Findings of the Study

4.4.1 Factors Affecting the Assimilation of E-Government Systems at the Ministry of Trade and Industry in Botswana

The empirical findings of the study are presented in line with the research objectives of the study as well as the research questions. The first objective of the study was to find out factors affecting the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana using the EGAF framework as an analysis framework. These factors are presented and discussed as individual factors that affect assimilation of E-Government services. The individual factors are placed under the broad Structuration Perspectives for E-Government Systems Assimilation, being the meta-structures of signification, domination and legitimization (Hossain et al., 2011a). First presented are the factors classified under the meta structure of signification.

4.4.1.1 Meta Structure of Signification

According to Orlikowski and Robey (1991:582), the meta-structure of signification "comprises interpretive schemes of standardized, shared stocks of knowledge that humans draw on to interpret behavior and events, thus achieving meaningful interactions." These are provided by the strategic, relational and technological context in which e-government systems must be interpreted. Factors which affect the assimilation of e-government under this meta structure are top management leadership, user support and security.

(a) Security of E-Government Services

Security in this context is defined by Hossain et al., (2011a) as the degree to which e-government systems provide safeguards, and protect users as they manage businesses. Thus security focuses on perceptions about the security and protection of e-government systems such as how they protect information and information systems from unauthorized access, use, disclosure, disruption, modification or disruption in order to

provide integrity, confidentiality and availability. One of the questions asked respondents was whether MTI had a code of conduct to describe data protection obligations and responsibilities that employees, contractors, and third party users must accept when working with MTIMIS. The results of the study indicated that 13 out of 30 respondents, (43.3%) said that there was no such codes in place at all, 2 (6.7%) said they were used minimally, 8 (26.7%) said they were somewhat used, 4 (13.3%) said they were used moderately, 1 (3.3%) said they were extremely used. 2 responses, (6.7%) were invalid as they were entered as missing numbers. Figure 4-1 presents the study findings on whether MTI had in place a code of conduct to describe data protection obligations and responsibilities with regard to the use of MTIMIS.

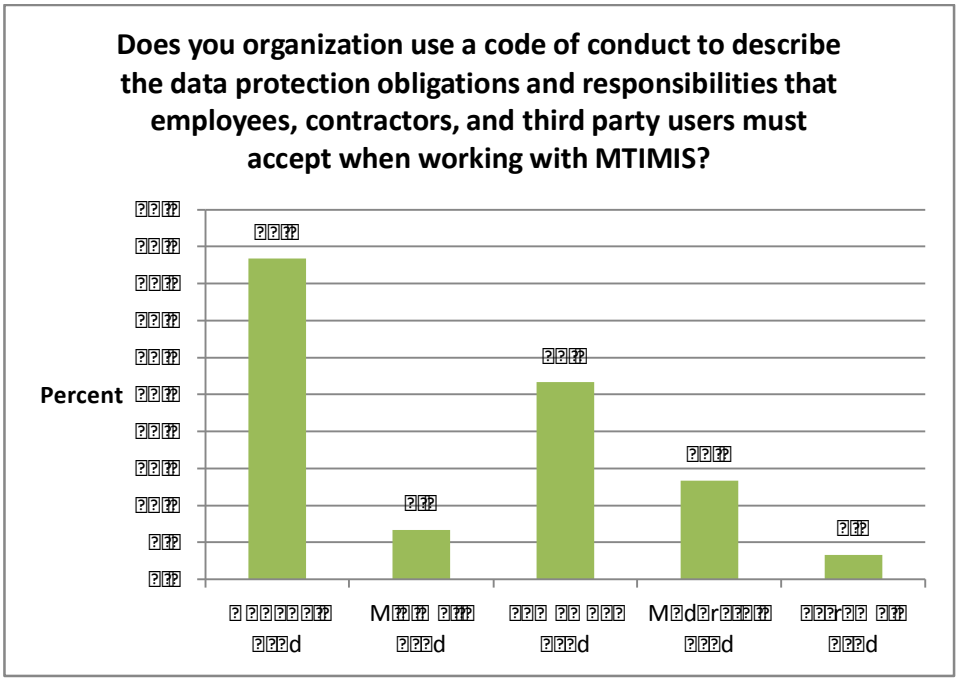

Figure 4-1: Use of a code of conduct to describe data protection obligations and responsibilities

One of the questions asked users was what measures were in place to protect the information held in MTIMIS. The findings revealed that 1 out of 30 respondents (3.3%) said the measures were physical barriers, 27 (90%) were passwords, 1 (3.3%) was firewalls. 1 (3.3%) response was captured as missing and was thus not valid for inclusion. This is summed up in Figure 4-2.

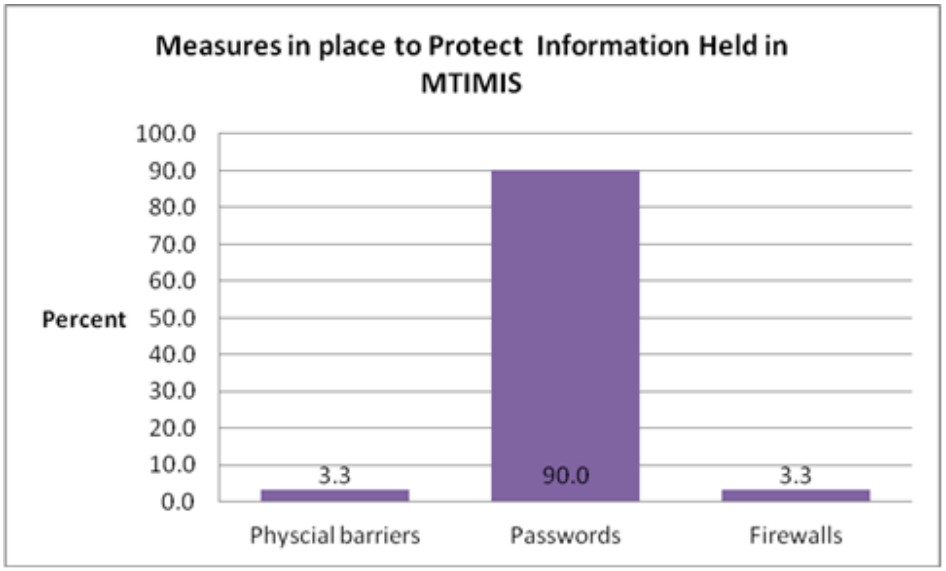

Figure 4-2: Measures in place to protect the information held in MTIMIS

MTIMIS users were also asked if MTI had policies or rules to secure information for the conduct of business through e-government systems. 2 out of 30 (6.7%) of the respondents said there was such a policy in place, another 2 (6.7%) said there was no policy in place while 25 (83.3%) said they did not know whether there was such a policy in place. 1 (3.3 %) did not attempt the question. The majority of respondents (83.3%) were not aware of the presence of a policy regulating the use of MTIMIS for the conduct of business through e-government systems. Since some of the respondents said that there was a policy in place, the researcher asked to be furnished with a copy of the policy to observe its contents. However, the policy was not availed and this confirmed that indeed there was no such policy in place. This is represented in Figure 4-3.

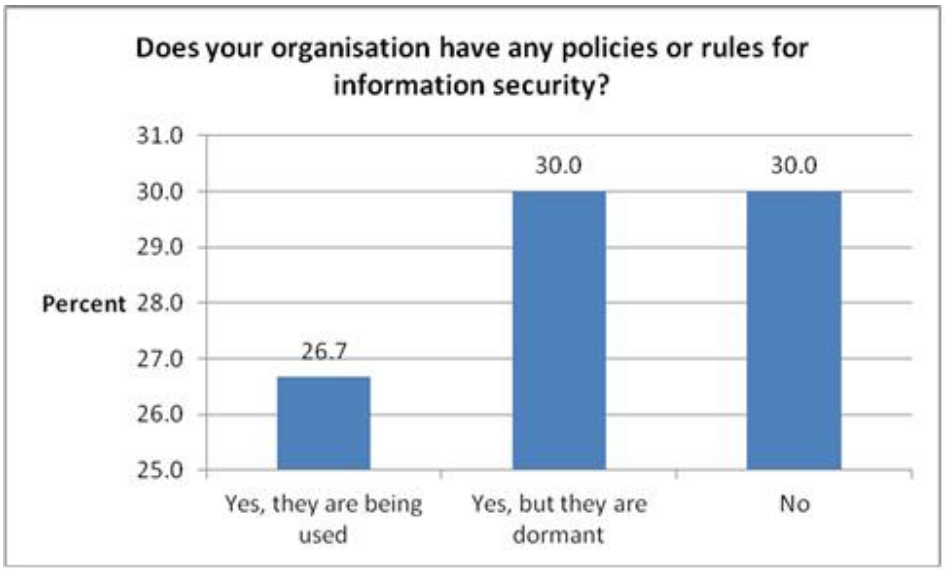

Figure 4-3: Availability of policies or rules to secure information for the conduct of business through e-government systems

MTI clients were asked to respond to the statement: "I am satisfied with the security and privacy measures provided with the e-government system." The responses revealed that 6 out of 15 (40%) agreed that they wre satisfied with the security and privacy measures provided for e-government systems, 3 (20%) disagreed while 6 (40%) maintained a neutral position.

(b) Top Management Leadership Support

Top management support is one of the factors that determined the assimilation of e-government systems. According to Hossain et al., (2011a), top management leadership refers to the extent to which top management communicates the strategic context for e-government systems deployment, which actually informs the cognition of the business need of e-government systems. MTIMIS users were asked if MTI senior management was engaged in IT related issues and decision making. Seventeen (17) out of 30 (57%) agreed that senior management was engaged in IT-related issues and decision-making, 8 (11%) disagreed while 5 (17%) maintained a neutral position.

(c) User Support

User support is another factor that affects assimilation of e-government systems (Hossain et al., 2011a). It refers to perceptions about the technical support from service providers for e-government systems. MTIMIS users were also asked if they were satisfied with ICT user support for MTIMIS. 21 respondents, (70%) indicated that they were moderately satisfied, 6 (20%) said they were very satisfied while 3 (10%) said they were minimmally satisfied. The majority of respondents said they were moderately satisfied with user support for MTIMIS. Figure 4-4 below presents the study findings with regard to user satisfaction with ICT user support for MTIMIS.

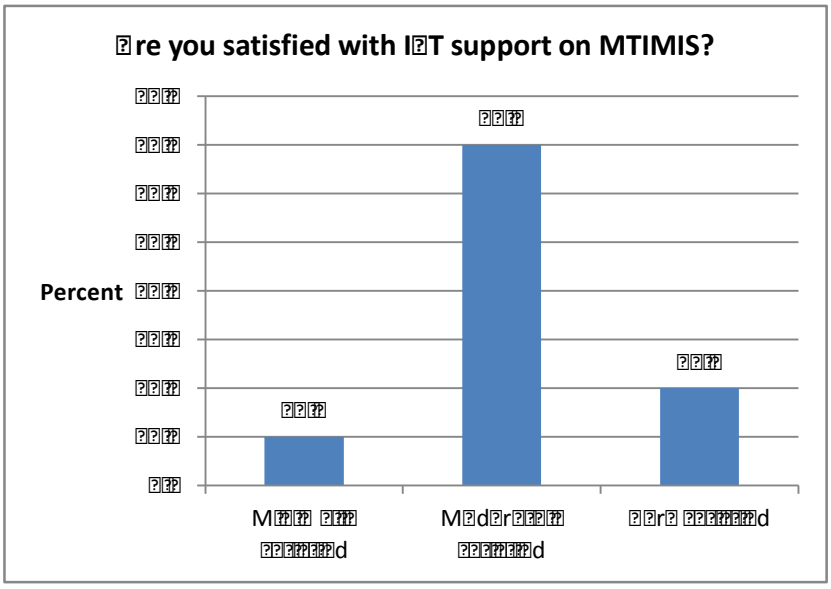

Figure 4-4: User satisfaction with ICT support for MTIMIS

MTIMIS users were also asked if they had been trained to use MTIMIS. Twenty-nine, 29 (97%) respondents said they were trained while only one user, 1 (3%) was not trained. This is presened in figure 4-5.

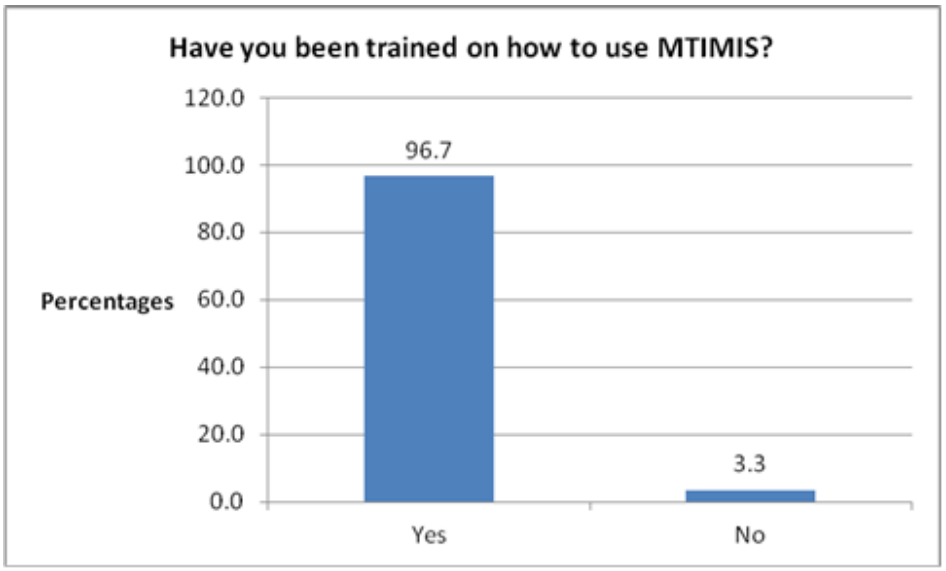

Figure 4-5: Training on how to use MTIMIS

4.4.1.2 Meta Structure of Domination

In the perception of e-government systems assimilation, meta-structure of domination refers to resources such as capital and human resources to uptake e-government and assimilate it in the work processes. This section presents the factors that affect the assimilation of e-government systems and these have been placed under the Meta structure of Domination (Hossain et al. 2011a). There are four of such factors and these are top management leadership, IT sophistication, financial resources, User IT competence and organisational absorptive capacity.

a. Top Management Leadership

According to Hossain et al. (2011a), top management leadership under the meta structure of domination refers to the extent to which top management signals political support for the initiative and legitimize actions and behaviours related to e-government systems assimilation as shown by their active involvement of e-government systems. Regarding top management leadership for MITIMIS implementation, users were asked whether

senior management led the way by using MTIMIS themselves, the results revealed that 23 (77%) of users believed senior management is using MTIMIS. 5 (17%) indicated that management does not use MTIMIS while 2 (7%) did not respond to the question. The majority of respondents (77%) were of the view that the leadership used MTIMIS. IT officers were asked if top management was actively involved in the assimilation of e-government systems in the Ministry.

The 4 IT Officers interviewed indicated that there was a lack of coordination to guide and support for the implementation of MTIMIS. Piloting of e-government systems in a bid to automate was cited as taking too long because they are not monitored. Implementation of systems is said to be ongoing but there is no authority to guide implementation. Other IT officers said support from leadership is there but with little understanding hindered by lack of ICT background. The teams, which have been tasked to lead and control e-government processes, are not doing enough to put everybody on board. Other IT officers said there is adequate support from top management leadership. They also confirmed that management ensures that users of different systems and IT staff in the various stations were provided with training and continuous support for effective implementation of the system.

b. User IT Competence

User IT competence is one of the factors that determines the assimilation of e-government systems by users. As said by Hossain et al. (2011a), User IT competence refers to the belief that one is capable of performing in a certain manner to attain certain goals, such as the confidence to use e-government systems. MTIMIS users were therefore asked if they considered themselves familiar with MTIMIS such that they can use it with ease. Fourteen, 14 (47%); the majority, said they were moderately familiar with MTIMIS, 7 (23%) said they were extremely familiar with MTIMIS while 4 (13%) indicated that

they were slightly familiar. The responses are presented at Figure 4-6.

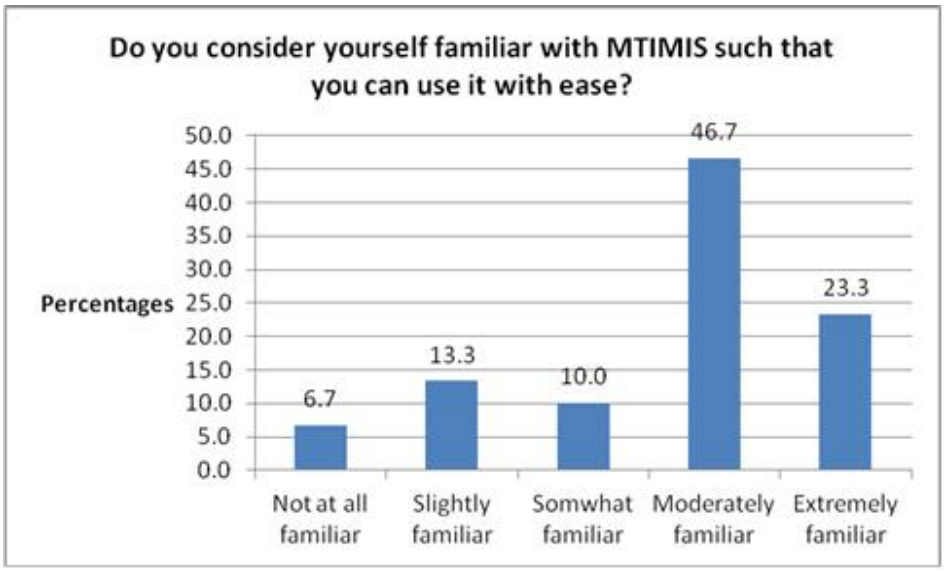

Figure 4-6: Familiarity and ease of use of MTIMIS

The degree to which a person believes that using computer technology would be achieved with minimum possible effort is associated with ease of use (Lin, Fofanah & Liang, 2011, citing Ajzen & Fishbein, 1972). MTI clients were in the same manner asked to state by level of agreeing if learning to operate the e-government system would be easy for them. 11 out of 15 (73.3%) agreed that it would be easy to operate the e-government systems while 4 (26.7%) of the respondents were neutral.

MTI clients were also asked whether or not MTI website was difficult to use. 2 out of 15 (13%) said that MTI website was difficult to use, 8 (53%) disagreed while 5 (33%) maintained a neutral position. The majority (53%) of MTI clients disagreed that its website was difficult to use. To explore further on the familiarity of the public with online systems, MTI clients were asked to rate by level of agreeing on the statement: "I have enough internet experience to use the e-government services". 3 (20%) disagreed while 12 (80%) of the respondents concurred with the statement. The majority of the respondents (80%) said that they had enough internet experience to use e-government services. This response is consistent with the previous one whereby most of the respondents (53%) indicated that the MTI website was not difficult to use.

c. Organisational Absorptive Capacity

Absorptive capacity is one of the several factors that affect the adoption of assimilation e-government systems classified under the Meta structure of domination (Hossain et al. 2011a). In this context, organisational absorptive capacity is defined by Cohen and Levinthal (1990) and Tippins and Sohi (2003) as an organisation's capability to absorb, through existing infrastructures to assimilate and use new ICTs such as e-government systems. It follows therefore that the availability of ICT infrastructure determines the assimilation of e-government systems. MTIMIS users were asked if there was adequate infrastructure for e-government functions. 10 out of 30 respondents, (33.3%) answered in the affirmative, 18 (60%) responded negatively while the rest, 2 (6.67%) did not respond to the question. On the basis of the above responses, it could be said that there was inadequate infracstructure for e-government funtions as the majority said so. This is because through observations, the researcher was able to see first hand equipment neccessary for e-government functions and such equipment included computers, computer servers and software installed in computers such as Internet Explorer, as well as search engines such as google and yahoo. Figure 4-7 represents responses of participants relating to the adequacy of ICT infrastructure for e-government at MTI.

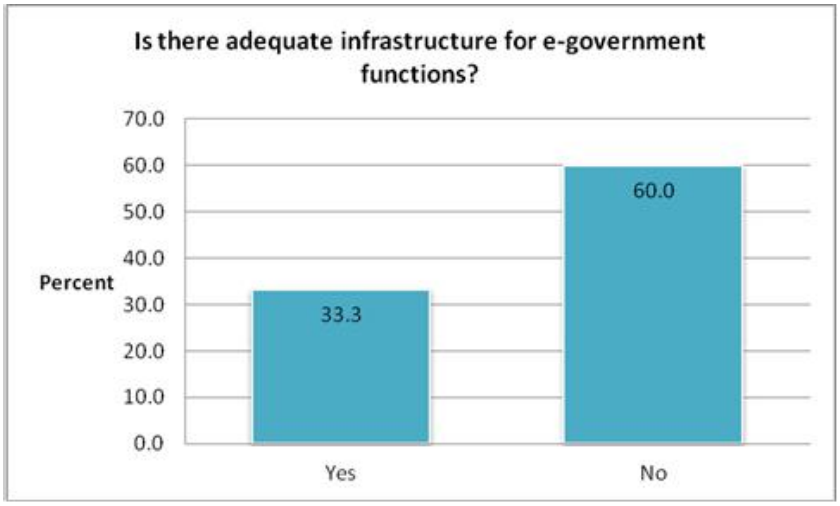

Figure 4-7: Adequacy of infrastructure for e-government functions

Apart from the adequacy of ICT infrastructure as presented in Figure 4-7 above, MTIMIS users were also asked to describe the quality of ICT infracstructure. 10 out of 30 respondents, (33.3%) indicated that the state of ICT infracstructure was poor, 7 (23%) said it was fair while 11 (37%) said it was good. 2 (6.67%) did not respond to the question. The majority of respondents (37%) said that the ICT infrastructure in place was good for e-government functions and the equipment seen by the researcher also suggested that it was adequate.

MTI clients as customers are expected to have a bearing on the organisation's absorptive capacity. MTI clients who are expected to use systems that MTI implemented were asked to indicate if they have the resources necessary to use the online government systems. 4 out of 15 (27%) disagreed with the statement indicating that they did not have enough resources, 2 (13%) maintained a neutral position while 9 (60%) agreed indicating that they had enough resources to use online government systems. The results are summarised in Figure 4-8.

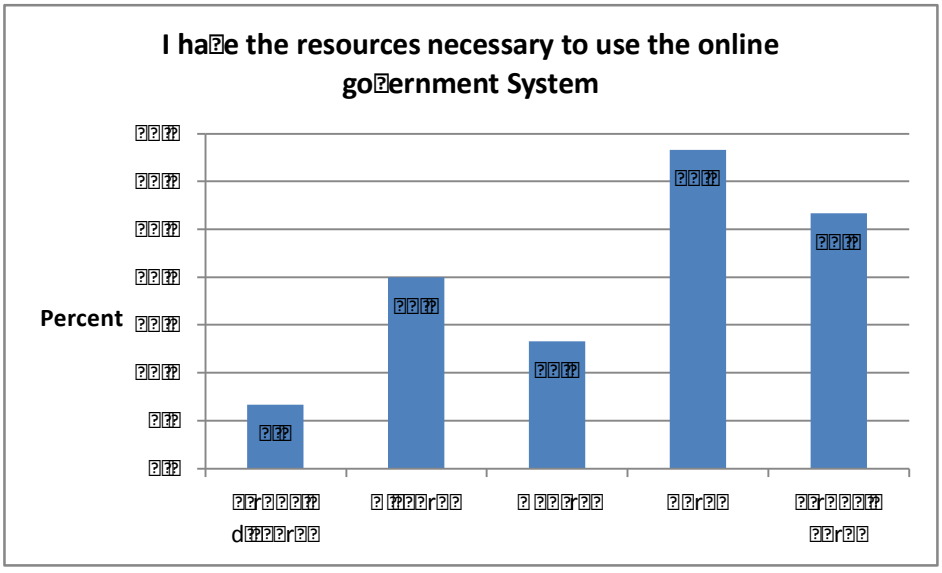

Figure 4-8: I have the resources necessary to use the online government system

d. Financial Resources

Financial resources are another factor that affects the assimilation of e-government systems which is categorized under the meta structure of domination (Hossain et al. 2011a). It refers to the general base of financial resources available for investment in organisational improvement and innovation and such innovations include the assimilation of e-government systems. Questionaires were given out to Action Officers who work with MTIMIS. They were asked if the availability of resources, particularly financial resources, for the implementation of MTIMIS was a problem. Eleven (11) out of 30 (37%) indicated that financial reseources *were* a slight problem, 5 (17%) said it was not at all a problem while four 4 (13%) indicated that finance was somewhat of a problem. In addition, 4, (13%) responded that financial reseources *were* a serious problem while 6 (20%) did not respond to the question. From the elicited responses, it could be said that lack of financial resources was a problem towards the implementation of MTIMIS.

e. ICT Sophistication

Amongst the factors that affect the assimilation of e-government systems is ICT sophistication which is also classified under the meta structure of domination (Hossain et al., 2011a). ICT sophistication refers to the actual ICT sophistication and capabilities as an aggregate signal of the desirability and importance of IT related innovations for core organisational processes which in the context of this study, include e-government systems assimilation which help the organisation to chieve its mission and mandate. MTIMIS users were asked whether the system had brought improved customer service and 24 out of 30 (80%) answered in the negative while 6 respondents (20%) did not respond to the question. Another question asked whether the implementation of MTIMIS had improved access to information and 19 (63%) said yes, 7 (23%) said no, while 4 (13%) did not answer the question.

4.4.1.3 Meta–Structure of Legitimisation

Hossain et al. (2011a) indicates that the meta structure of legitimization refers to goals and organisational standards that regulate actions and behaviours for e-government systems assimilation. Under this meta structure, the identified factors that affect the assimilation of e-government systems were top management leadership, e-government standards efficacy and the regulatory environment.

a. Management Leadership

Under the Meta-structure of Legitimisation, top management leadership regulates actions and behaviours for e-government system assimilation by establishing goals for initiatives and standards to monitor, assess, and evaluate them (Hossain et al., 2011a). IT officers were asked if lack of top management support was a barrier that hindered the e-government systems assimilation process. A total of 3 out of 4 respondents, (75%) indicated that lack of top management support was a barrier that hindered the e-government assimilation process while (25%) said top management was not a barrier at all. On the basis of the responses, a lack of top management support was found to be a barrier to e-government assimilation. The respondents' responses are presented at Figure 4-9.

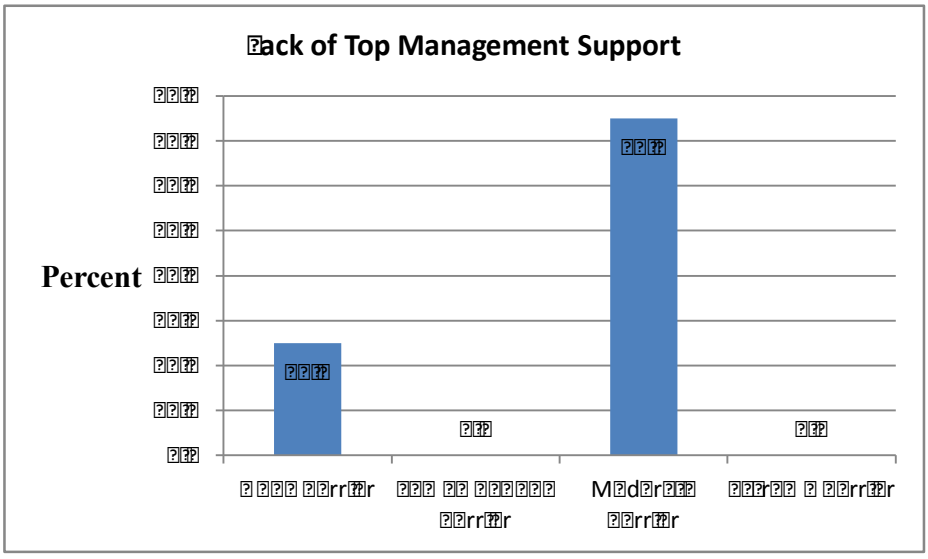

Figure 4-9: Lack of Top Management Support

b. E-government System Standards Efficacy

Standard efficacy is a meta-structure of legitimisation factor that relates to perceptions about e-government systems business standards as they relate to the requirements of the work processes of the organisation. According to Rai et al. (2006), the routine work embodied within the standard efficacy factor incorporate the priorities to conduct tasks as well as the logic by which tasks are related. In other words, these factors deal with people who are fundamental in implementing the e-government process. This study identified IT officials as one of the drivers of the standards efficacy factor.

IT officers were asked whether or not with the quality of infrastructure in place, the country was ready to embrace e-government, 4 out of 4 or 100% indicated that infrastructure was fairly good as MTI used the latest information and communication technology equipment. When asked whether the systems are compatible such that they can be used across different departments, all the 4 IT Officers (100%) indicated that their systems are compatible and government ministries can communicate and share information with other departments. They were also asked whether they have any standards in place and the IT officers indicated that they have tools in place to monitor people's conduct. Currently some of the laws served as standards. These included the Cybercrimes and Computer Related Crimes of 2007, Electronic Communications Transactions Act of 2014 and the Electronic Evidence Act of 2014. The laws were used as standards largely because specific e-government standards were yet to be developed and implemented.

c. Regulatory Environment

The regulatory environment has been identified by Hossain et al. (2011a) as a factor that affects the asimilation of e-government systems. The regulatory environment is one of the three factors classified under the meta structure of legitimization. According to Hossain et al. (2011a), regulatory environment refers to the role of government in encouraging e-government systems usage by establishing e-government laws and

providing incentives for compliance to such laws. The laws are meant to protect the electronic transactions which are conducted through the internet. MTIMIS users were asked if there are regulations regarding the use of MTIMIS. Twenty-one (21) (70%) of the respondents indicated a lack of knowledge in the existence of regulations regarding the use of MTIMIS. Four (4) respondents, i.e (13%) indicated that there are regulations guiding the use of MTIMIS, whereas another four (4) indicated that there are no regulations. The graph in the next page, Figure 4-10 presents a statistical distribution of the responses.

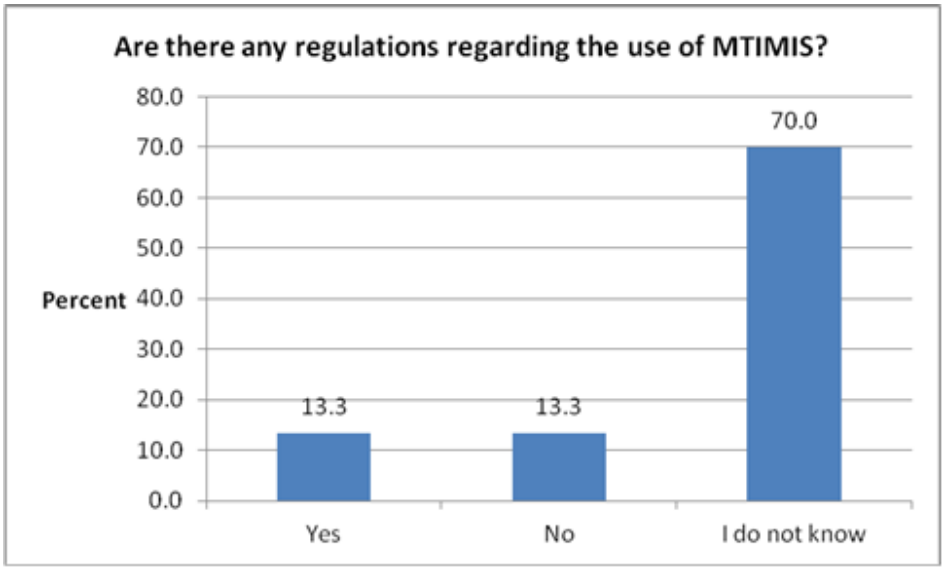

Figure 4-10: Regulations Regarding the Use of MTIMIS

In addition, participants were asked if there are policies guiding the use of MTIMIS. Two (2) (6.7%) respondents indicated that there are policies guiding the use of MTIMIS. Another two (2) (6.7%) indicated that there are no policies guiding MTIMIS usage. However, twenty-five (25) (83%) indicated a lack of knowledge on any existing policy guiding MTIMIS usage. Below is the graphical presentation of the responses in Figure 4-11.

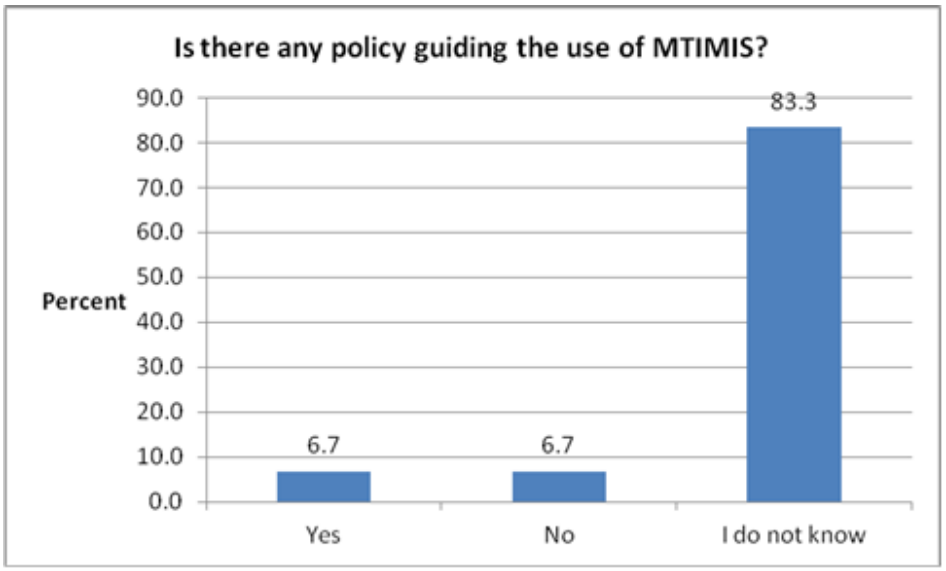

Figure 4-11: Policy guiding the use of MTIMIS

4.4.1.4 Other Factors that Affect Assimilation of E-Government Systems at MTI

Apart from factors that affect the assimilation of e-government systems at MTI as revealed by the study in line with the Organisational E-Government Systems Assimilation Framework (EGAF) model (Hossain et al., 2011a) as used in the study, some other factors were unearthed. These were lack of awareness of e-government, unreliable access to internet country wide, lack of coordination between departments and negative attitudes towards e-government.

a. Lack of Awareness of E-Government

Awareness of e-government came up as one of the factors that affect the assimilation of e-government systems at MTI. IT officers were asked if lack of awareness about e-government hindered the assimilation of e-government systems. A total of 75% of respondents indicated that a lack of awareness about e-government is a barrier to assimilation. The levels of barriers indicated by the respondents include 'somewhat a barrier', 'moderate barrier', and 'extreme barrier'. Only 25% indicated that a lack of awareness of e-government in MTI is not a barrier. Based on the responses, this study

concludes that lack of awareness of e-government is a barrier to e-government systems assimilation in MTI. The respondents' responses are presented in Figure 4-12.

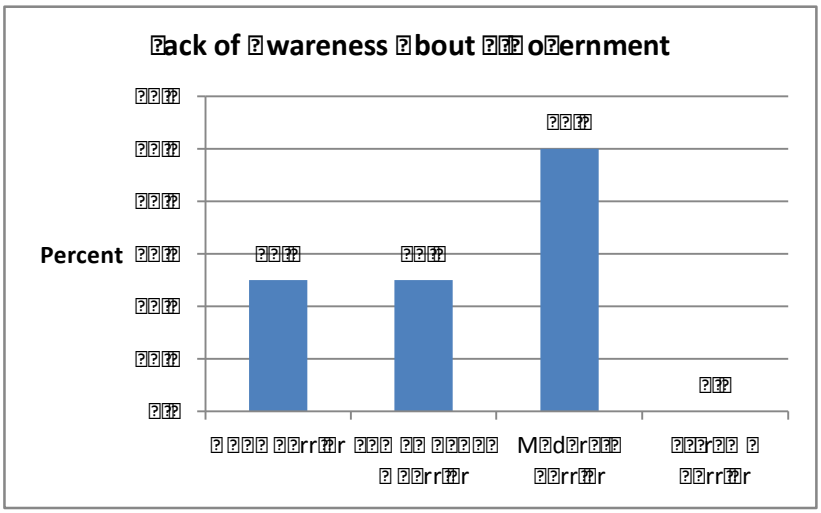

Figure 4-12: Lack of Awareness About E-government

b. Unreliable Access to Internet Country Wide

Access to reliable internet around the country was also mentioned as a factor that affected the assimilation of e-government systems at MTI. For e-government to flourish there should be an uninterrupted internet in both the cities and the rural settings. To this effect, respondents were asked if access to internet would influence the assimilation of the e-government in the Ministry of Trade and Industry. Two (2) of the respondents (50%) indicated that access to internet in the cities would influence the assimilation of the e-government in the Ministry of Trade and Industry, whereas 1 (25%) indicated the contrary. One (1) respondent (25%) did not answer the question. From the responses, it will be safe to assert that access to internet in the city will enhance the assimilation of e-government in MTI. Access to internet in rural areas was also found to be a factor that affected the assimilation of e-government systems. Respondents were thus asked if access to internet influenced e-government assimilation. The findings revealed that 3 out of 4 (75%) respondents indicated that access to internet influenced e-government assimilation, 1 (25%) disagreed. The majority of respondents indicated that for both cities and rural

areas, access to reliable internet was a factor that affected the assimilation of e-government systems at MTI.

IT officers were asked what the key problems of IT infrastructure that affect the adoption of e-government negatively are. They indicated that there is a problem of network coverage in rural areas but there is no such concern in Gaborone. They also said there is lack of internet in outstations outside Gaborone. Power cuts were also cited as a problem that affects networks. Load shedding is said to be affecting IT infrastructures in a negative way and sometimes damages facilities. Lack of IT facilities was also said to be a problem. Sometimes it takes long to acquire some equipment. The systems constantly crash resulting in data loss. Sometimes people are employed to specifically recapture the lost data using manual files.

c. Lack of Coordination between Departments

The study findings also revealed that poor coordination between departments hindered the assimilation of e-government systems at MTI. IT officers were asked to rate the level of barrier brought about by lack of coordination of systems between departments. Specifically, out of 4, a total of 3 (75%) of the respondents indicated that a lack of coordination between departments is a barrier to assimilation. There are levels of barrier indicated by the respondents as in the case of the previous barrier tests. These include 'somewhat a barrier', 'moderate barrier', and 'extreme barrier'. Only 1 respondent (25%) indicated that a lack of coordination between departments is not a barrier. Based on the responses, this study concludes that a lack of coordination between departments in MTI is a barrier to e-government assimilation. Figure 4-13 illustrates the responses.

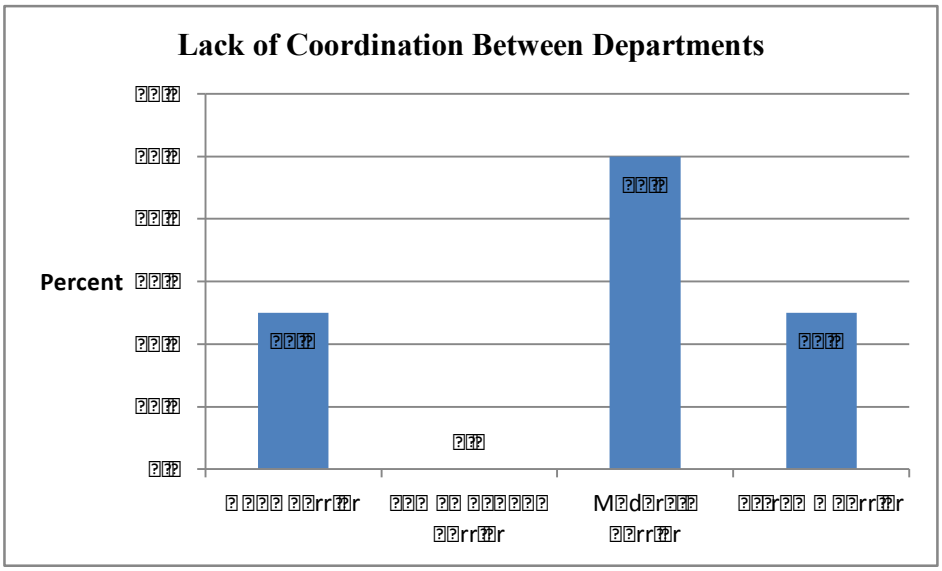

Figure 4-13: Lack of Coordination between departments

d. Negative Attitudes towards E-Government

Negative attitudes towards e-government systems were also cited as a factor that affected the assimilation of e-government systems at MTI. IT officers were asked to state whether or not negative attitudes towards e-government was a factor that affected the assimilation of e-government systems at MTI. A total of 75% indicated that negative attitude towards e-government is a barrier to assimilation. There are levels of barriers indicated by the respondents. These include 'somewhat a barrier', 'moderate barrier', and 'extreme barrier'. Only 25% indicated that negative attitude towards e-government in MTI is not a barrier. Based on the responses, this study concludes that a negative attitude towards e-government is a barrier to e-government assimilation in MTI. The respondents' responses are presented in Figure 4-14.

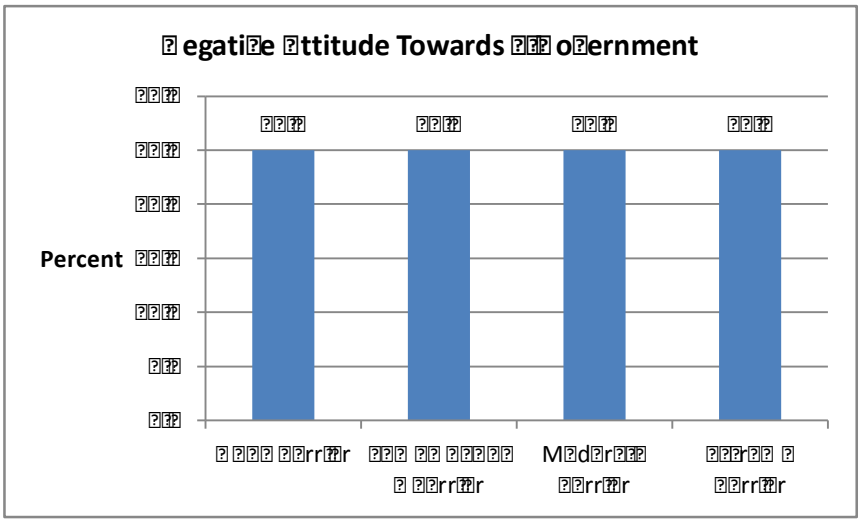

Figure 4-14: Negative Attitude towards e-government

To examine the public's attitude towards e-government systems, MTI clients were asked to indicate whether or not they are looking forward to using e-government systems wholly. 2 respondents (13%) disagreed with the statement that they are looking forward to using e-government systems wholly. 10 (47%) agreed, while 3 (20%) remained neutral. The results are summarized in Figure 4-15.

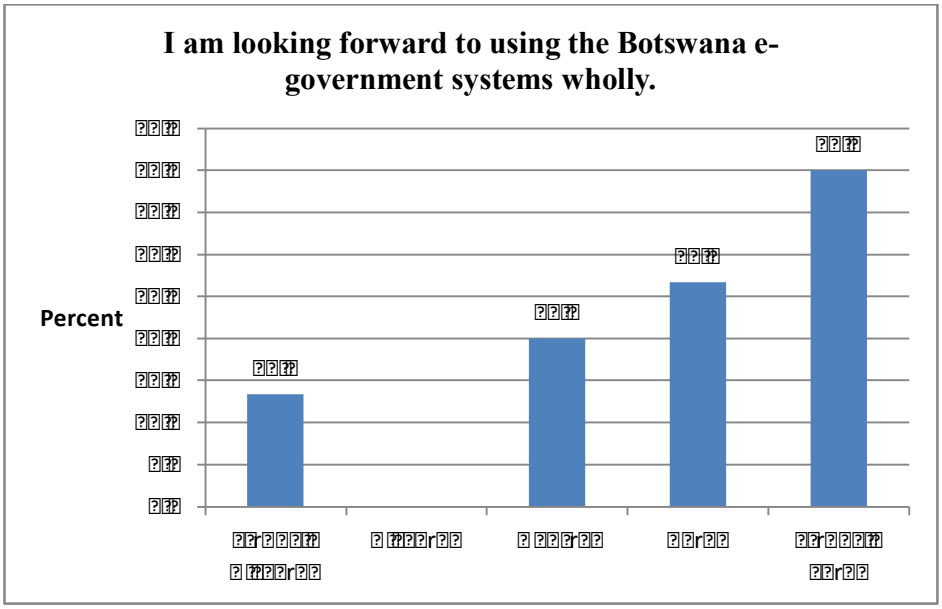

Figure 4-15: Attitudes towards using the Botswana e-government systems wholly

4.4.2 Solutions by the e-government Office on the drivers that affected the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana?

Office of E-Government Controller's response to the factors affecting assimilation of e-government Systems at MTI

The second objective of this study sought to examine how the Office of the E-Government Controller as the drivers of e-government are dealing with factors that hindered the implementation of e-government at the Ministry of Trade and Industry (MTI). Such factors that hindered the assimilation of e-government systems at MTI include lack of top management support, poor awareness of e-government services, unreliable internet coverage, inadequate regulatory environment, inadequate ICT infrastructure, lack of coordination between departments and negative attitudes towards e-government.

Recognizing the role played by top management in making e-government assimilation a reality, the E-Government Office who are the drivers of e-government indicated that they

have resolved to address the issue of poor support by the leadership through capacity building workshops for management officers in government ministries and departments. The workshops have been able to expose management to the ideals of e-government and this may get their commitment. In the words of the interviewee,

"Top management and officers of various ministries and departments are undergoing specialized training to help them manage change and sustain support for the e-government project. They are being prepared to make e-government a priority and to embrace transformation by putting it in a broader context." (Field Data, 2013)."

Regarding the issue of negative attitudes to e-government systems implemented, the E-Government Office indicated that change management was a component of information systems implementation package. He indicated that during awareness raising workshops for the leadership of various government ministries and departments, the issue of change management was impressed upon them as a barrier to e-government implementation if it was taken lightly. Basically, the E-Government Controller said that government ministries and departments were encouraged to make sure that prior to e-government information systems implementation, individual users should be encouraged to accept changes brought by implemented information systems by training them on system use and also communicating the benefits of e-government systems being implemented. The e-government office was also asked whether there were fears and apprehension of action officers in implementing e-government systems as is common in newly implemented information systems and the response was that there was resistance due to replacement fears. Officers fear that they would be replaced by computers. He added that change management strategies put in place by implementing government agencies would address the issue of computer anxiety related to the implementation of e-government information systems. This may get their commitment. In the words of the interviewee,

> *"Top management and officers of various ministries and departments are undergoing specialized training to help them manage change and sustain support for the e-government project. They are being prepared to make e-government a priority and to embrace transformation by putting it in a broader context." (Field Data, 2013)."*

The e-government controller was asked to state ICT constraints Botswana faces in e-government implementation processes? E-government controller (2013) made the claim that the country is scattered which hinders smooth implementation. He said although ICT facilities are not much of a problem in Gaborone, he said internet connectivity is a challenge in rural areas. He said that strategies are being drawn which are anticipated to help implementers to bridge the digital divide between the urban and rural populations to ensure that no one is marginalized by technology. To address the challenge of a scattered country the e-government office is using a phased approach whereby different projects are implemented at different times in different regions at various stages. The E-Government Controller added that the issue of ICT constraints was being addressed by the Botswana Power Corporation electrification project which has targeted rural villages around Botswana. ICT infrastructure need electricity so the electrification project will partly assist in addressing the ICT constraints related to e-government implementation.

The e-government controller was asked to describe the key challenges for e-government implementation and assimilation within the public sector in Botswana. He stated that:

> *"Institutional rigidness is a problem; as entities government departments are unwilling to change from their usual manual systems. Mindset change is also a hurdle, individuals including implementers."*

In speaking of the relationship between e-government and legislation environment e-government controller (2013) has this to say:

> *The 2011-2016 e-government strategy includes the review of legislation to facilitate online transactions. Legislation is currently shortcoming to deal with e-government transactions. Laws must be modernized and implemented to fully support electronic documents and transactions.*

Specifically, the E-Government Controller pointed out that the Electronic Evidence Act which recognizes the use of electronic records to transact official government business was passed in April 2014 and once it is implemented it will force government departments and ministries to comply with it. He added that the regulations for the law were still being enacted and being more explicit, they will further give a push to the

implementation of e-government systems. The E-Government Controller also added that another piece of legislation, the Electronic Communications and Transactions Act was passed to promote and legalize e-commerce transactions. Such a law will also give e-government adoption by government agencies a push as legal compliance is not a choice but a must.

The E-Government Controller indicated that coordination of e-government projects between Ministries and Departments was a real problem. One indicator of such problems was the procurement of expensive information systems which perform some of the functions being performed by existing systems. Some of the projects are later abandoned due to lack of maintenance and support by suppliers who are able to leave them in the lurch unaware, at a great cost for government. The E-Government Controller indicated the solution for such poor coordination was that the E-government office has moved to Office of the President so that it can have more authority and also to be able to curb the problem of enforcement.

The E-Government Controller was asked how they dealt with internet connectivity challenges in Botswana as the capacity for Botswana's bandwith was relativelly small and the response was that the government of Botswana had invested in internet connectivity infrastructure such as the West Africa Cable System (WACS) and EASSY cables. Once completed, these facilities will result in cheaper and faster internet connectivity. Moreover, BOFINET was formulated to address broadband strategy.

How are you dealing with the lack of existing policies and rules? E-government office has moved to Office of the President so that we can have authority; to curb the problem of enforcement. We are still working on policies in conjunction with International Telecommunication Union (ITU).

The e-government controller was asked how they are you dealing with inadequate infrastructure for e-government functions. He cited connectivity as a challenge in Botswana as the e-government controller stated that the capacity of our bandwidth internet connectivity is small. Government facilitated the connection to West Africa

Cable System (WACS) and EASSY cables. Moreover, BOFINET was formulated to address broadband strategy.

4.5 Summary

This chapter has presented the empirical findings of the study on the assimilation of E-government Systems at the Ministry of Trade and Industry in Botswana. The findings have showed that the implementation of e-government has been limited due to a number of factors such as a lack of awareness of the e-government campaign; lack of implementation of policies on rules for information security; inadequate infrastructure for internet, especially in rural areas and a lack of top management support. This research extends and enriches the literature on e-government assimilation by providing important new insights into e-government system assimilation. It worked with three meta-structures that play a significant role in e-government systems assimilation. These are the meta structure of signification, meta structure of domination and the meta structure of legitimisation.

CHAPTER 5: INTERPRETATION AND DISCUSSION OF RESULTS

5.1 Introduction

The previous chapter reported the findings of the study on the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana. Chapter 5 presents the interpretation and discussion of the study findings. It is organised logically according to the findings of the study. The chapter provides a discussion of the findings on factors that determine the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana. The specific objectives of the study are to:

1. Examine factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana.
2. Identify factors that enable and inhibit e-government assimilation at MTI.
3. Determine the role of e-government assimilation factors at MTI.
4. Establish how the drivers of e-government are dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana.
5. Suggest possible solutions in dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana.

The discussion and interpretation of the findings of the study is organised in accordance with the way the research objectives have been logically arranged.

5.2 Factors Affecting the Assimilation of E-Government Systems at the Ministry of Trade and Industry in Botswana.

The first objective of the study investigated the factors that affected the assimilation of e-government systems at the Ministry of Trade and Industry (MTI). The findings under this objective are presented under each of the Meta structures of Signification, Domination and Legitimization.

5.2.1 Meta structures of Signification

Under the meta structure of signification, the findings of the study indicated that security of e-government services, top leadership support and user support were factors that affected the assimilation of e-government systems at MTI.

a. Security of E-Government Services

Security of e-government services was revealed as one of the factors that affected the assimilation of e-government services at MTI. Security in this context is defined by Hossain et al., (2011a) as the degree to which E-Government systems provide safeguards and protections for users to process business. Thus security focuses on perceptions about the security and protection of e-government systems such as how they protect information and information systems from unauthorized access, use, disclosure, disruption, modification or disruption in order to provide integrity, confidentiality and availability. Included within the aspect of security is the issue of policies for privacy and security of information.

According to Basu (2004), security of information within e-government systems is a vital component in the trust relationship between citizens and government. If not addressed well, security issues may present the largest obstacle to the development of e-government services. Thus, security policies and standards that meet citizen expectations are an important step toward addressing these concerns (Alshehri & Drew (2010) citing Sharma & Gupta, 2003). The use of security solutions, including digital signatures, encryption, user names, passwords, customer unique numbers, bank account numbers, and others being transmitted over the Internet and stored electronically can help in fulfilling security goals in e-government applications. Furthermore, Seifert and Bonham (2004) point out that information security, specifically cyber security or computer security is important in addressing security concerns in e-government. A survey of American and Australian public managers by Teicher and Dow (2002) pointed out that security is considered a major barrier to the implementation of e-government by 36.8% of Australian respondents and by 37% of US respondents. Australian respondents ranked it the second most

important obstacle to e-government implementation. Feng (2003) advised that a body of security professionals should be set up to respond to threats and breaches. Additionally, there is a need for authority and an infrastructure encryption system to secure information in e-government systems.

Around the world, privacy and security of information has also been revealed as a challenge identified in e-government implementation (Layton, 2007). Potential users of e-government services feel that using websites to transfer their personal information (such as name, picture, and date of birth, ID number, and credit card details), sharing information with public agencies online or electronically is not safe. They feel their personal information may not be protected and thus not secure enough to protect it. Safeena and Kammani (2013) point out that e-government is considered as a tool for easy administration of government activities; its success depends on its vast usage. Kamatula (2010) also concurs that there are no clear policies, procedures and guidelines for the smooth implementation of e-government in African countries.

In this study one of the questions asked respondents was whether MTI used a code of conduct to describe data protection obligations and responsibilities that employees, contractors, and third party users must accept when working with MTIMIS. The results of the study indicated that 13 out of 30 respondents, (43.3%) said that there were no such codes in place at all, 2 (6.7%) said they were used slightly, 8 (26.7%) said they were somewhat used, 4 (13.3%) said they were used moderately, 1 (3.3%) said they were used extremely. 2 responses, (6.7%) were invalid as they were entered as missing numbers. The fear that important information will be leaked through the use of MTIMIS negatively affected its uptake although measures such as the use of codes and passwords were in place. It seems from interviews that officers were used to using paper records which they deem more secure than using an electronic information system such as MTIMIS.

Users were also asked what measures were in place to protect information held in MTIMIS. The findings reveal that 1 out 30 respondents (3.3%) said the measures were physical barriers, 27 (90%) were passwords, 1 (3.3%) were firewalls. 1 (3.3%) response was captured as missing and was thus not valid for inclusion. MTIMIS users were also

asked if MTI had policies or rules to secure information. 2 out of 30 (6.7%) of the respondents said there was such a policy in place, another 2 (6.7%) said there was no policy in place while 25 (83.3%) said they did not know whether there was a policy in place. 1 (3.3 %) did not attempt the question. The majority of respondents were not aware of the presence of a policy regulating the use of MTIMIS for the conduct of business through e-government systems at MTI. 8 out 30 (26.7%) respondents said that the policy was in place and was used, 9 (30%) said the policy was in place but it was dormant while another 9 (30%) said there was no policy for securing information. 4 (13.3%) did not attempt the question. Most of the respondents were not aware of the presence of a policy. Even though some officers said that there was a policy on information protection in place, when the researcher asked for a copy to appreciate the policy, it could not be availed and this confirmed the responses of questionnaire respondents who said that there was no such policy in place. The leadership is always more concerned with policy issues and perhaps the absence of the policy on the protection of information in MTIMIS explains the slow uptake of the system and this negatively affected its usage.

MTI clients were asked to rate their satisfaction with the security and privacy measures provided with e-government systems. 6 out of 15 (40%) agreed that they are satisfied with the security and privacy measures provided with e-government systems, 3 (20%) disagreed while 6 (40%) maintained a neutral position. The majority of MTI clients, (40%) either agreed were satisfied with the security and privacy measures provided with e-government systems or remained neutral. Interviews with IT personnel have revealed that efforts have been made to secure information in MTIMIS. This is done through the use of passwords which serve as security codes to protect information of users of the system.

b. Top Leadership Support

According to Hossain et al., (2011a), top management leadership refers to the extent to which top management communicates the strategic context for e-government systems deployment, which actually informs the cognition of the business need of e-government

systems. A lack of top management support for e-government initiatives was also cited in the interview as a factor that militated against the assimilation of e-government. Leadership is cited as one of the main driving factors in any new and innovative project (Seifert & Bonham, 2004). The implementation of e-government needs the support from the leaders and top management. Top management support refers to the promise from leaders to accept, support and adopt the e-government systems and applications. Therefore, it plays a significant role in the adoption and implementation of e-government (Seifert & Bonham, 2004). The support from high-level is vital to e-government development, the gaining of required resources and training, the cooperation and coordination between partners and stakeholders for a successful implementation of e-government (McLure, 2001).

MTIMIS users were asked if MTI senior management was engaged in IT related issues and decision making. Seventeen (17) out of 30 (57%) agreed that senior management was engaged in IT-related issues and decision-making, 8 (11%) disagreed while 5 (17%) maintained a neutral position. In addition, the e-government officer was asked how he would describe the support and commitment of his leadership towards the e-government project. He indicated that they are very supportive and are also eager to provide online services. Interviews confirmed that there was leadership support from ministry executives and it was demonstrated by the funding of the project and the provision of other resources including human resources. MTIMIS was able to take off from the ground due to the visible leadership who made the decision to procure the MTIMIS. The support of the leadership enabled all the processes leading to the implementation of MTIMIS to be successful through their involvement in IT decisions. The Ministerial Tender Committee is a high level structure which made the decision to approve the implementation of MTIMIS. This was a positive move by the leadership as they are aware of the wider governments to utilize ICTs to improve the delivery of public services to citizens.

c. User Support

User support refers to perceptions about the technical support from service providers for e-government systems (Hossain et al., 2011a). User support is an important element in reaching the goal of universal usability for Web information systems (Engelbart, 1962). User support systems operate in association with the user to effectively accomplish a range of tasks. Some of these systems serve the purpose of expanding the user's natural capabilities, for example by acting as intelligence or memory augmentation mechanisms. Classified as an inter-organisational factor in e-government assimilation (Hossain et al., 2011b), user support from e-government system providers plays a significant role in shaping system user behaviour and has become an important component which is necessary for the success of information systems implementation especially in an environment where customer service is crucial (DeLone & McLean, 2003). Hossain et al. (2011b) agrees and further adds that there is a significant positive relationship between user support and assimilation.

MTIMIS users were also asked if they were satisfied with ICT user support for MTIMIS. 21 respondents, (70%) indicated that they were moderately satisfied, 6 (20%) said they were very satisfied while 3 (10%) said they were minimally satisfied. The majority of respondents said they were moderately satisfied with user support for MTIMIS. MTIMIS users were also asked if they had been trained to use MTIMIS. Twenty-nine, 29 (97%) respondents said they were trained while only one user, 1 (3%) was not trained. Interviews with IT Officers indicated that they were always available to offer user support to users of MTIMIS who experienced operational difficulties. This is reflected by the words of one user who said; "*IT Officers are always ready to assist us when we request for help although they at times come long after a request to come and assist was made.*" The researcher was able to observe one of the users actually using the system and the user said that continuous support by IT Officers led to them as users feeling confident to use the e-government system. The availability of end user support is a sign that the usage of MTIMIS could be a success and although that is a positive sign, other issues related to poorly implemented change management may have shadowed the efforts of willing IT Officers to assist officers who needed help with the system. Thus end user

support cannot be said to be a negative factor that affected the implementation of MTIMIS at MTI.

5.2.2 Meta Structure of Domination

The second batch of factors that were found to affect the assimilation of e-government systems at MTI have been classified under the broader term of the meta structure of domination. The study revealed that the specific factors, which affect the assimilation of e-government systems at MTI, are top management leadership, User IT competence, organisational absorptive capacity financial resources and ICT sophistication.

a. Top Management Leadership

According to Hossain et al. (2011a), top management leadership under the meta structure of domination refers to the extent to which top management signals political support for the initiative and legitimize actions and behaviours related to e-government systems assimilation as shown by their active involvement of e-government systems. Regarding top management leadership for MITIMIS implementation, users were asked whether senior management led the way by using MTIMIS themselves, the results revealed that senior management indeed led the way by using MTIMIS themselves, the results revealed that 23 (77%) of users believed senior management is using MTIMIS. 5 (17%) indicated that management does not use MTIMIS while 2 (7%) did not respond to the question. Interviews revealed that top management supported MTIMIS in terms of availing resources but when it comes actually using the e-Government system, the support was partial as some seem to want to cling to the use of manual systems while a few have taken to using the system. The researcher concluded from interviews that change management was poorly handled and it could explain the level of change embraced by the leadership. Although findings from questionnaires indicated that the leadership led by example by using the e-Government system being implemented, interviews revealed that there was some element of leadership resistance to using MTIMIS and that negatively affected its uptake. This has led to partial uptake of the system. Once the leaders are reluctant to show the way by using MTIMIS, it can be

expected that the junior officers will also do the same and that will not help system implementation.

Hossain et al., (2011) indicated that the beliefs of top management play a crucial role in promoting e-government system assimilation. For example, if top management believes in e-government system innovations and also communicates a clear vision about the organisational role of e-government, it becomes a strong signal to employees to evaluate, implement, and utilize such systems. Top management leadership also provides essential political resources to overcome resistance that typically accompanies organisational innovation (Howell & Higgins 1990).

b. User IT Competence

User IT competence is one of the factors that determined the assimilation of e-government systems by users. According to Hossain et al. (2011a), User IT competence refers to the belief that one is capable of performing in a certain manner to attain certain goals, such as the confidence to use e-government systems. According to Chwelos, Benbasat, and Dexter, (2001), User IT competence reflects human resources, especially system end users, who can legitimize information systems and support actions related to proper utilization and integration with existing processes. This includes the ability to make enhancements during usage of information systems. Hossain et al. (2011b) is of the view that organisations with a competent human resource have employees with high levels of information system knowledge who can contribute to best information management practices. Pudjianto and Hangjung (2009) also observe that organisations are likely to be successful in e-government implementation when employees have ICT expertise, as such competence increase opportunities for the implementation of technological innovations. Furthermore, empirical evidence suggests that organisations that have a human resource that is highly competent in using ICTs possess the knowledge and technical abilities required for the implementation of e-government applications (Lin & Lee, 2005). Hossain et al. (2011b) concludes that both IT sophistication and user IT competence indicates organisational readiness for e-government assimilation as the key

causal factors of the meta-structure of domination. Basically, this meta-structure reflects an organisation's resources that can be used to act on intentions, pursue goals, and exert power related to e-government system assimilation.

MTIMIS users were therefore asked if they considered themselves familiar with MTIMIS such that they can use it with ease. Fourteen, 14 (47%), which represented a majority said they were moderately familiar with MTIMIS, 7 (23%) said they were extremely familiar with MTIMIS while 4 (13%) indicated that they were slightly familiar. The degree to which a person believes that using computer technology would be achieved with minimum possible effort is associated with ease of use (Lin, Fofanah & Liang, 2011, citing Ajzen & Fishbein, 1972). MTI clients were in the same manner asked to state by level of agreeing if learning to operate the e-government system would be easy for them. 11 out of 15 or 73.3% agreed that it would be easy while 4 (26.7%) of the respondents were neutral. Interviews generally showed that MTIMIS users had some competencies in using the e-government system although it was clear that they needed continuous training as some officers had left after training and the ones who replaced them took time to be trained in system use and hence their competencies were not that good when compared to those that were formally trained to use the system.

MTI clients were also asked to state how long they had been using the internet to find out their familiarity with the internet. 9 (60%) said they had been using the internet for 1-5 years, 4 (26.7%) said 6-10 years, 1 (6.7%) said 11-15 years while the other 1 (6.7%) said 21 years and above. MTI clients were also asked whether or not MTI website is difficult to use. 2 out of 15 (13%) said that MTI website is difficult to use, 8 (53%) disagreed while 5 (33%) maintained a neutral position. To explore further on the familiarity of the public with online systems, MTI clients were asked to rate by level of agreeing on the statement: "I have enough internet experience to use the e-government services". 3 (20%) disagreed while 12 (80%) of the respondents concurred with the statement.

c. Organisational Absorptive Capacity

Absorptive capacity is one of several factors that affect the adoption of assimilation of e-government systems classified under the meta structure of domination (Hossain et al. 2011a). In this context, organisational absorptive capacity is defined by Cohen and Levinthal (1990) and Tippins and Sohi (2003) as an organisation's capability to absorb, through existing infrastructures to assimilate and use new ICTs such as e-government systems. Alshehri and Drew (2010) studied challenges of e-government Services Adoption in Saudi Arabia from an e-Ready Citizen perspective and also discovered that poor ICT infrastructure hampered e-government assimilation. The said ICT infrastructure does not only consist of simple telecommunications and computer equipment but it also includes E-readiness and ICT literacy, networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society. E-readiness and ICT literacy are necessary in order for people to be able to use and benefit from e-government applications. A study by Nkwe (2012) on opportunities and challenges of e-government in Botswana also revealed that lack of ICT infrastructure was an impediment to the ideals of e-government.

The quality of ICT infrastructure is a factor in the assimilation of e-government systems. Ndou (2004) and Ebrahim and Irani (2005) point out that inadequate ICT infrastructure remain the main challenge for e-government implementation. The digital divide is a problem in developing countries and acts as a significant barrier to the provision of government services and transactions online (Mutula, 2002) and so unreliable ICT infrastructure has further influenced the poor performance of e-government systems of respective governments (Ebrahim & Irani, 2005).

The implementation of e-government faces some technological difficulties. Actually, an interview with an e-government official revealed that one of the difficulties facing e-government assimilation was a lack of compatible infrastructure among government departments and agencies. The available infrastructure is inadequate and weak and thus it does not really support e-government assimilation at MTI. Responding to how the E-government Office was doing to enhance infrastructural development, it was revealed

that the government was aware of the poor state of infrastructure which has negatively affected the uptake of e-government. To quote IT the officer verbatim, he said,

"*The government is aware of the state of infrastructure. It has engaged Botswana Fibre Network (BOFINET) to provide a world-class telecommunications backbone network infrastructure, which will drive connectivity and economic growth.'' This infrastructural improvement will enhance internetworking."*

MTIMIS users were asked if there was adequate infrastructure for e-government functions. 10 out of 30 respondents, (33.3%) answered in the affirmative, 18 (60%) responded negatively while the rest, 2 (6.67%) did not respond to the question. Even though most of the respondents said that infrastructure for e-government functions was inadequate, interviews with IT Officers and observations revealed a different thing especially at MTI offices in Gaborone. IT Officers revealed that ICT infrastructure was relatively useful for MTIMIS to work as there were computers, servers and related infrastructure such as electricity. The observations confirmed information sought from interviews. The absence of proper of ICT infrastructure to support e-government systems implementation at MTI therefore could not be said to be a negative factor.

Apart from the adequacy of ICT infrastructure as presented in Figure 4-7, MTIMIS users were also asked to describe the quality of ICT infrastructure. 10 out of 30 respondents, (33.3%) indicated that the state of ICT infrastructure was poor, 7 (23%) said it was fair while 11 (37%) said it was good. 2 (6.67%) did not respond to the question.

MTI clients as customers are expected to have a bearing on the organisation's absorptive capacity. MTI clients who are expected to use systems that MTI will implement were asked to indicate if they have the resources necessary to use the online government systems. 4 out of 15 (27%) disagreed with the statement indicating that they do not have enough resources, 2 (13%) maintained a neutral position while 9 (60%) agreed indicating that they have enough resources to use online government systems.

d. Financial Resources

Financial resources are another factor that affects the assimilation of e-government systems which is categorized under the meta structure of domination (Hossain et al. 2011a). It refers to the general base of financial resources available for investment in organisational improvement and innovation and such innovations include the assimilation of e-government systems. The financial muscle of an organisation has been found to be advantageous during information systems implementation (Zhu et al., 2004) as the organisation is able to procure necessary ICT resources which are turned into superior e-Business functionalities so as to realize the potential of e-Business value (Chircu & Kauflman, 2001), such as e-government systems. The funding and costs of e-government services has an impact on the implementation of e-government systems (Nkohkwo & Islam, 2013). Funding of e-government services has been the responsibility of the public sector (Ebrahim & Irani, 2005) but funds have not always been available, as financial resources have to be competed for, making it difficult to plan sustainable IT initiatives such as e-government.

MTIMIS users were asked if the availability of resources, particularly financial resources, for the implementation of a MTIMIS was a problem. Of the thirty (30) respondents, eleven (11) (37%) indicated that financial resources was a slight problem, 5 (17%) said it was not at all a problem while four 4 (13%) indicated that finance was somewhat of a problem. In addition, 4, (13%) responded that financial resources was a serious problem while 6 (20%) did not respond to the question. From the elicited responses, it could be said that lack of financial resources was a problem towards the implementation of MTIMIS. The majority of MTIMIS users said that lack of financial resources was a slight problem, and it may not be a factor with a large bearing on the assimilation of e-government services at MTI although its impact might be negligible. The researcher was informed during interviews with management as well as the IT Manager that financial resources were not much of a problem as MTIMIS was an ongoing project was budgeted for and hence funding for the project was always available although there was some acknowledgement that funds were limited due to the bad economic situation that prevailed when the project was undertaken.

e. ICT Sophistication

Amongst the factors that affect the assimilation of e-government systems is ICT sophistication which is also classified under the Meta structure of domination (Hossain et al., 2011a). ICT sophistication refers to the actual ICT sophistication and capabilities as an aggregate signal of the desirability and importance of IT related innovations for core organisational processes, which in the context of this study include e-government systems assimilation which help the organisation to achieve its mission and mandate. ICT sophistication is crucial in the implementation of information systems. According to Hossain et al. (2011a), it is important in the context of ICT based innovation behaviours and it concerns itself with the existing level of information systems usage in the main business of an organisation. That means that organisations which have previously deployed and used information systems have developed ICT sophistication such that they already possess superior corporate data resources, information management practices and necessary resources for the integration of ICT innovations (Chwelos, Benbasat, & Dexter, 2001). Hossain et al. (2011a) opines that organisations with high ICT sophistication should have the capacity to transform business processes using e-government systems innovations. That is actually what MTI desires in line with the ideals of the E-Government Strategy (Botswana's National e-Government Strategy 2011-2016, 2011).

MTIMIS users were asked whether the system had brought improved customer service and the responses indicated that 24 out of 30 (80%) said no, the system did not improve customer service. 6 respondents (20%) did not respond to the question. MTIMIS is currently on trial and has not been rolled out to be used by the public. What the customer should achieve by the click of the button, they go to MTI offices and an officer does what the customer could have done. But in future it would improve customer service as customers would get services from anywhere without paper. Another question asked was whether the implementation of MTIMIS had improved access to information and the results of the study showed that 19 (63%) said yes, 7 (23%) said no, while 4 (13%) did

not answer the question. From these responses, it is clear that indeed MTIMIS has improved access to information. Observations by the researcher who observed the MTI website revealed that ICT sophistication was still not achieved especially that MTIMIS had not been rolled out to members of the public. However, interviews with management and IT personnel suggested that once the system was rolled out, members of the public will be able to have access to information that would enable them to transact some MTI business process such as completing forms for company registration and business name reservation, just to give one example.

5.2.3 Meta –Structure of Legitimisation

The third and last batch of factors that were found to affect the assimilation of e-government systems at MTI have been classified under the broader term of the meta structure of legitimization. Hossain et al. (2011a) indicates that the meta structure of legitimization refers to goals and organisational standards that regulate actions and behaviours for e-government systems assimilation. Under this meta structure, the identified factors that affect the assimilation of e-government systems were top management leadership, e-government standards efficacy and the regulatory environment.

Respondents were asked if there are regulations regarding the use of MTIMIS. Twenty-one (21) (70%) of the respondents indicated a lack of knowledge of the existence of regulations regarding the use of MTIMIS. Four (4) (13%) indicated there are regulations guiding the use of MTIMIS, whereas another four (4) respondents indicated that there are no regulations. From the responses it is evident that the regulations are not being used effectively. In addition, participants were asked if there are policies guiding the use of MTIMIS. Two (2) (6.7%) respondents indicated that there are policies guiding the use of MTIMIS. Another two (2) (6.7%) indicated that there are no policies guiding MTIMIS usage. However, twenty-five (25) (83%) indicated a lack of knowledge on any existing policy guiding MTIMIS usage. The researcher also requested a copy of the regulations to appreciate it in relation to the regulation of the use of MTIMIS and it could not be furnished. This suggested that such regulations were not available.

The study participants were asked if their organisation uses a code of conduct to describe the data protection obligation and responsibilities that employees, contractor and third party users must accept when working with MTIMIS. From the responses, thirteen (13) (43.3%) indicate that a code of conduct is not frequently used; two (2) (6.7%) state that a code of conduct is slightly used; eight (8) (26.7%) and four (4) (13.3%) indicate that there is a somewhat use and moderate use of the code of conduct to describe data protection obligations; and only one (1) (3.3%) indicated that a code of conduct is used to describe data protection obligations in the Ministry.

a. Top Management Leadership

Top management leadership was found to be a factor that affected the assimilation of e-government systems at MTI. According to Hossain et al. (2011a), top management sets out the vision and a clear strategy though it does not only legitimize the use of e-government systems, but also establishes their significance. This encourages everyone in the organisation to embrace new innovations. Furthermore, to the extent that top management calibrates the goals of an organisation, actions and initiatives related to e-government system assimilation are regulated. Lack of top management support has been found to be a factor, which needs to be addressed in order to facilitate the acceptance of innovations such as e-government systems (Gunnlaugsdottir, 2006; Nguyen, Swatman, & Fraunholz, 2008; Nguyen, 2011). Visible top management support that is also consistent has been found to encourage employees to appreciate the adoption of implemented information systems (Nguyen, Swatman, & Fraunholz, 2008). MTIMIS users were asked if MTI senior management was engaged in IT related issues and decision making. Seventeen (17) out of 30 (57%) agreed that senior management was engaged in IT-related issues and decision-making, 8 (11%) disagreed while 5 (17%) maintained a neutral position. Interviews with management indicated that management was involved in the use of information systems. For example, a senior indicated that power cuts and network problems negatively affected their systems.

Regarding top management leadership for MITIMIS implementation, users were asked whether senior management led the way by using MTIMIS themselves, the results revealed that 23 (77%) of the users believed senior management is using MTIMIS. 5 (17%) indicated that management does not use MTIMIS while 2 (7%) did not respond to the question. The majority of respondents were of the view that the leadership used MTIMIS.

IT officers were asked if top management was actively involved in the assimilation of e-government systems in the Ministry. It was indicated that there is lack of coordination to guide and support implementation. Piloting of e-government systems in a bid to automatize was cited as taking too long because it is not monitored. Implementation of systems is said to be ongoing but there is no authority to guide implementation. Other IT officers said support from leadership is there but with little understanding hindered by lack of ICT background. The teams, which have been tasked to lead and control e-government processes, are not doing enough to put everybody on board. Other IT officers said there is adequate support from top management leadership. They said management ensures that users of different systems are trained.

b. E-Government Systems Standards Efficacy

Standard efficacy is a meta-structure of legitimization factor, which relates to perceptions about e-government systems business standards as they relate to the requirements of the work processes of the organisation (Hossain et al., 2011a). This study has revealed at present that there are no specific e-government business standards in place at MTI. Rather, laws such as Electronic Communications Transactions Act of 2014, the Electronic Evidence Act of 2014 and the Cybercrime and Computer Related Crimes Act of 2007 were used instead of available standards (Government of Botswana, 2007; 2014). The Cybercrime and Computer Related Crimes Act of 2007, for example, is meant to combat cybercrime and computer related crimes for purposes of repressing criminal activities perpetrated through computer systems and to facilitate the collection of electronic evidence. Since e-government systems operate through computer based

systems, it is imperative that crimes, which could possibly be committed through the use of computer systems, should be regulated through specific standards and policies.

According to Rai et al. (2006), the routine work embodied within the standard efficacy factor incorporate the priorities to conduct tasks as well as the logic by which tasks are related. In other words, these factors deal with people who are fundamental in implementing the e-government process. This study identifies IT officials as drivers of the standard efficacy factor. Hossain et al. (2011b) is of the view that e-government systems standards efficacy provide an important antecedent of e-government system assimilation as standards embody rules on how e-government systems should be used and establish institutional structures to regulate individual actions and behaviors related to the business process. In addition, if the e-government system standards are comprehensive, provide flexibility, and enact a good level of enforcement to ensure compliance for day-to-day operations, they not only increase efficiency but also reduce complexity and uncertainty while still flexible. Efficacy standards in fact structure actions and regulate the behaviors of individuals involved in business processes to favor e-government system assimilation.

c. The Regulatory Environment

The regulatory environment has been identified by Hossain et al. (2011a) as a factor that affects the assimilation of e-government systems. Regulations of e-government systems can be achieved through the use of policies and regulations According to Hossain et al. (2011a), regulatory environment refers to the role of government in encouraging e-government systems usage by establishing e-government laws and providing incentives for compliance to such laws. The laws are meant to protect the electronic transactions which are conducted through the internet.

Respondents were asked if there are regulations regarding the use of MTIMIS. More than half of the officers 70% indicated a lack of knowledge in the existence of regulations regarding the use of MTIMIS. The responses indicate that there no, or if they are

available they are not used. In addition, participants were also asked if there are policies guiding the use of MTIMIS. a lesser number of respondents indicated that there are policies guiding the use of MTIMIS. However, 25 (83%), majority of respondents indicated a lack of knowledge on any existing policy guiding MTIMIS usage. The study participants were also asked if their organization uses a code of conduct to describe the data protection obligation and responsibilities that employees, contractor and third part users must accept when working with MTIMIS. Most officers 13 out of 30 (43.3%) indicate that a code of conduct is not frequently used.

These responses show that in MTI regulations and policies to regulate behaviours are not in use; they are not followed. People cannot follow policies, rules and regulations, which they are not aware of.

Full implementation means no transactions will be done manually; all the transactions will be done using MTIMIS, no manual files. It does not mean that MTI clients can make applications online. The current law does not protect online transactions. The ministry is withholding online transactions as a precaution. The current law that can achieve that has been approved by the president but is not operational. At the moment you cannot take evidence from online transactions to court. However, when the law is operational you can take the contract to court as evidence.

The majority of users of MTIMIS were also not aware of any policy that regulated its use. Ndou (2004) conducted a study on the barriers of e-government adoption in developing countries and amongst those barriers was insufficient legal and regulatory frameworks and government strategy. Similarly, Matavire et al. (2010) undertook a study that investigated the challenges of e-government project implementation in a South African context. He observed that a legislative and regulatory framework presented a barrier to e-government implementation.

5.1 Introduction

5.3 Other Factors Affecting the Assimilation of E-Government Systems at MTI

The study used the Organisational E-Government Systems Assimilation Framework (EGAF) adapted from Hossain et al. (2011a). However, factors other than those depicted by EGAF were revealed by the study. The said factors are lack of awareness of e-government, unreliable access to internet country wide, lack of coordination between departments and negative attitudes towards e-government.

a. Lack of Awareness of E-Government

Awareness of e-government came up as one of the factors that affect the assimilation of e-government systems at MTI. Poor awareness of e-government is a common feature as the literature shows. According to Fang (2002), this is common even in public organisations and this has hampered the public from enjoying the benefits brought by e-government services. Heeks (2003) observes that the success and failure of e-government projects depend largely on the awareness of e-government, including its costs and benefits. Nkwe (2012) also revealed the poor awareness of e-government in a study that investigated e-government opportunities and challenges in Botswana. The study also found that lack of citizen awareness and participation negatively affected e-government assimilation in Botswana. For example, the adoption rate of ICT enabled services was below expectation. Mobile banking service, one of the best facilities introduced by banks in Botswana was poorly utilised by Batswana, as they still prefer to spend hours in a bank just to get an account balance or to transfer funds.

Awareness of e-government came up as one of the factors that affect the assimilation of e-government systems at MTI. IT officers were asked if lack of awareness about e-government hindered the assimilation of e-government systems. A total of 75% of respondents indicated that a lack of awareness about e-government is a barrier to assimilation. There are different levels of barriers as indicated by the respondents. These include ‘somewhat a barrier’, ‘moderate barrier’, and ‘extreme barrier’. Only 25% indicated that a lack of awareness of e-government in MTI is not a barrier. On the basis of the responses, this study concludes that lack of awareness of e-government is a barrier to e-government systems assimilation in MTI.

b. Unreliable Access to Internet Country Wide

Access to reliable internet around the country was also mentioned as a factor that affected the assimilation of e-government systems at MTI. For e-government to flourish there should be an uninterrupted internet in both the cities and the rural settings. Countries that have been successful in e-government adoption such as Egypt and Mauritius have reliable internet services (Komba, n.d). This underscores the importance of internet connection in the assimilation of e-government systems. For example, in Mauritius, all ministries and departments have been wired and buildings have been interconnected through an integrated and secure network to allow the use of e-government services (Waema & Adera, 2011). According to Hardy and Williams (2008), internet networking is required to enable appropriate sharing of information and open up new channels for communication and delivery of new services. For a transition to electronic government architecture, that is, a guiding set of principles, models and standards, is needed.

IT officers were asked to state the key problems of IT infrastructure that will negatively affect the adoption of e-government. They indicated that there is a problem of network coverage in rural areas but there is no such concern in Gaborone. They also said there is lack of internet in stations outside Gaborone. Power cuts were also cited as a problem that affects networks. Load shedding is said to be affecting IT infrastructures in a negative way and sometimes damages facilities. Lack of IT facilities was also said to be a problem. Sometimes it takes long to acquire equipment. The systems constantly crash resulting in data loss. Sometimes people are employed to specifically recapture the lost data using manual files. A study by Nkwe (2012) on opportunities and challenges of e-government also revealed that lack of ICT infrastructure was an impediment to the ideals of e-government in Botswana. Elsewhere in the word, Alshehri and Drew (2010) also studied challenges of e-government services adoption in Saudi Arabia from an e-ready citizen perspective and also discovered that poor ICT infrastructure hampered e-government assimilation. The said ICT infrastructure does not only consist of simple telecommunications and computer equipment. It also includes e-readiness and ICT literacy, networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society. E-readiness and ICT literacy are necessary in order

for people to be able to use and benefit from e-government applications.

c. Lack of Coordination between Departments

The study findings also revealed that poor coordination between departments hindered the assimilation of e-government systems at MTI. MTI is made up of several Departments and this makes coordination crucial. According to Pudjianto et al. (2011), coordination is very relevant in order to manage e-government initiatives. Coordination can be done by establishing a formal group such as a Steering Committee to manage the coordination of e-government implementation.

IT officers were asked to rate the level of barrier brought about by lack of coordination of systems between departments. Specifically, out of 4, a total of 3 (75%) respondents indicated that a lack of coordination between departments is a barrier to assimilation. There are levels of barrier indicated by the respondents as in the case of previous barrier tests. These include 'somewhat a barrier', 'moderate barrier', and 'extreme barrier'. Only 1 respondent (25%) indicated that a lack of coordination between departments is not a barrier. On the basis of the responses, this study concludes that a lack of coordination between departments in MTI is a barrier to e-government assimilation.

d. Negative Attitudes towards E-Government

d. Negative attitudes towards e-government systems were also cited as a factor that affected the assimilation of e-government systems at MTI. Attitudes to e-government services are known to have an effect on the assimilation of e-government services. Vassilakis et al. (2005) observes that citizens with negative attitudes towards using e-government services formed a major barrier to the adoption of e-government services. This results in citizens preferring manual systems, which are mostly paper based. West (2004) analyzed websites to gauge the ability of e-government to influence citizens' views and attitudes about government and their confidence in the effectiveness of service delivery. 1003 randomly selected residents in the United States were studied. The analysis revealed that increased exposure to e-government services eventually assisted citizens to develop positive attitudes toward not only such services but government itself.

In this study, IT officers were asked to state whether or not negative attitudes towards e-government was a factor that affected the assimilation of e-government systems at MTI. A total of 75% indicated that negative attitude towards e-government is a barrier to assimilation. There are levels of barriers indicated by the respondents. These include 'somewhat a barrier', 'moderate barrier', and 'extreme barrier'. Only 25% indicated that negative attitude towards e-government in MTI is not a barrier. Based on the responses, this study concludes that a negative attitude towards e-government is a barrier to e-government assimilation in MTI.

To examine the public's attitude towards e-government systems, MTI clients were asked to indicate whether or not they look forward to using e-government systems wholly. 2 respondents (13%) disagreed with the statement that they look forward to using e-government systems wholly. 10 (47%) agreed, while 3 (20%) remained neutral. These results show that MTI clients are eager to use e-government systems as the majority of the respondents said they look forward to using e-government systems wholly.

5.4 E-Government Controller's response to the factor affecting assimilation of e-government Systems at MTI

The second objective of this study sought to examine how the drivers of e-government (E-Government Controller) are dealing with factors that affected the assimilation of e-government systems at MTI, especially those that hindered e-government assimilation. Such factors included inadequate regulatory environment, lack of the implementation of policy rules for security of information in e-government systems, inadequate infrastructure as technical barriers and inadequate top management support for e-government initiatives.

a. Inadequate Regulatory Environment

The regulatory environment includes policies and laws that have an impact on the operationalization of e-government systems. It emerged from the interview with the e-government official that effort to address this challenge was the enacting of the Electronic Communications Transactions Act of 2014, as well as the Electronic Evidence

Act of 2014. They said the ministry's lack of policy or its implementation was also found to be a challenge that hindered the delivery of public services in the realm of e-government implementation (Wastell, 2002).

Willingness to implement e-government initiatives exists but there exists a lack of legitimate capacity to follow this through. Despite the increasing popularity and growth in the development of e-government services on the internet, the e-government stumbles upon security and privacy threats. Security and privacy issues are big concerns in using commercial websites; there is even more of a concern for citizens engaging with e-government services (Palanisamy & Mukerji, 2012). This would give it the support needed for e-government implementation.

b. Security

According to Basu (2004), security of information within e-government systems is a vital component in the trust relationship between citizens and government. If not addressed well, security issues may present the largest obstacle to the development of e-government services. Thus, security policies and standards that meet citizen expectations are an important step toward addressing these concerns (Alshehri & Drew (2010) citing Sharma & Gupta, 2003). The use of security solutions, including digital signatures, encryption, user names, passwords, customer unique numbers, bank account numbers, and others being transmitted over the Internet and stored electronically can help in fulfilling security goals in e-government applications. Furthermore, Seifert and Bonham (2003) point out that information security, specifically cyber security or computer security is important in addressing security concerns in e-government. A survey of American and Australian public managers by Teicher and Dow (2002) pointed out that security is considered a major barrier to the implementation of e-government by 36.8% of Australian respondents and by 37% of US respondents. Australian respondents ranked it the second most important obstacle to e-government implementation. Feng (2003) advised that a body of security professionals should be set up to respond to threats and breaches. Additionally, there is a need for authority and an infrastructure encryption system to secure information in e-government systems.

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c. Inadequate ICT Infrastructure

The implementation of e-government systems at MTI faces some technological difficulties. The interview with the e-government official revealed that one of the difficulties facing e-government assimilation was a lack of shared standards and compatible infrastructure among government departments and agencies. The available infrastructure is inadequate and weak thus it does not really support e-government assimilation at MTI.

According to Hardy and Williams, (2008), internet networking is required to enable appropriate sharing of information and open up new channels of communication and delivery of new services. For a transition to electronic government, architecture, that is, a guiding set of principles, models and standards, is needed. A study by Nkwe (2012) on

opportunities and challenges of e-government also revealed that lack of ICT infrastructure was an impediment to the ideals of e-government. Alshehri and Drew (2010) studied challenges of e-government Services Adoption in Saudi Arabia from an e-Ready Citizen perspective and also discovered that poor ICT infrastructure hampered e-government assimilation. The said ICT infrastructure does not only consist of simple telecommunications and computer equipment. It also includes E-readiness and ICT literacy, networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society. E-readiness and ICT literacy are necessary in order for people to be able to use and benefit from e-government applications.

d. Inadequate Top Management Support for E-Government Initiatives

Top management leadership as a factor in the assimilation of e-government systems is a factor across the three structures of signification, domination and legitimization. This underscores the importance of the leadership in the successful implementation and assimilation of e-government systems. A lack of top management support for e-government initiatives was also cited in the interview as a factor that militated against the assimilation of e-government. Leadership is cited as one of the main driving factors in any new and innovative project (Seifert & Bonham, 2004).

As the drivers of the initiative, the E-government Office has been organising capacity building workshops at regional levels for managerial level officers in government ministries and departments. The workshops are driven by the leadership and are driving the success of e-government at the MTI. In the workshops, the respondent continues, top management officers have been exposed to commitment and actions that are consistent with the e-government message. By putting the e-government project in a broader context, the top management integrates e-government into an action plan.

5.5 Summary

This chapter has presented the empirical findings of the study on the assimilation of e-government Systems at the Ministry of Trade and Industry in Botswana. The findings

have showed that the implementation of e-government has been affected by factors such as top leadership support, regulatory environment, ICT infrastructure, security of e-government systems and financial resources, just to mention a few. The chapter has also discussed how the Office of the E-Government Controller as the driver of e-government in Botswana has addressed factors that have hindered the assimilation of e-government systems at MTI. The next chapter provides a summary of findings. It goes on to conclude the study and suggests recommendations that can be implemented in order to further enhance the assimilation of MTIMIS at MTI.

CHAPTER 6: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The purpose of this study was to determine factors that affect the assimilation of e-government systems at Ministry of Trade and Industry (MTI). This chapter provides a summary of the findings on a study of an evaluation of factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry (MTI) in Botswana. The specific objectives of the study were to:

1. Examine factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana.
2. Identify factors that enable and inhibit e-government assimilation at MTI.
3. Determine the role of e-government assimilation factors at MTI.
4. Establish how the drivers of e-government are dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana.
5. Suggest possible solutions in dealing with factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana.

Data for the study was collected through self-administered questionnaires, observations and face-to-face interviews.

6.2 Summary of study findings

A summary of the findings of the study is presented in accordance with research objectives and questions.

6.2.1 Factors that affect the assimilation of e-government systems at the Ministry of Trade and Industry in Botswana

The first objective of the study examined the factors that affected the assimilation of e-government systems at the Ministry of Trade and Industry (MTI) in Botswana. The study found that such factors were:

a. Security of e-government services

b. Top management leadership

c. User support

d. User IT Competence

e. Organisational absorptive capacity

f. ICT sophistication

g. E-Government standards efficacy

h. Unreliable ICT Infrastructure

i. Awareness of e-government

j. Unreliable access to internet country wide

k. Lack of coordination between departments

l. Negative attitudes towards e-government

6.2.2 E-Government Controller's response to the factor affecting assimilation of E-government Systems at MTI

The way in which the Office of the E-Government Controller deals with factors negatively affecting the assimilation of e-government depends on the challenges or barriers experienced in implementation of e-government. Lack of top management support was addressed by mounting capacity-building workshops at regional levels for managerial level officers in government ministries and departments. The Office of the E-Government Controller dealt with the issue of lack of awareness of e-government services by engaging different media houses to publicize the importance and benefits of e-government through a variety of mass communication agents. As for the problem of unreliable ICT infrastructure that includes unreliable internet coverage, the Office of the E-Government Controller has engaged Botswana Fibre Network (BOFINET), a local

parastatal organisation to provide an excellent telecommunications backbone network infrastructure that will drive connectivity and internet connection. Lack of adequate regulatory framework was resolved by the passing of appropriate legislation such as the Electronic Communications Transactions Act of 2014 and the Electronic Evidence Act of 2014. More legislative instruments will be passed or amended in order to facilitate the road to e-government implementation.

6.3 Recommendations of the study

The assimilation of e-government at MTI has been faced with a number of challenges as pointed out in the study findings. The following are the recommendations of the study meant to improve the uptake of e-government assimilation at MTI. The recommendations are arranged in accordance with the study findings under the three meta structures of signification, domination and legitimization as well as other factors that were revealed by the study but are not part of the EGAF model, which drove this study.

6.3.1 Recommendations under assimilation of e-government system factors falling under the meta structure of signification

Under this meta structure of signification, the study found that regarding the security of e-government systems, specifically on whether there was a code of conduct to describe data protection obligations and responsibilities that employees, contractors, and third party users must accept when working with MTIMIS the majority (43.3%) said there was no code in place. The study also revealed that there were rules and policies in place to regulate access of information in MTIMIS. Therefore the study recommends that MTI should implement policies to protect information from falling into wrong hands.

It is recommended that top management leadership be encouraged to embrace the use of MTIMIS whole-heartedly as just above half (57%) of them were engaged in IT related issues and decision-making. The success of e-government systems depends on usage so if the leaders commit to its usage, they are likely to influence the rest of the staff to follow

suit. In terms of user support, the majority of respondents indicated that they were moderately satisfied with user support for MTIMIS. It is recommended that more officers be trained on system usage so that they get skills to use the system. Furthermore, it is recommended that MTIMIS implementers should be readily available to offer support in case the system encounters some technical problems.

6.3.2 Recommendations under assimilation of e-government system factors falling under the meta structure of domination

In terms of user IT competence, 47% of the respondents, which represented a majority, said they were moderately familiar with MTIMIS. This is a low number for modernization of government through e-government to succeed. It is recommended users be continuously trained on the system to enable them get familiar with the system and be able to use it.

Regarding organisational absorptive capacity, the study had found that 60% of the respondents felt that the availability of ICT infrastructure for the assimilation of e-government systems functions was inadequate. This study therefore recommends that appropriate ICT infrastructure for e-government functions should be put in place otherwise e-government assimilation will remain a dream.

Regarding ICT sophistication, the study found that the majority (80%) of the users of MTIMIS felt that the system did not improve customer service. It is recommended that users be retrained on system usage because when they are familiar with it, they can be more efficient than using manual systems. This will eventually improve service given to customers.

6.3.3 Recommendations under assimilation of e-government system factors falling under the meta structure of legitimization

Under the Meta-structure of Legitimisation, top management leadership was found by 67.7% of the respondents as a barrier that hindered the e-government assimilation process. Across the three meta structures, top management leadership has been found wanting. It is recommended that senior managers be made to appreciate the importance of e-government assimilation through their visible support by organizing practical training workshops for them.

On the issue of whether standards were in place to standardize e-government practices, the study found that there are no specific standards currently in place but pieces of legislation such as the Cybercrimes and Computer Related Crimes of 2007, Electronic Communications Transactions Act of 2014 and the Electronic Evidence Act of 2014 served as standards. The study recommends that specific standards be developed and implemented as bound to regulate e-government processes better than laws that may be too general and thus not offer specific guidance.

6.3.4 Recommendations under assimilation of e-government system factors falling under the meta structure of legitimization.

The study unearthed other factors that affected the assimilation of e-government systems other than those put forward by the EGAF model, which guided the study. Poor awareness was discovered as one such factor. The study recommends that seminars, workshops and media briefings be continually undertaken in order to raise the level of awareness of e-government processes. This recommendation is also relevant in addressing negative attitudes towards e-government processes. Regarding lack of coordination between departments, it is recommended that e-government committees or working groups with clearly defined responsibilities be set up in the entire ministry departments in order to improve coordination of e-government efforts.

6.4 Conclusion

This study evaluated the factors that affected the assimilation of e-government systems at the Ministry of Trade and Industry (MTI) in Botswana. It utilized the EGAF Framework to find out such factors and they were found to be security of e-government services, top management leadership, user support, user IT competence, organisational absorptive capacity, ICT sophistication, e-government standards efficacy and unreliable infrastructure. In addition, other factors that affected the assimilation of e-government systems outside were discovered and these were awareness of e-government, unreliable access to internet country wide, lack of coordination between departments and negative attitude towards e-government. The study has therefore succeeded in answering the research questions. The discovery of new factors outside the scope of the EGAF model means that the model can be modified to include the newly discovered and the modified EGAF model can be tested in empirical studies in future.

Piloting started in May 2012. Full implementation started in June 2014. MTIMIS is being rolled out; the ministry has wholly implemented the system. The piloting stage was meant to allow for the system to be tested. During the piloting stage the system has proved to be effective. All transactions that can be accomplished using MTIMIS will no longer be done manually; there is no opportunity to go back to manual systems. From this, the researcher has concluded that assimilation of MTIMIS is high. Through the system; MTI has phased out manual systems for applications of permits.

6.5. Areas of Further Study

This study has revealed a number of issues related to the assimilation of e-government at MTI. These issues were not the subject of this study and these are the issues, which can be further probed by specific studies. This study was limited to the assimilation of e-government systems at MTI. A much broader study covering ministries can be conducted to study such assimilation on a wider scale. This study was conducted in a public body setting. Another area of study could be to study assimilation of e-government systems in private sector organisations as well as in parastatal organisations. Another possible area

of study would be to investigate the role of culture in the assimilation of e-government systems. A purely qualitative study concentrating on the organisational and technological factors that affect the assimilation of e-government systems is another possible area of study.

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Appendix 1
Application for Academic Research Permit

P. O. Box 1120
Mogoditshane

13 February 2013

The Director
Department of Industrial Affairs
Private Bag 004
GABORONE

Dear Sir/Madam

REF: APPLICATION FOR ACADEMIC RESEARCH PERMIT

Application is made for a permit to conduct research study in your Ministry. I am asking for permission to conduct an empirical study in your Ministry. My name is Kenanalo Motupu. I am pursuing a Master's Degree in Archives and Records Management at the University of Botswana. My topic is "Assimilation of E-government Systems at the Ministry of Trade and Industry in Botswana". The research study is a partial requirement for the completion of the masters' programme. The research involves documentary reviews, interviews, observation and a questionnaire scheduled to be answered by MTI staff members. Data collection for the research is planned to take place from March–April 2013.

It is envisaged that at the end of the study I will submit a dissertation to the University of Botswana for examination purposes. The dissertation will also be made available to your organisation so that you can benefit from the recommendations that will be drawn from the study. The information collected through participation in this research will be used only for academic purposes and nothing else and research ethics will be highly observed.

Yours sincerely

Kenanalo Motupu, MARM student, University of Botswana

Appendix 2
Grant for Research Permit: MTI

TELEPHONE: 3601200
TELEFAX: 371539
EMAIL: Mtihq@gov.bw
WEBSITE: www.mti.gov.bw

MINISTRY OF TRADE AND INDUSTRY,
PRIVATE BAG 004,
GABORONE
BOTSWANA

REPUBLIC OF BOTSWANA

ALL CORRESPONDENCE MUST BE ADDRESSED TO
THE PERMANENT SECRETARY

REFERENCE: TI/1/19/2 IV (5) 10th February 2013

Dr T. Kalusopa
University of Botswana
Private Bag 00703
Gaborone

Dear Dr Kalusopa

APPLICATION FOR A RESEARCH PERMIT- Ms. Kenanalo Motupu

Your letter dated 1st February 2013 on the above captioned subject refers. We have reviewed your request for a Research Permit and wish to inform you that the request is hereby granted for two (2) months with effect from 1st March to 30th April 2013

Thank you.

Yours Sincerely

Dr D. Okullo
For/ Permanent Secretary

Appendix 3
Grant for Research Permit: MTC

Republic of Botswana
Ministry of Transport and Communications
Private Bag 00414, Gaborone, Botswana Tel: (+267) 361 2000 / 390 7230, Fax: (+267) 390 7236

REF: MT&C 1/13/9 II (21)

13th November 2012

Senior Lecturer
University of Botswana
Faculty of Humanities
Private Bag 00703
Gaborone

Attention: T. Kalusopa

Dear Sir,

APPLICATION FOR RESEARCH PERMIT – MS KENANALO MOTUPU

The Ministry of Transport and Communications acknowledges receipt of your request to undertake research.

Your request to undertake the research has been **approved.**

The Ministry will be grateful if you share the findings of the research so as to inform the Government on areas of weakness or improvement that Government can work on to better project implementation strategies.

Thank you and best wishes in your study.

Yours faithfully

Mabua L. Mabua
for/**PERMANENT SECRETARY**

LONG TERM VISION FOR BOTSWANA

we connect communities

Appendix 4
Ethical Considerations

Researcher: _____
Phone Number: _____

You are kindly requested to participate in the research study entitled **"Assimilation of E-government Systems at the Ministry of Trade and Industry in Botswana"** being carried out by Kenanalo Motupu, a student pursuing Master's Degree of Archives and Records Management at the University of Botswana. The purpose of the study is to analyse information security issues in the management of electronic records in Botswana's e-government initiatives. It is hoped that the research findings and recommendations will be beneficial to the Ministry of Trade and Industry. You were purposefully selected to participate in the study. Your identity is not required and your anonymity is guaranteed. All the information you provide will be treated with outmost confidentiality. You are free to withdraw from participating in the study at any time if necessary. Your participation is highly appreciated.

Researcher: _____ Date: _____
(Signature)

Appendix 5
Consent Form for Research Study

Title of Research: **Assimilation of E-government Systems at the Ministry of Trade and Industry in Botswana**

Name of Researcher: **Kenanalo Motupu**
The researcher has discussed this research with me. I have had the opportunity to ask questions about this research and I have received answers that are satisfactory to me. I have read and kept the Information Sheet and understand the general purposes and methods of this research.

I agree to take part because:

1. I know what I am expected to do and what this involves.
2. The inconvenience and discomfort of participating in the study have been explained to me.
3. All my questions have been answered to my satisfaction.
4. I understand that the research may not be of direct benefit to me.
5. I can withdraw from the study at any time.
6. I am satisfied with the explanation given in relation to the project as it affects me and my consent is freely given.
7. I can obtain a summary of the results of the study when it is completed.
8. I understand that my personal information will be kept private.
9. I agree to the publication of results from this study provided details that might identify me are removed.

Signed by the participant: _____ Date: _____

Signed by the researcher: _____ Date: _____

Appendix 6
Questionnaire (Action Officers)

Title of Research: Analysis of the Assimilation of the E-government System at the Ministry of Trade and Industry in Botswana

Dear respondent,
I am a final year postgraduate student at the University of Botswana pursuing a Master's Degree in Archives and Records Management. As part of the requirements, I have to undertake a research project to investigate the Assimilation of the E-government System at the Ministry of Trade and Industry in Botswana. You are, therefore, kindly requested to take some of your valuable time to provide some information by way of answering this questionnaire. The results will be treated with utmost confidentiality and will be used for academic purposes only. I am very much thankful for your cooperation.

Section A: Demographic Information
Please tick (✓) the appropriate answer

Age group: Less than 30( ) 30 to 40( ) 40 and above ( )

Gender: Male ( ) Female ( )

Level of Education: Cambridge Overseas School Certificate (COSC)/Botswana General Certificate of Secondary Education (BGCSE) ( ) Certificate ( ) Diploma ( ) Degree ( ) Masters ( ) PhD ( )

Job Experience: 0 ( ) 1-5 ( ) 6-10 ( ) 11-15 ( ) 16-20 ( ) 21-25 ( ) 26 and above ( )

Please answer the following questions by ticking (✓) the relevant tablet or writing your answer in the space provided.
Section B: Meta-structure of signification

a. Do you understand the purpose of Ministry of Trade and Industry Management Information System (MTIMIS)? Yes ☐ No ☐

b. Do you understand the functionality MTIMIS would provide? Yes ☐ No ☐

c. How successful have your MTIMIS implementations been in the following aspects? Please indicate your opinion on a scale from **1(not successful)** to **5 (very successful)**?

	1	**2**	**3**	**4**	**5**
Completed on time	☐	☐	☐	☐	☐
Completed on budget	☐	☐	☐	☐	☐

	Implemented with all features and functions initially specified	☐	☐	☐	☐	☐
	Delivering the benefits and value expected	☐	☐	☐	☐	☐

Security

a. Does you organisation use a code of conduct to describe the data protection obligations and responsibilities that employees, contractors, and third party users must accept when working with MTIMIS?

1. Not at all used	☐
2. Slightly used	☐
3. Somewhat used	☐
4. Moderately used	☐
5. Extremely used	☐

b. Are there any measures put in place to protect information held in MTIMIS? (Please tick (✓) where applicable)

1. Physical Barriers	☐
2. Passwords	☐
3. Firewalls	☐
4. Computer Programs (antivirus)	☐

c. Does your company have any policies or rules for information security? Please tick (✓) where applicable)

1. Yes, they are being used	☐
2. Yes, but they are Dormant	☐
3. No	☐

Section C: Meta-structure of domination

I. Organisational Absorptive Capacity

a. Is the availability of resources on the implementation of a MTIMIS a problem? Please indicate your opinion on a scale from **1(Not at all a Problem)** to **4 (Serious Problem)**?

	1	**2**	**3**	**4**
Financial Resources	☐	☐	☐	☐
Skilled Personnel	☐	☐	☐	☐
ICT Facilities (equipment)	☐	☐	☐	☐

II. User IT Competence

a. Have you been trained on how to use MTIMIS? Yes ☐ No ☐

b. Do you consider yourself familiar with MTIMIS such that you can use it with ease?

1. Not at all familiar	☐
2. Slightly familiar	☐
3. Somewhat familiar	☐
4. Moderately familiar	☐
5. Extremely familiar	☐

c. Is ICT expertise readily available to offer you help on MTIMIS? (Please tick (✓) where applicable)

Never	☐
Rarely	☐
Sometimes	☐
Often	☐
Always	☐

d. Are you satisfied with ICT support on MTIMIS? Please tick (✓) to indicate your satisfaction on a scale from **1(not satisfied)** to **5 (extremely satisfied)**

1. Not at all Satisfied	☐
2. Slightly Satisfied	☐
3. Moderately Satisfied	☐
4. Very Satisfied	☐
5. Extremely Satisfied	☐

e. Are you aware of e-government functions in your organisation? Please tick (✓)

1. Not at all aware	☐
2. Slightly aware	☐
3. Somewhat aware	☐
4. Moderately aware	☐
5. Extremely aware	☐

III. Organisational IT Capabilities and Learning (Al-Shafi, 2009)

Please indicate your opinion on a scale from **1 (Strongly agree)** to **5 (Strongly disagree)**?

	1	**2**	**3**	**4**	**5**
Senior management is engaged in IT related issues and decision making	☐	☐	☐	☐	☐
We have a widespread understanding and participation IT governance at all levels of organisation	☐	☐	☐	☐	☐
We are successful in implementing the organisational changes that are required to benefit from the new opportunities created by an investment on MTIMIS	☐	☐	☐	☐	☐
We are able to learn from each IT implementation, which is clearly reflected in our capability to make better and faster IT related decisions	☐	☐	☐	☐	☐

IV. ICT Infrastructure

a. Is there adequate infrastructure for e-government functions? Yes ☐ No ☐

b. How would you describe the quality of ICT infrastructure?

1. Poor	☐
2. Fair	☐
3. Good	☐
4. Very Good	☐
5. Excellent	☐

Is MTIMIS an integrated system, where you can perform different functions?

Yes ☐ No ☐

Section D: Meta-structure of Legitimization

I. Regulatory Environment

a. Are there any regulations regarding the use of MTIMIS? Yes ☐ No ☐

I do not know ☐

Is there any policy guiding the use of MTIMIS? Yes ☐ No ☐ I do not know ☐

Appendix 7
Questionnaire (MTI Client Businesses)

Title of Research: Analysis of the Assimilation of E-government Systems at the Ministry of Trade and Industry in Botswana.

This questionnaire attempts to identify factors that influence e-government assimilation by the Botswana's Ministry of Trade and Industry's clients.

Dear respondent,
I am a final year postgraduate student at the University of Botswana pursuing a Master's Degree in Archives and Records Management. As part of the requirements, I have to undertake a research project to investigate the Assimilation of the E-government System at the Ministry of Trade and Industry in Botswana. You are, therefore, kindly requested to take some of your valuable time to provide some information by way of answering this questionnaire. The results will be treated with utmost confidentiality and will be used for academic purposes only. I am very much thankful for your cooperation.

I am interested in your opinions and perceptions of interacting with the ministry's e-government system. Your participation in this study is highly appreciated.

Demographic Information
Please tick (✓) the appropriate answer

Age group [Years]: Less than 30( ) 30 to 40( ) 40 and above ( )

Gender: Male ( ) Female ( )

Level of Education: Cambridge Overseas School Certificate (COSC)/Botswana General Certificate of Secondary Education (BGCSE) ( ) Certificate ( ) Diploma ( ) Degree ( ) Masters ( ) PhD ( )

Job Experience [Years]: 0 ( ) 1-5 ( ) 6-10 ( ) 11-15 ( ) 16-20 ( ) 21-25 ( ) 26 and above ( )

About Your Company

Business Activity**:** *

Your Position: *

Please answer the following questions by ticking (✓) the relevant answer.

1	How long have you been using the Internet?	1. 1 – 6 months 2. 7 – 11 months 3. 1 – 2 years 4. 3 – 4 years 5. more than 4 years
2	Is MTI website difficult to use?	1. Very difficult 2. Difficult 3. Neutral 4. Easy 5. Very easy

4. Performance expectancy

- **Circle the Most Suitable Number to Your Opinion from the Following Scale:**

1 = Strongly Disagree. 2 = Disagree. 3 = Neutral. 4 = Agree. 5 = Strongly Agree.

3	**Performance Expectancy Statements**	
a.	I am looking forward to using the Botswana e-government systems wholly	1 2 3 4 5
b.	Learning to operate e-government systems would be easy for me.	1 2 3 4 5
c.	I have the resources necessary to use online government systems.	1 2 3 4 5
d.	I have enough internet experience to use the e-government services.	1 2 3 4 5
e.	I am satisfied with the security and privacy measures provided with the e-government system.	1 2 3 4 5

3. Comments/suggestions

_____
_____
_____

Appendix 8
Interview Guide (Implementers) – E-Government Office

The interview schedule seeks to identify factors that affect e-government assimilation in Botswana.

Dear respondent,
I am a final year postgraduate student at the University of Botswana pursuing a Master's Degree in Archives and Records Management. As part of the requirements, I have to undertake a research project to investigate the Assimilation of the E-government System at the Ministry of Trade and Industry in Botswana. You are, therefore, kindly requested to take some of your valuable time to provide some information by way of answering this questionnaire. The results will be treated with utmost confidentiality and will be used for academic purposes only. I am very much thankful for your cooperation.

SECTIONS
Section A: Guidelines

Section B: Demographic Information

Section C: Common Factors that affect e-government assimilation in Botswana
Part 1: Guidelines

1. Give an outline of the study and the objectives.
2. Find out if further contact can be made after the interview for data saturation.
3. Clarify the nature of confidentiality and the use of the quotes.
4. Make clear that the interviewee can refuse to answer any question.

Part 2: Demographic Information

Title ……

Position……

Date of interview ……..……..

Venue…..……..……...

Duration : Start ……Finish: ……

a) Level of Education: Cambridge Overseas School Certificate (COSC)/Botswana General Certificate of Secondary Education (BGCSE) ( ) Certificate ( ) Diploma ( )

Degree ( ) Masters ( ) PhD ( )

b) Age group: Less than 30( ) 30 to 40( ) 40 and above ( )

c) Job Experience: 0 ( ) 1-5 ( ) 6-10 ( ) 11-15 ( ) 16-20 ( ) 21-25 ( ) 26 and above ( )

d) Experience with IT in general: 0 ( ) 1-5 ( ) 6-10 ( ) 11-15( ) 16-20 ( ) 21-25 ( ) 26 and above ( )

e) How would you describe your role in respect of the e-government project?

Part 3: Common Factors that affect e-government assimilation in Botswana

1. **Assimilation Process:**

Aims: obtain an understanding of the e-government assimilation progression to date.

a. In your judgment, do you think Botswana needs to pursue e-government applications?

b. Is there any strategy in place for the government to tackle e-government goals?

c. How would you summarize the implementation process to date? (Key events, incidents)?

d. Has the e-government team in the past investigated factors that affect the assimilation of e-government systems?

e. Can you describe the key challenges for e-government implementation and assimilation within the public sector in Botswana?

f. How is e-government project different from other IT projects?

2. Commitment and Support of Leadership

a. How would you describe the support and commitment of your leadership towards the e-government project?

b. How would you rank e-government priority for the leadership?

	Priority Ranking	
1	Not a Priority	☐
2	Low Priority	☐
3	Medium Priority	☐
4	High Priority	☐
5	Essential	☐

c. In your judgment, do you think the leadership has sufficient knowledge about how technology can be used as a tool to carry out and develop government processes?

2. **Financial Issues**

a. Is e-government funding aligned with priorities outlined in its strategy?

b. Would you consider financial issues as a key challenge in the progress of e-government assimilation in Botswana?

3. **Legal/ Regulatory Framework**

a. Is privacy of information protected in the country's legislation?

b. Are there any regulations that ensure security and privacy of the Botswana e-government users?

c. Are there any online services regulation and legislation in place?

d. How would you describe the current legislative process? (E.g. competent/incompetent).

4. **Institutional E-Government Coordination**

a. Is there any coordinating institution that stimulates and brings together the e-government development process in the country?

5. **Change and Change Management**

a. Do you believe that change management is a skill that is necessary for e-government implementation?
b. Do you think that organisations in the public sector are willing to change so that they will use technology in their work processes?
c. According to your opinion, what do the public sector organisations need to fully participate in the e-government initiative?

Human Issues

6. **Customer Focus**

a. Have you taken steps to evaluate customer demand of e-government services?
b. Is there any type of relationship between the e-government team and citizens for collecting their suggestions?
c. Do you ensure that service delivery and policy processes are open to input from citizens and businesses?
d. If yes, do you ensure that input received from citizens and businesses is taken into account during policy-making processes?

7. **Awareness level**

a. How was the e-government project promoted?

b. Describe the present awareness strategy amongst the stakeholders (policy makers, managers, citizens and business partners)

c. Are any of the below areas of Botswana public sector organisations e-government programs being outsourced?

8. How have you benefited from the extended awareness of e-government?
9. How are you dealing with the problem of time, budget etc.?
10. How are you dealing with the lack of existing policies and rules?
11. How are you dealing with the lack of familiarity with e-government systems?
12. How are you dealing with inability of users and clients to learn from each IT implementation?
13. How are you dealing with the unavailability of financial resources on the implementation of e-government systems?
14. [illegible]
15. What are you doing to improve the poor ICT infrastructure?
16. How are you dealing with lack of code of conduct in data protection?

Appendix 9
Interview Guide (IT Managers)

The interview schedule seeks to identify factors that affect e-government assimilation at the Ministry of Trade and Industry in Botswana.

Dear respondent,
I am a final year postgraduate student at the University of Botswana pursuing a Master's Degree in Archives and Records Management. As part of the requirements, I have to undertake a research project to investigate the Assimilation of the E-government System at the Ministry of Trade and Industry in Botswana. You are, therefore, kindly requested to take some of your valuable time to provide some information by way of answering this questionnaire. The results will be treated with utmost confidentiality and will be used for academic purposes only. I am very much thankful for your cooperation.

SECTIONS
Section A: Guidelines

Section B: Demographic Information

Section C: Common Factors that affect e-government assimilation in Botswana

Part 1: Guidelines

1. Give an outline of the study and the objectives.
2. Find out if further contact can be made after the interview for data saturation.
3. Clarify the nature of confidentiality and the use of the quotes.
4. Make clear that the interviewee can refuse to answer any question.

Part 2: Demographic Information

Title ……

Position……

Date of interview ……..……..

Venue…..……..……...

Duration : Start ……Finish: ……

a) Level of Education: COSC/BGCSE ( ) Certificate ( ) Diploma ( )

Degree ( ) Masters ( ) PhD ( )

b) Age group: Less than 30( ) 30 to 40( ) 40 and above ( )

c) Job Experience: 0 ( ) 1-5 ( ) 6-10 ( ) 11-15 ( ) 16-20 ( ) 21-25 ( ) 26 and above ( )

d) Experience with IT in general: 0 ( ) 1-5 ( ) 6-10 ( ) 11-15( ) 16-20 ( ) 21-25 ( ) 26 and above ( )

e) How would you describe your role in respect of the e-government project?

Part 3: Common Factors that affect e-government assimilation in Botswana

1. Assimilation Process:

Factors that affect the assimilation of e-government

i. Top Management
   a. Does your top management have a clear vision and realize the significance of e-government?
   b. Is top management actively involved in the assimilation of e-government systems in your Ministry?

ii. Technological Issues and Infrastructures

a. What are the key problems of IT infrastructure that will impact negatively the adoption of e-government?
b. Does your organisation have intranet based communication as part of IT infrastructure?
c. How would you describe the quality of IT infrastructure in your organisation?
d. Would you consider the following as **factors** that would **influence** the assimilation of the e-government in the Ministry of Trade and Industry? (Adapted from Al-Shafi, 2009)

	Target Audience	**Yes**	**No**	**I Don't Know**
1	Access Internet in cities			
2	Access Internet in rural areas			
3	Lack of government wide intranet			
3	Lack of LANs in government offices			
	Infrastructure	**Yes**	**No**	**Don't Know**
1	Inefficient technology legacy system in place (e.g. phone, fax computers, databases, and existing networks)			
2	Internet access providers			
3	Unreliable internet connections			
4	Adequate bandwidth (Speed of connections)			
5	Adequate computing and processing speed			
6	Reliable power supply			
7	Adequate network security			
	Technical Support	**Yes**	**No**	**Don't Know**
1	Availability of technical support for implementation			
2	Availability of technical support for operations			
3	Other (Specify):			

2. Organisational Issues

What are the barriers to e-government assimilation in your organization?

Appendix 10
Interview Schedule: Leadership (Directors/HODs)

The interview schedule seeks to identify factors that are influence e-government assimilation at the Ministry of Trade and Industry in Botswana.

Dear respondent,
I am a final year postgraduate student at the University of Botswana pursuing a Master's Degree in Archives and Records Management. As part of the requirements, I have to undertake a research project to investigate the Assimilation of the E-government System at the Ministry of Trade and Industry in Botswana. You are, therefore, kindly requested to take some of your valuable time to provide some information by way of answering this questionnaire. The results will be treated with utmost confidentiality and will be used for academic purposes only. I am very much thankful for your cooperation.

SECTIONS
Section A: Guidelines

Section B: Demographic Information

Section C: Common Factors that affect e-government assimilation in Botswana
Part 1: Guidelines

1. Give an outline of the study and the objectives.
2. Find out if further contact can be made after the interview for data saturation.
3. Clarify the nature of confidentiality and the use of the quotes.
4. Make clear that the interviewee can refuse to answer any question.

Part 2: Demographic Information

Title ……

Position……

Date of interview ……..……..

Venue…..……..……...

Duration : Start ……Finish: ……

a) Level of Education: COSC/BGCSE ( ) Certificate ( ) Diploma ( )

Degree ( ) Masters ( ) PhD ( )

b) Age group: Less than 30( ) 30 to 40( ) 40 and above ( )

c) Years of Service ……..……

d) Experience with IT in general: 0 ( ) 1-5 ( ) 6-10 ( ) 11-15( ) 16-20 ( ) 21-25 ( ) 26 and above ( )

e) How would you describe your role in respect of the e-government project?

Part 3: Common Factors that affect e-government assimilation in Botswana

1. Assimilation Process:

Aims: obtain an understanding of the e-government implementation process to date.

a. In your opinion do you think Botswana needs to pursue e-government applications?
b. If yes, why?
c. What is the role of e-government systems in e-government implementation in MTI?
d. What role does the e-government system play in your operations?
e. Have e-government systems in the ministry so far proved to be efficient?
f. What strategy does the government have in place to tackle e-government goals?
g. How would you summarize the implementation process to date? (Key events, incidents)?
h. Has the e-government team already investigated factors that affect the assimilation of e-government systems?
i. Can you describe the key challenges for e-government implementation and assimilation within the public sector in the Ministry of Trade and Industry?

2. E-Government Strategies and Progress.

a. What challenges are you facing in assimilating e-government in MTI?

3. Resources

a. Is leadership in any way facilitating efficient acquisition of IT products and services?
b. If yes, in what ways?
c. Are e-government projects provided with sufficient resources (money, skilled personnel, training, etc)?

4. Customer Focus

a. Have you taken steps to evaluate customer demand of e-government services?
b. Do you ensure that service delivery and policy processes are open to input from citizens and businesses?
a. If yes, do you ensure that input received from citizens and businesses is taken into account during policy-making processes?

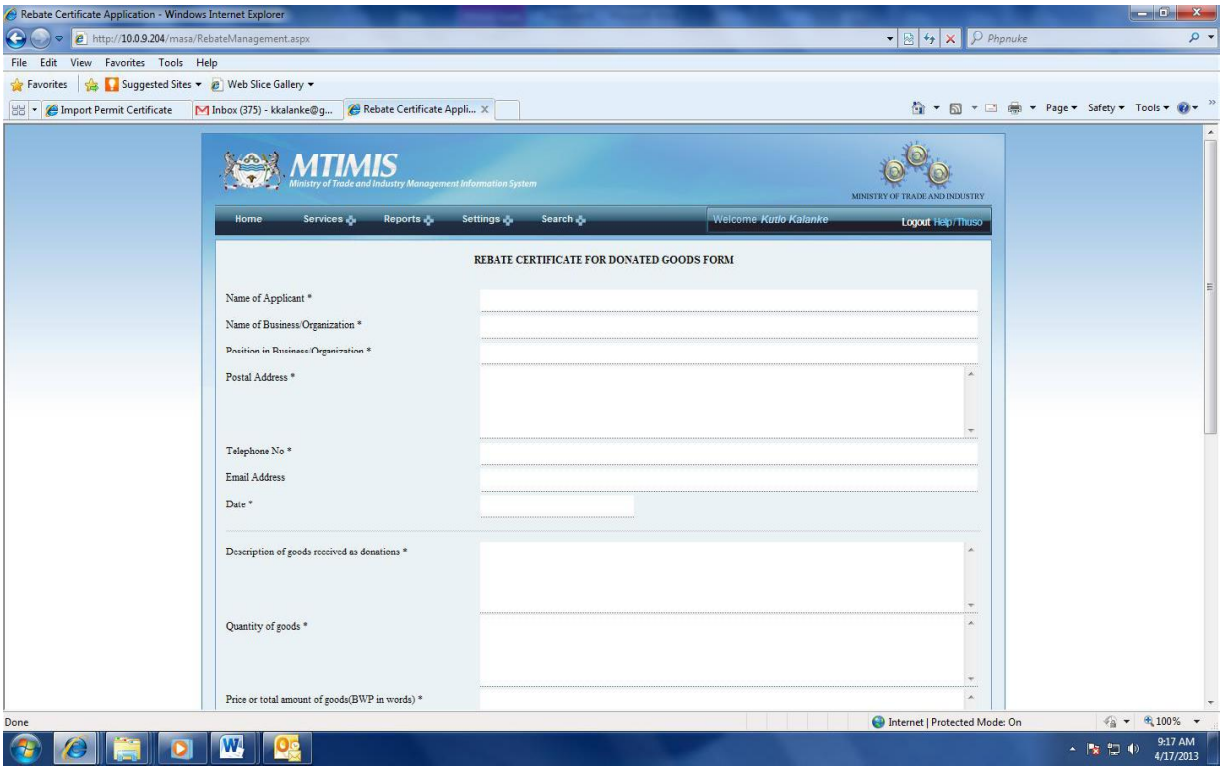
Appendix 11
Observation Protocol

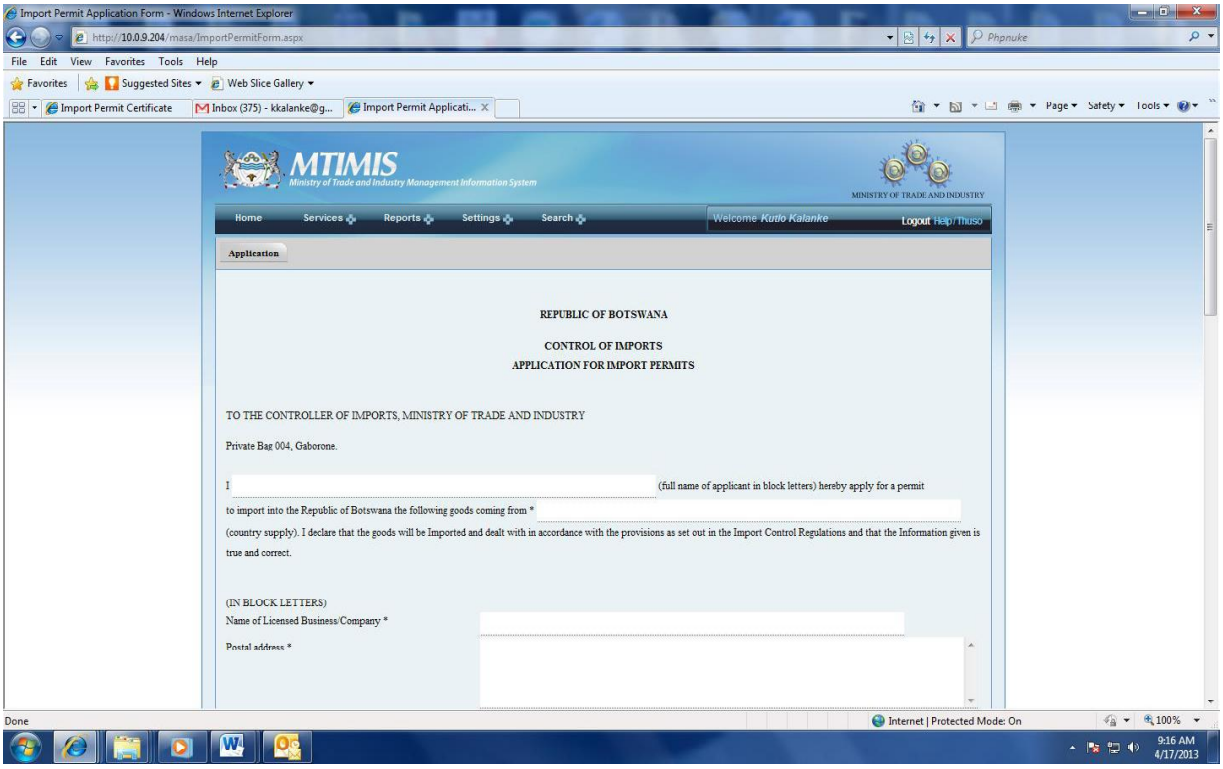
DEPARTMENT: _____

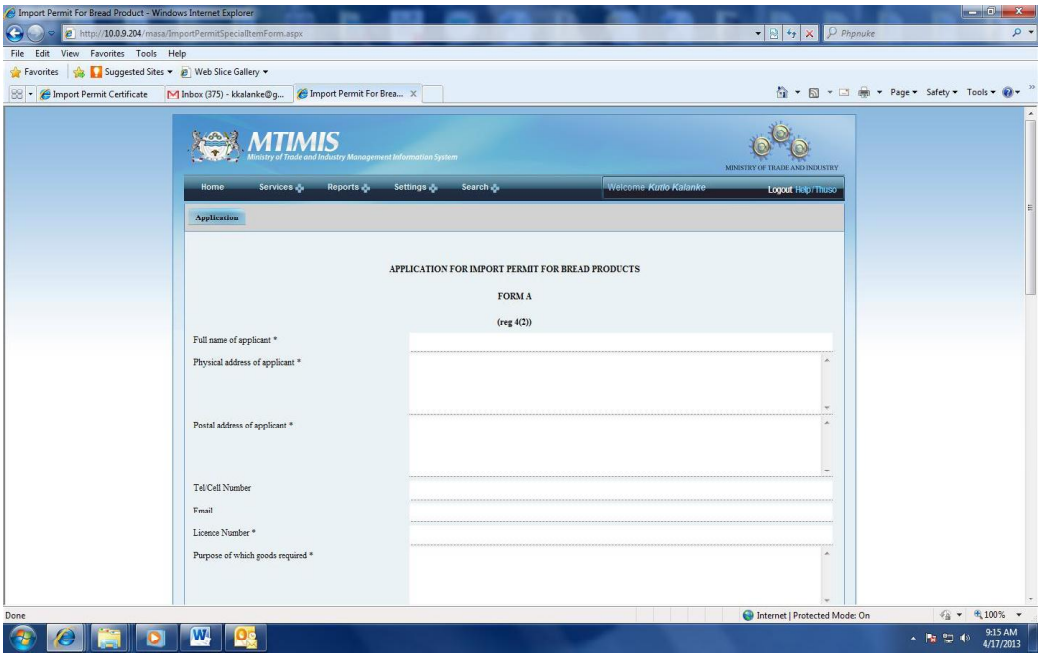
DATE: _____ TIME: _____

Observation Item	**Observed? (Check if yes)**	**Comments**
Is there an information management system for e-government activities?	✓	Yes, MTIMIS. Screen shots in Appendix 12.
Policies for regulating access and use	✓	The researcher was told during interviews with IT and leadership personnel that there are policies. However, the researcher was not shown the policies; it was asserted that they are confidential and private.
Any barring measures to limit access for security purposes	✓	Yes, use of passwords. Users have usernames and passwords to log onto the computers before they can access the system.
Equipment (computers, printers…) Servers Electricity Software	✓	However, there is a problem with consumables. Big printers are reported to have long run out of cartridges, as such they lay idle. Poor planning. In this regard one of leadership personnel interviewed stated that it would have been better if they were buying their own supply instead of Department of Information Technology (DIT) who does not know their needs.
Analysis of the Ministry website	✓	There is immobile content with links for other websites on the website. There are no online services but downloadable documents such as forms. Moreover, there are no e-mail services. Furthermore, there is no support for online transactions. Forms are downloaded online and submitted manually.

Appendix 12
MTIMIS Screen Shots




Import Permit Application Form - Windows Internet Explorer
http://10.0.9.204/masa/ImportPermitForm.aspx
File Edit View Favorites Tools Help
Favorites
Suggested Sites
Web Slice Gallery
Import Permit Certificate
Inbox (375) - kkalanke@g...
Import Permit Applicati...
MTIMIS
Ministry of Trade and Industry Management Information System
MINISTRY OF TRADE AND INDUSTRY
Home
Services
Reports
Settings
Search
Welcome Kutlo Kalanke
Logout Help/Thuso
Application
REPUBLIC OF BOTSWANA
CONTROL OF IMPORTS
APPLICATION FOR IMPORT PERMITS
TO THE CONTROLLER OF IMPORTS, MINISTRY OF TRADE AND INDUSTRY
Private Bag 004, Gaborone.
I (full name of applicant in block letters) hereby apply for a permit
to import into the Republic of Botswana the following goods coming from *
(country supply). I declare that the goods will be Imported and dealt with in accordance with the provisions as set out in the Import Control Regulations and that the Information given is true and correct.
(IN BLOCK LETTERS)
Name of Licensed Business/Company *
Postal address *
Done
Internet | Protected Mode: On
100%
9:16 AM
4/17/2013


Import Permit For Bread Product - Windows Internet Explorer
http://10.0.9.204/masa/ImportPermitSpecialItemForm.aspx
File Edit View Favorites Tools Help
Favorites
Suggested Sites
Web Slice Gallery
Import Permit Certificate
Inbox (375) - kkalanke@g...
Import Permit For Brea...
MTIMIS
Ministry of Trade and Industry Management Information System
MINISTRY OF TRADE AND INDUSTRY
Home
Services
Reports
Settings
Search
Welcome Kutlo Kalanke
Logout Help/Thuso
Application
APPLICATION FOR IMPORT PERMIT FOR BREAD PRODUCTS
FORM A
(reg 4(2))
Full name of applicant *
Physical address of applicant *
Postal address of applicant *
Tel/Cell Number
Email
Licence Number *
Purpose of which goods required *
Done
Internet | Protected Mode: On
100%
9:15 AM
4/17/2013

Appendix 13
Budget

Item	Quantity	Unit Price (P)	Total (P)
Hardcover note book for notes taking	1	100	100
Stapler	1	20	20
Note pads (packet)	1	15	15
Binding	3	15	45
Printing (per page)	500	0.75	375
Voice recorder	1	150	150
Memory stick	1	100	100
Lunch	90	15.5	1395
Communication expenses (calls)	2	3	6
Transport	90	6.6	594
Grand total			**2800**

Appendix 14
Schedule of Activities

Year	2012								2013				2014			2015		
Task	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Oct	Nov	Dec	Jun	Jul	Aug
Initial Development of Research Proposal																		
Submission for Review																		
Final Development of Research Proposal																		
Defence of Proposal																		
Data Collection																		
Data Analysis																		
Final Dissertation Report Write Up																		
Submission For Internal and External Examination																		