



**A FRAMEWORK FOR SELECTION OF  
PROCESSES TO VIRTUALIZE IN  
E-GOVERNMENT: A CASE STUDY OF  
LIBERIA**

A Thesis submitted by

Ransford Mensah, BSc., MSc.

For the award of

Doctor of Philosophy

[2019]

# Abstract

E-government has become an important strategic area of focus in many Sub-Saharan African countries. It has prompted many governments to consider digital transformation of services to residents. Countries in America, Europe and Australia have reported improvement of governance through the effective and efficient use of technology in the public sector. Despite the numerous success stories about e-government bringing great benefits in developed countries, many e-government implementations in Africa do not achieve the expected outcomes. The reason for the failure of e-government projects in Africa is still not well understood.

This study is focused on Liberia, a developing country in Sub-Saharan Africa, where e-government has been adopted as a key government strategy for making services accessible to its citizens. However, the implementation of e-government in Liberia has not been successful. The IT practitioners in the government of Liberia ministries and agencies have no guidelines to select viable e-government initiatives to implement. The problem lies in the aspect that there is no formally implemented framework for the selection of most suitable government processes or services to virtualize. There is little academic nor practitioner work that has been conducted in this area.

The objective of the research is to develop a framework that can be used to select suitable government physical processes to virtualize, and, hence, contribute to the success of an e-government program in Liberia and other developing countries.

To achieve this objective, this reflective-practitioner research applies Process Virtualization (PVT), Extended PVT (EPVT) Theories and design science research methodology to develop a framework in the form of a decision support tool that enables practitioners to select suitable government physical processes to virtualize. The three phases in the research include definition of the problem; design and development of the framework; and evaluation of the framework. The results of the literature review, survey and focus group discussion form the basis for the design of the framework.

The study combines qualitative and quantitative data collection from IT professionals of the government of Liberia ministries, agencies and commissions (MACs). In this regard, the perspective of IT practitioners in Liberia is found to be key contribution to this research.

This study makes an important theoretical contribution to PVT and EPVT theories by applying it in the context of e-government. The proposed framework will help manage and mitigate potential negative outcomes to e-government implementation in developing countries.

# Certification of Thesis

This Thesis is entirely the work of Ransford Mensah except where otherwise acknowledged. The work is original and has not previously been submitted for any other award, except where acknowledged.

Principal Supervisor: \_\_\_\_\_

Professor Aileen Cater-Steel

Associate Supervisor: \_\_\_\_\_

Professor Mark Toleman

Student and supervisors' signatures of endorsement are held at the University.

# Acknowledgments

This thesis would not be possible without the inspiration and support of many people. I am deeply indebted to my principal supervisor, Professor Aileen Cater-Steel for her engaged, encouraging support and high quality of supervision which has been of great significance for the study and myself. My associate supervisor, Professor Mark Toleman for providing insightful and constant guidance and conscientiously reading through numerous drafts of the dissertation. Also, thanks to Dr. Francis Gacenga for his supervision and participation in the early stage of the study.

I thank Ms. Libby Collett for reading through and making corrections to numerous drafts. I thank the staff of the School of Information Systems, Faculty of Business and Law, University of Southern Queensland, for the providing scholarship and support.

This research could not have been completed without the assistance of the Government of Liberia IT leaders who participated in this study. They patiently dedicated their time in their busy agenda to provide thoughtful responses to my survey, focus group discussions, interviews and generously shared their experience and knowledge with me. And for that I wish to express to them my sincere appreciation. My sincere gratitude also goes to my colleagues at the USAID Digital Liberia and e-Government Project, especially Mr. Anthony Waddell (Senior ICT Advisor) for his advice and support he provided throughout this study.

I am grateful to my beloved parents, brother and sister for their prayers; unflagging love; encouragement; and support throughout my life.

My special thanks to my wonderful children Naila and Aileen for their love and enormous sacrifices made to allow me time to study. To my loving wife, I will forever be grateful to you for your support, motivation, and prayers.

Above all, my greatest thanks and gratitude goes to God who gave me the strength and perseverance to keep going despite the many challenges I encountered through the journey.

# Table of Contents

Abstract.....	i
Certification of Thesis .....	iii
Acknowledgments .....	iv
List of Figures.....	viii
List of Tables .....	x
List of Abbreviations .....	xii
<b>Chapter 1: Introduction .....</b>	<b>1</b>
1.1 CHAPTER INTRODUCTION.....	1
1.2 RESEARCH BACKGROUND AND MOTIVATION.....	2
1.3 RESEARCH PROBLEM AND RESEARCH QUESTION.....	4
1.4 JUSTIFICATION OF THE RESEARCH .....	6
1.5 RESEARCH APPROACH.....	7
1.6 DEFINITION OF KEY TERMS.....	8
1.7 SCOPE AND DELIMITATIONS AND KEY ASSUMPTIONS.....	8
1.8 STRUCTURE OF THESIS .....	8
1.9 SUMMARY OF CHAPTER ONE.....	10
<b>Chapter 2: Literature Review.....</b>	<b>11</b>
2.1 CHAPTER INTRODUCTION.....	11
2.2 LITERATURE REVIEW STRATEGY .....	12
2.3 E-GOVERNMENT: DEFINITION, MODELS AND DRIVERS .....	20
2.4 E-GOVERNMENT IN AFRICA: INITIATIVES AND CHALLENGES.....	26
2.5 LIBERIA: A BRIEF OVERVIEW.....	30
2.6 THE RESEARCH CONTEXT: LIBERIA AND ITS E-GOVERNMENT PROGRAMME.....	33
2.7 THEORETICAL FOUNDATION .....	36
2.8 MIXED METHODS RESEARCH IN IS .....	42
2.9 SUMMARY OF CHAPTER TWO.....	43
<b>Chapter 3: Research Design .....</b>	<b>45</b>
3.1 CHAPTER INTRODUCTION.....	45
3.2 RESEARCH PHILOSOPHY .....	46
3.3 RESEARCH METHODOLOGY .....	48
3.4 MIXED-METHODS RESEARCH DESIGN.....	51
3.5 RESEARCH METHODS.....	52
3.6 DATA COLLECTION PROCEDURE .....	55
3.7 DATA ANALYSIS METHODS.....	63

3.8	FRAMEWORK FOR IDENTIFICATION OF PROCESSES SUITABLE FOR VIRTUALIZATION .....	65
3.9	ROLE OF THE RESEARCHER .....	68
3.10	ETHICAL ISSUES .....	69
3.11	SUMMARY OF CHAPTER THREE.....	71
	<b>Chapter 4: Survey and Focus Group Analysis and Results.....</b>	<b>73</b>
4.1	CHAPTER INTRODUCTION .....	73
4.2	PRELIMINARY ANALYSIS OF SURVEY DATA .....	74
4.3	DEMOGRAPHIC PROFILE of respondents .....	75
4.4	FINDINGS FROM SURVEY .....	77
4.5	FOCUS GROUP RESULTS.....	80
4.6	FINDINGS AND DISCUSSION (DEVELOPING THEMES).....	101
4.7	SUMMARY OF CHAPTER FOUR.....	106
	<b>Chapter 5: Artefact Design, Development, Evaluation and Results .....</b>	<b>107</b>
5.1	CHAPTER INTRODUCTION .....	107
5.2	DESIGN AND DEVELOPMENT.....	108
5.3	APPLICATION OF EEPVT FRAMEWORK.....	112
5.4	EEPVT VALIDATION .....	122
5.5	EXPERIMENTAL VALIDATION OF EEPVT FRAMEWORK .....	123
5.6	COMMUNICATION OF THE FRAMEWORK.....	128
5.7	SUMMARY OF CHAPTER FIVE.....	128
	<b>Chapter 6: Discussion .....</b>	<b>130</b>
6.1	CHAPTER INTRODUCTION .....	130
6.2	RESEARCH AIM.....	131
6.3	DISCUSSIONS ON FINDINGS RELATED TO RESEARCH QUESTION.....	132
6.4	RESEARCH QUESTION ANSWER.....	134
6.5	FINDINGS FROM FIELDWORK: BARRIERS TO E-GOVERNMENT IMPLEMENTATION IN LIBERIA .....	138
6.6	ANSWERING RESEARCH QUESTION.....	142
6.7	SUMMARY OF CHAPTER SIX .....	142
	<b>Chapter 7: Conclusion.....</b>	<b>144</b>
7.1	CHAPTER INTRODUCTION .....	144
7.2	SUMMARY OF THESIS .....	145
7.3	ANSWER TO RESEARCH QUESTION .....	147
7.4	SIGNIFICANCE OF THE STUDY .....	147
7.5	CONTRIBUTION TO THEORY AND PRACTICE .....	150
7.6	RECOMMENDATIONS TO GOVERNMENT OF LIBERIA.....	151
7.7	RESEARCHER’S THOUGHTS ABOUT PERSONAL DEVELOPMENT .....	153

7.8	LIMITATIONS OF THE STUDY AND FURTHER RESEARCH .....	154
7.9	CONCLUDING REMARKS .....	156
	<b>References.....</b>	<b>158</b>
	<b>List of Appendices.....</b>	<b>173</b>



# List of Figures

Figure 1-1 Chapter 1 overview and section linkages.....	2
Figure 1-2 Outline of Thesis .....	10
Figure 2-1 Overview of Chapter 2 .....	12
Figure 2-2 Different Steps in the Literature Search and Selection Strategy .....	16
Figure 2-3 Map of Liberia.....	31
Figure 2-4 Conceptual Model of EPVT.....	40
Figure 3-1 Chapter 3 Overview .....	46
Figure 3-2 Study design framework .....	52
Figure 3-3 Data collection methods .....	56
Figure 4-1 Overview of Chapter 4 .....	74
Figure 4-2 Age of respondents.....	76
Figure 4-3 Education level of respondents .....	76
Figure 4-4 Years of work experience of respondents .....	77
Figure 4-5 Use of e-government services .....	77
Figure 4-6 Codification of Video 3.....	82
Figure 4-7 Codification of Video 4.....	83
Figure 4-8 Codification of Video 5.....	83
Figure 4-9 Category: Actual Performance of E-Government Services .....	84
Figure 4-10 Category: People’s Perceptions About E-Government Services .....	86
Figure 4-11 Category: Literacy.....	90
Figure 4-12 Category: Actions required for a Better Performance of E-Government Services.....	93
Figure 4-13 Category: Impediments for the Performance of E-Government Services.....	96
Figure 4-14 Category: Sustainability of E-Government Services .....	99
Figure 4-15 Theme #1: Current Situation of the e-Government Services Performance in Liberia .....	101
Figure 4-16 Obstacles Currently Confronted on the E-Government Services in Liberia.....	103
Figure 4-17 Theme #3: Proposed Solutions to Improve the E-Government Services in Liberia .....	105
Figure 5-1 Overview of Chapter 5 .....	108
Figure 5-2 Design science research methodology process model (adapted from Peffers et al. (2007)).....	109

Figure 5-3 Extended e-Government PVT (EEPVT) framework .....	111
Figure 5-4 EEPVT Information section.....	113
Figure 5-5 EEPVT Framework (v1) .....	119
Figure 5-6 EEPVT framework (v2).....	122
Figure 5-7 Populated EEPVT framework (Helpdesk e-initiative).....	126
Figure 6-1 Overview of Chapter 6.....	131
Figure 6-2 Final EEPVT framework .....	136
Figure 7-1 Overview of Chapter 7.....	145

# List of Tables

Table 2-1 Settings and scope for the different search engines used in this study.....	13
Table 2-2 Research keywords .....	14
Table 2-3 Filters applied to the different search engines .....	15
Table 2-4: The details of the literature search using the different types of search engines .....	17
Table 2-5 Main themes and sub-themes of the e-Government research.....	18
Table 2-6 Concept Matrix for the sources of literature reviewed .....	20
Table 2-7: e-Government implementation-related challenges in the different parts of Africa .....	29
Table 2-8 Statistics of Liberia for the past few decades .....	32
Table 2-9 Liberia e-Gov Strategic Outcomes (USAID 2014) .....	34
Table 2-10 Liberia E-Government Projects .....	35
Table 2-11 Propositions towards virtualization .....	41
Table 3-1 Research Methodology .....	50
Table 3-2 Research Method .....	53
Table 3-3 Research Questionnaire Development .....	60
Table 3-4 Reviewed Documents .....	62
Table 4-1 Participants perception about e-services .....	79
Table 5-1 Extended PVT Constructs .....	110
Table 5-2 Process Dimension questions .....	113
Table 5-3 Authorizing Dimension questions .....	114
Table 5-4 Conversion of Requirement Level (RL) to Requirement Value (RV)- Positive.....	114
Table 5-5 Conversion of Requirement Level (RL) to Requirement Value (RV)- Negative.....	114
Table 5-6 Polarity of each construct .....	115
Table 5-7 Constructs with Weights, Polarity and Requirement Value .....	115
Table 5-8 Traffic Light Colors representing virtualization status of process .....	118
Table 5-9 EEPVT list of variables, abbreviation, definition and range.....	119
Table 5-10 Weights of constructs assigned by panel of experts .....	121
Table 5-11 Panel of Experts experimental validation results .....	125
Table 5-12 Summary of results .....	125
Table 5-13 Panel of Experts' experimental validation results .....	127

Table 6-1 Summary of findings from survey results .....	132
Table 6-2 The advantages and benefits of each suggestion.....	142
Table 7-1 Constructs of EEPVT framework.....	147

# List of Abbreviations

<b>Abbreviation</b>	<b>Full form</b>
ACE	Africa Coast to Europe
AR	Action Research
CIO	Chief Information Officer
DLEG	Digital Liberia and Electronic Governance
DSRM	Design Science Research Methodology
e-Gov	Electronic Government
EEPVT	e-Government Extended Process Virtualization Theory
EPVT	Extended Process Virtualization Theory
FGD	Focus Group Discussion
GEMS	Governance and Economic Management Support
GOL	Government of Liberia
GSA	General Services Agency
ICT	Information and Communication Technology
ICT	Information and Communication Technology
IFMIS	Integrated Financial Management Information System
IS	Information Systems
IT	Information Technology
ITIL	Information Technology Infrastructure Library
ITSM	Information Technology Service Management
MAC	Ministries Agencies and Commissions
MIS	Management Information System
MoPT	Ministry of Post and Telecommunications
PDIA	Problem Driven Iterative Adaptation
PMO	Programme Management Office
PVT	Process Virtualization Theory
RQ	Research Question
SSA	Sub-Saharan Africa
USAID	United States Agency for International Development
USQ	University of Southern Queensland
VTS	Virtualization Total Score

# Chapter 1: Introduction

---

## 1.1 CHAPTER INTRODUCTION

This thesis proposes that there is a need for a framework for the selection of government physical processes that are most suitable for virtualization in an e-government implementation. This framework will define dimensions or characteristics of a physical service that an IT practitioner in a government institution in Sub-Saharan Africa implementing an e-service should consider. With the dawn of the technological age due to the wide spread use of information and communication technologies (ICTs), e-government is fast becoming of prime importance (Nkohkwo & Islam 2013).

The Government of Liberia in 2008 adopted a comprehensive e-government program involving all Ministries, Agencies and Commissions (MAC). However, after ten (10) years, the government is still struggling to identify and deploy effective e-government services.

The rate of failure for government IT projects is abnormally high in many countries. In the United States, it was reported by the Government Accountability Office that 49 percent of federally funded IT projects had been poorly planned, poorly performed or both (Zhu & Kindarto 2016). In the UK, it was reported that government agencies wasted \$4 billion on failed IT projects, achieving a success rate of only 30 percent (Johnson & Hencke 2008).

If managing government IT projects is difficult for developed nations, it is even more difficult for developing countries (Zhu & Kindarto 2016). Heeks (2002) stated that 35 percent of e-government projects in developing countries are total failures, 50 percent are partial failures, while the remaining 15 percent are successes. Furthermore, Nurdin, Stockdale and Scheepers (2012a) stated that adoption of e-government in developing countries is not considered as successful as developed countries.

The inspiration for this thesis came through many years of the researcher consulting in Liberia on e-government programs and seeing some government initiatives succeed and others fail.

E-government in the last decade has become an important area of focus for government strategy. The rapid development of e-government across the world has opened the discussion on how governments can improve citizens' adoption of their online public services (Sabani, Deng & Thai 2018). The growth of information technology solutions in Africa has prompted many governments to consider digital transformation of services to residents.

In Liberia, e-government has been adopted as the key government strategy for making services accessible to its citizens. However, a significant number of e-government programs in Liberia do not achieve the expected outcomes. An overview of the chapter is shown in Figure 1-1.

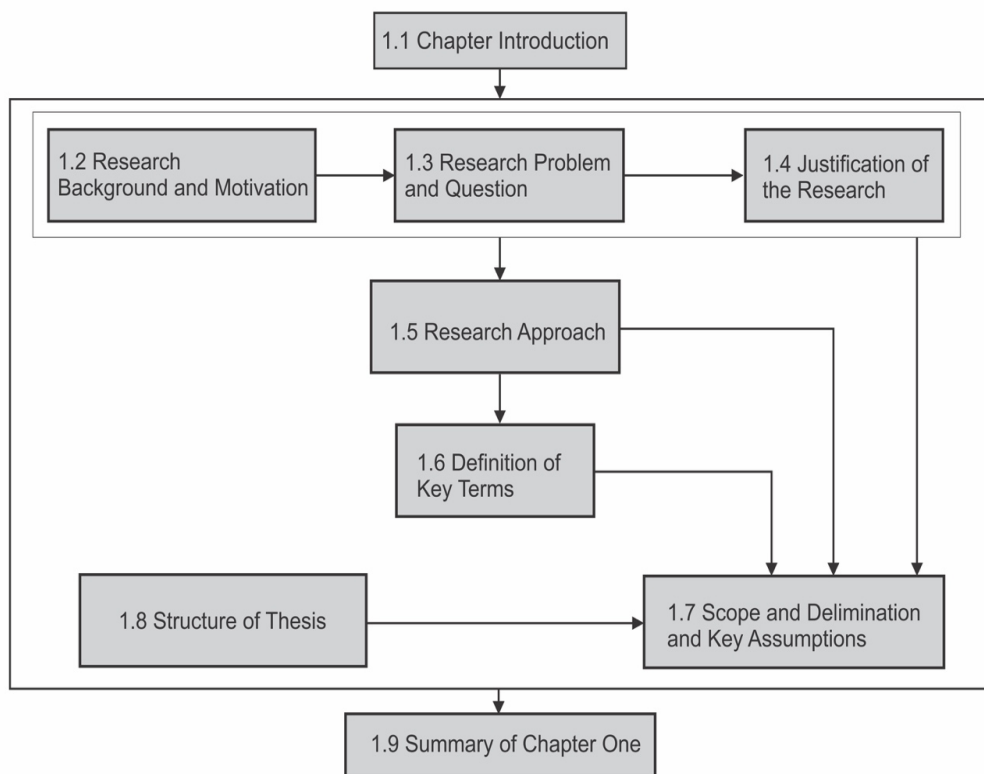


Figure 1-1 Chapter 1 overview and section linkages

## 1.2 RESEARCH BACKGROUND AND MOTIVATION

In Africa, e-government implementation faces many challenges due to poor telecommunications infrastructure and low literacy rate. Liberia which is one of the poorest countries in West Africa, is no exception. After over 10 years of civil war, Liberia became a democratic country in 2005. The government has come to the

realization that to hasten growth and improve the livelihood of its citizenry, it has to focus on delivering services with the prime customer being the people who voted them into power (Dessus, Hoffman & Lofgren 2012). The Liberian government is introducing innovation in its structure, processes and practices in ways to better mobilize, use and deploy human capital and information technology for service delivery to its people (Cheema & Rondinelli 2008).

The Government of Liberia (GOL) has made some progress in the use of Information and Communications Technologies (ICT) to enable it to govern well and provide services to citizens and businesses (Kamara 2011). GOL has demonstrated through the National ICT and Telecommunications Policy 2010-15 that it is strongly committed to utilizing ICT to transform the way information is provided and services are delivered to citizens, businesses and other government entities in the country. As an exemplar, the Ministry of Post and Telecommunication (MoPT), which is the leading ICT policy arm of the government, is progressing the use of ICT to manage and deliver services more effectively and efficiently.

In 2008 Liberia enacted an e-Government Act (Kuzma, Yen & Oestreicher 2009). The main aim of the law is to simplify electronic communication among government agencies and to deliver more user-friendly and cost-effective services (Rorissa & Demissie 2010). In the early years after the civil war in Liberia, IT implementation across the government agencies was viewed as involving the application and development of technology, and not as services that support business processes (Kamara 2011). Presently, we are witnessing a new phase in the development of Liberia that is characterized by the spread of digital and communication technologies with a strong focus on IT services.

The aim of the MoPT of Liberia is to provide government services anytime, anywhere. The citizenry will soon have a choice of channels for government information and services that are convenient and easy to use. This outcome can only be achieved if government services are hosted on a portal that meets the needs of the citizenry. The GOL has embarked on a project to build and host an “e-Liberia portal” which will act as the single point of contact for all government services. A challenge that GOL is currently facing is the selection of government services or processes that can easily be transformed from current physical processes to virtual processes.



A framework is required to enable GOL to identify government physical processes that are suitable candidates for virtualization. Process virtualization is receiving increasing attention as an emerging phenomenon in information systems. Process Virtualization Theory (PVT) has been suggested as a useful lens to analyze candidate processes in government for transformation to electronic services (Ofoeda 2015).

PVT is a theoretical model developed by Overby (2008) which provides guidance to assess, constitute, and determine the critical factors and pivotal components that specify the migration of processes into virtual environments (Balci 2014). PVT proposes that four main constructs (sensory requirements, relationship requirements, synchronism requirements, and identification and control requirements) can affect whether a process is amenable or resistant to being conducted virtually (Overby 2008).

Researchers such as Barth and Veit (2011); Li, Oh and Wang (2009) and Ofoeda, Boateng and Asmah (2018) have used process virtualization theory as an instrument and means to achieve research objectives. Although the findings of the authors diverge in some respects, the widespread conclusion is that it has become inconceivable to imagine life without processes that have been migrated from physical to virtual environments (Balci 2014).

PVT is relatively new, and there is a need to test whether it can be used as a guide in the selection of government processes to virtualize.

### **1.3 RESEARCH PROBLEM AND RESEARCH QUESTION**

Creswell (2009) defines a research problem as a question that leads to the need for a research study to be undertaken. A critical issue facing e-government initiatives in developing countries is the high rate of failure (Heeks 2002). Despite the many benefits of e-government, the implementation of e-government initiatives in African countries has in most cases failed (Nkohkwo & Islam 2013). The E-Government Development index (EGDI) which presents the development of e-government in United Nations Member States (based on Online Service Index (OSI), Telecommunications Index (TII) and Human Capital Index (HCI)) shows that Sub-Saharan African countries are the least ranked among 193 nations.

The challenges that affect the implementation of e-government initiatives in the Sub-Saharan Africa (SSA) region lead to diversified implementation strategies at various levels (Middleton 2007). According to Mutula (2005), e-government initiatives in SSA region seem to be far from reaching realization and attainment of the purpose for which they are undertaken due to several challenges and stumbling blocks.

Due to complex and inter-connected challenges, Liberia remains one of the world's most under-developed countries despite signs of significant progress. Such challenges include curbing malaria and Ebola, preventing and resolving conflicts, and decreasing corruption.

In any e-government program implementation, seamless service, proactive and responsive interaction, and quality delivery should be a given (Grant & Chau 2006). But sadly the government of Liberia has fallen short even on these fundamental requirements (Kamara 2011). Liberia is struggling to achieve a government-wide holistic approach of using technology for the delivery of IT services to the public.

The research problem highlights the need for GOL to ensure its e-government program is able to achieve the expected outcomes.

Therefore, the overall question for this research can be described as: *'How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business processes supporting e-government services?'*.

## **Research Objectives**

This research deals with how to increase the success of e-government initiatives in Liberia. Developing a framework to select government processes to virtualize is the main objective of the research. More specifically, the objectives of this study are:

- 1. To identify the challenges of implementing e-government in Liberia.*

The issue presented in this study is the development of a framework to select government physical processes to virtualize in an e-government implementation in Liberia. Accordingly, this objective is to investigate issues affecting e-government programs in Liberia from both literature and focus group discussions with leading IT practitioners from key government ministries and agencies.

- 2. To build a framework to identify physical government processes that can be converted to virtual processes.*

The focus of this objective is to select factors from the focus group discussions that impact the success of e-government initiatives in Liberia. Then, the selected factors will be placed in a framework to design a model for selection of government processes that are suitable candidates for virtualization.

#### **1.4 JUSTIFICATION OF THE RESEARCH**

The first justification for this study is the high failure rate of e-government initiatives especially in Sub-Sahara Africa. As mentioned in the background, e-government adoption in West Africa is increasing with a strong focus on IT services. Liberia is one of the poorest countries in West Africa and has developed a roadmap for e-government implementation. Liberia is receiving assistance from the US government through the USAID Liberia Digital and e-government Capacity Building project to improve connectivity and provide effective services online, progressing the Liberia ICT platform now and for future generations. One main focus is how to ensure Liberia maximizes this support from the US government to promote economic growth through sustainable government digital initiatives. A useful by-product of the research will be the provision of baseline information on e-government implementation in West Africa to funding organizations (e.g. World Bank, USAID, European Union, Africa Development Bank and others).

The second justification is that the research will extend the existing knowledge on Process Virtualization Theory and Extended Process Virtualization Theory by applying it in the context of e-government. Both Overby (2008) and Barth and Veit (2011) stated that there is much work to be done to sharpen and extend process virtualization theory. As with any newly proposed theory, process virtualization theory can benefit from rigorous empirical testing.

In addition, practitioners and implementers of e-government in West Africa could benefit from the framework developed in this study to select government services that can be easily virtualized. This study is conducted in Liberia and includes key stakeholders (IT practitioners) from the government Ministries, Agencies and Commissions to gather insights. It sets a path for a logical way to better understand the selection of government processes to virtualize. The framework designed and

applied in this research is expected to contribute to practice by providing an effective and efficient way of selecting government processes to virtualize leading ultimately to more successful e-government programs. The findings and conclusions could help Governments and the donor community.

## **1.5 RESEARCH APPROACH**

This research is conducted using reflective practitioner and design science methodology, as the aim is to improve e-government implementation in Liberia with the help of IT practitioners implementing e-initiatives in their ministries. To achieve this aim, the researcher needs to gain the differing views and perceptions of the key stakeholders (Senior IT professionals of the ministries, agencies and commissions) who are engaged in Liberia's e-government program.

McMahon (1999) in his research on the difference between reflective practice and action research, stated that action research is a deliberate and planned attempt to solve a particular problem or set of problems using a coherent, systematic and rigorous methodology. Reflective practice can be seen as the specific application of experiential learning to activities carried out as part of one's profession or job. He further stated that reflective practice can be a useful precursor to action research. It is not identical to it.

The researcher is employed as a member of the USAID Digital Liberia and e-Government project team in Liberia. The USAID Digital Liberia and e-Government Activity aims to improve government's performance and bring government closer to citizens by assisting it to develop its Internet and computer technology capability. The researcher is thus able to immerse himself into the life experiences of the stakeholders and actors under study. The research seeks to satisfy two aims, namely addressing or solving a 'real world issue' or problem and contributing to the development of theory (Adelman 1993; Lewin 1946).

This research uses qualitative and quantitative research methods taking a pragmatic stance, using the reflective practitioner approach.

The philosophy adopted for this research is that of pragmatist as the research seeks to gain insight into the complex societal, business, process and personal relationships that form a particular environment, and thus gain a better understanding of them. As advised by Kim (2003), a better understanding of the relationships will

place the researcher in a position where it is possible to introduce changes or improvements to the e-Government program.

## **1.6 DEFINITION OF KEY TERMS**

Some of the terms and definitions used in this paper may contrast from regular usage, or are not uniformly defined by other researchers. In this section, key and disputable terms are defined to provide clarity on positions taken in the study.

**Terms relating to RQ:** *How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business processes supporting e-Government services?*

*e-Government:* It is the online delivery of government information and services through the Internet or other digital means (Kanaan 2009; West 2004).

*Service:* A means of delivering value to customers by facilitating outcomes that customers want to achieve without the ownership of specific costs and risks (Van Bon et al. 2008).

*Process Virtualizability:* This describes how amenable a process is to being conducted without physical interaction between people or between people and objects (Overby 2008).

## **1.7 SCOPE AND DELIMITATIONS AND KEY ASSUMPTIONS**

A first delimitation is the sampling of the people selected for the survey and focus group discussion. A judgment sampling approach was used which involved choosing participants who are most able to provide the information that the researcher requires (Sekaran & Bougie 2016). The participants are senior IT practitioners from the government of Liberia ministries and agencies, with attention paid to their role and the specialist knowledge of their respective ministry. In such a situation, where a subsection of the group possesses the best knowledge, a cross-sampling of the entire population will not normally produce different results (O'Sheedy 2012).

## **1.8 STRUCTURE OF THESIS**

The thesis comprises seven chapters. The structure is based on recommendations from Perry (1998) and the University of Southern Queensland PhD guidelines (USQ 2017).

**Chapter One** provides background information on the study, research problem, research questions, significance of research, term and their uses, overview of research methodology and the contributions of the research.

**Chapter Two** systematically reviews the literature on e-government with emphasis on initiatives in Africa and challenges. Most importantly, the chapter provides background on PVT and EPVT.

**Chapter Three** presents the details and justifies use of the proposed research methodology. The chapter begins with a description of the research philosophical paradigm used. It presents comparisons of quantitative and qualitative research strategies. The chapter also outlines a development process for a framework for identification of government physical processes suitable for virtualization. The development process considers the Design Science Research (DSR) development life cycle. It also details the reflective practitioner approach followed in the study. A description of the research orientation, ethical considerations, trustworthiness and validity are also provided.

**Chapter Four** details the descriptive analysis of the data gathered in the study and also presents findings from the focus group discussion.

**Chapter Five** presents the design, development and evaluation of the e-government extended PVT model based on the framework proposed in Chapter Three. This chapter answers the RSQ.

**Chapter Six** presents a discussion of the research findings. The chapter provides a critical examination of the research results with discussions based on the context of the research method and reviewed literature. Discussions are structured around the three research questions with a reflection on research work conducted and the presentation of key themes emerging from this research.

**Chapter Seven** concludes the research by summarizing the findings which include the novelty of the developed framework. The contribution of research to the body of knowledge is discussed and implications of the research to theory and practice are presented. The chapter also discusses the limitations of the research and directions for future research are presented. Finally, the chapter presents the recommendations for Government of Liberia aimed at improving e-government implementation. Figure 1-2 depicts the outline of the thesis.

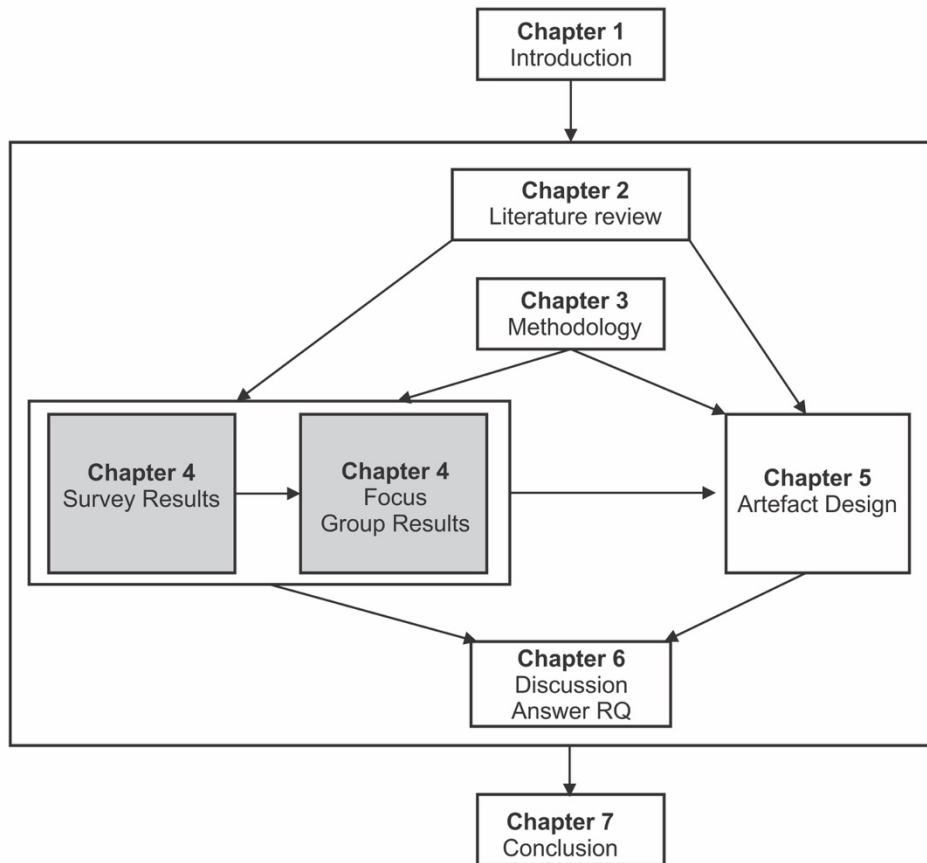


Figure 1-2 Outline of Thesis

## 1.9 SUMMARY OF CHAPTER ONE

This chapter introduced the research study, and provided the basis upon which the rest of the thesis is constructed. The research background and motivation were presented for an overall understanding of the research context. Then the research problem and research questions were identified. Justification of the research and the research methodology was then briefly introduced. Key definitions and scope delimitations were provided before an outline of the thesis chapters. The next chapter is the literature review on the topics relevant to the research.

# Chapter 2: Literature Review

---

## 2.1 CHAPTER INTRODUCTION

The previous chapter provided an introduction to the study. The main objective of this study is to increase the success of e-government initiatives in Liberia by developing a framework to evaluate government processes in order to facilitate their successful virtualization.

This chapter provides a discussion on reviewed literature comprising both academic and practitioner knowledge on the research topic. The purpose of the literature review was to explore the available knowledge, in order to understand the relationship between this study and the available knowledge on the research topic.

The chapter focuses on describing the major emerging themes of the study, which have been uncovered from an extant survey of relevant literature related to e-government adoption, along with various challenges and barriers to its adoption in view of the case studies from different countries.

From the managerial and users' perspectives, a number of different theoretical perspectives highlighting the various factors affecting the adoption of technology (in this case, the e-government services) will also be discussed and these include Process Virtualization Theory (PVT) and Extended Process Virtualization Theory (EPVT)

Section 2.1 introduces this chapter. Section 2.2 presents the literature review strategy used in this research and Section 2.3 provides definition of e-government and models. Section 2.4 discusses E-Government in Africa, both initiatives and challenges. Section 2.5 presents an overview of Liberia and Section 2.6 e-Government Programme in Liberia. Section 2.7 presents theories specific to the research problem. Section 2.9 summarizes this chapter. Figure 2-1 presents an overview of Chapter 2.



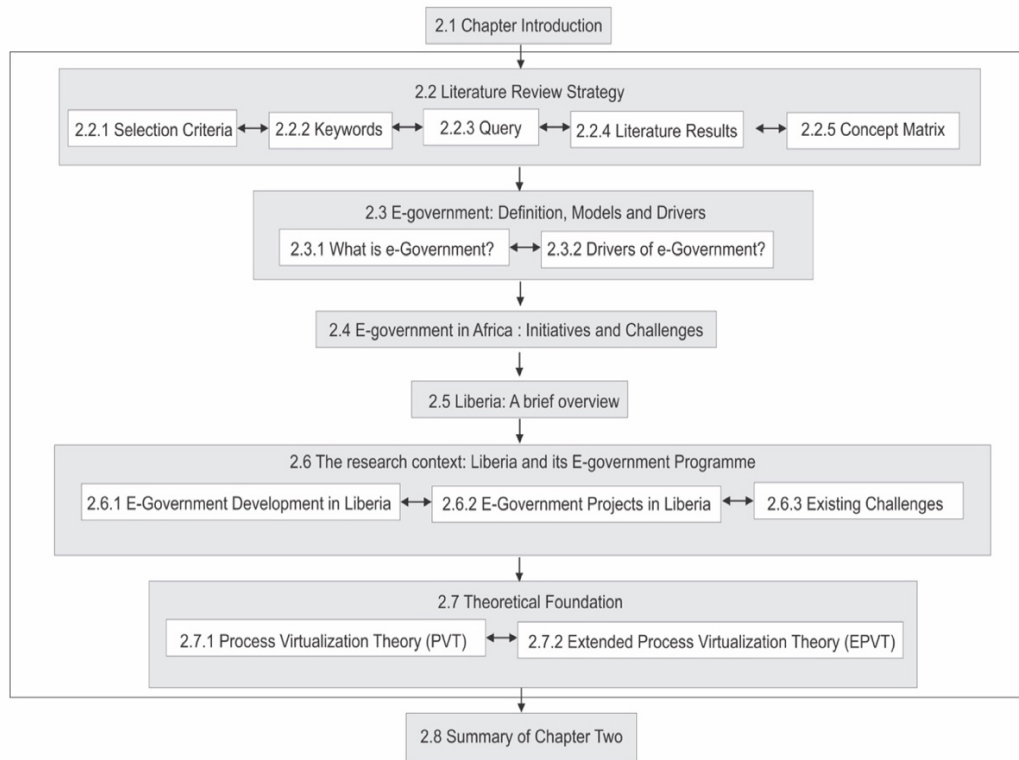


Figure 2-1 Overview of Chapter 2

## 2.2 LITERATURE REVIEW STRATEGY

The objective of the literature review is to obtain a detailed understanding of the current state of knowledge surrounding e-government implementation in Sub-Saharan Africa.

In this chapter, the Webster and Watson (2002) framework for conducting a literature review was implemented. The usage of an appropriate methodology for collecting and analysing literature is essential for the validity of the overall research being conducted. This ranges from the type of data being collected, to the data analysis methods being utilized and the actual findings.

According to Hart (2018), literature review can be defined as “the use of ideas in the literature to justify the particular approach to the topic, the selection of methods, and demonstration that this research contributes something new” (p. 1-2). Meanwhile, Webster and Watson (2002) contend that an effective literature review is one which “creates a firm foundation for advancing knowledge, facilitates theory development, closes areas where a plethora of research exists and uncovers areas where research is

needed” (p. 13). This further emphasizes that a literature review is much more than simple summarization of the past research.

The following sections highlight the steps taken from searching to evaluating and analysing information from the different research papers collected and reviewed for the purpose of conducting literature review.

### 2.2.1 Selection Criteria

This section provides the guidelines applied regarding the criteria for searching and selecting the different research from some of the most widely used and trusted sources for searching and selecting relevant research-related information.

Table 2-1 Settings and scope for the different search engines used in this study shows the list of search engines used.

Search Engine	Settings	Timeline	Databases
<i>Google Scholar</i>	Keyword	2000 – onwards	All
<i>Science Direct</i>	Title, Abstract, Keyword	2000 – onwards	All
<i>Wiley Online Library</i>	Keyword	2000 – onwards	All
<i>SpringerLink</i>	Keyword	2000 – onwards	All
<i>Taylor and Francis</i>	Keyword, Title	2000- onwards	All

Table 2-1 Settings and scope for the different search engines used in this study

Apart from the *Google Scholar* search engine, which is general purpose in nature, the other four search engines, namely *SpringerLink*, *Science Direct*, *Taylor & Francis Online* and *Wiley Online Library* are specifically designed to search and extract relevant literature published by the respective publishing firms. Due to the usage of different search engines, the researcher ensured that the relevant databases from the search engines were thoroughly searched for any related published research. The researcher selected only the most relevant and up-to-date research findings.

In order to accomplish that, relevant papers were included, which had been published after the year 2000. To keep the search simple and conclusive in nature, titles and keywords were used to search for papers published on the relevant topics.

### 2.2.2 Keywords

The selection of keywords is essential in obtaining relevant information, while any redundant information is successively filtered out. The keywords used and description are shown in

Table 2-2.

<b>Keywords</b>	<b>Description</b>
'e-Government', 'electronic government', 'digital governance', 'digital government', 'internet-based government', 'e-governance', 'Digital-era Governance'	To provide a broad-based overview of the topic to cover different types of e-government initiatives being developed around the world,
'e-Government initiatives in Africa', 'electronic government in Africa' and 'digital governance in Africa'	To specifically target the relevant e-government implementations being conducted in the different countries within the African continent
e-Government initiatives in Liberia', 'electronic government in Liberia' and 'digital governance in Liberia'	To unearth the existing literature on e-government implementations and initiatives in Liberia. This is the focus of the discussion within this research.

Table 2-2 Research keywords

The different databases were searched using specific keywords highlighted above, while the obtained results were further scrutinized for relevance, credibility and importance of findings in the present research context by reading their abstracts. For the case of the Google search engine, the primary focus was towards obtaining files in PDF. The extension “.pdf” was added to the keywords to ensure that only the research papers were included in the search results, while excluding all other mentions of the keywords within websites, social media, and blogs. When the search was extended to include other online sources, such as *SpringerLink*, *Wiley Online Library*, *Science Direct* and *Taylor & Francis Online*, the search terms were directly entered into the search engines to obtain a list of all the research papers mentioning the keywords outlined above in the different contexts of the underlying discussions either within the body, keywords or title of the different research papers.

### 2.2.3 Query

Since different types of search engines were used concurrently in order to obtain the most relevant research, each of the search engines required different types of search-related queries. This ensured that only the most relevant and important papers were acquired. At the same time, different search-related filters were also used, so that some of the non-important search results were sifted out and only the most relevant information was searched from each of the search engines.

In order to ensure only accessible publications were retrieved from each search conducted, different filters were used. For example, in the search conducted in *Wiley Online Library*, a filter was applied so that only the journal publications could be

reviewed, while reference works and book chapters were omitted, as most of them were not freely available. The search in *SpringerLink* included conference papers and chapters from past research. In the search done in Taylor & Francis Online, filters were implemented, which ensured that only open-access research papers were reviewed, while omitting all restricted information. For all of the scholarly search engines, which include *Google Scholar* and *Science Direct*, filters were also applied. The primary focus was to obtain papers published after 2000. As, due to the low number of published, peer-reviewed publications on African e-government initiatives in the past five to ten years, the timespan was expanded to include information on the various aspects of e-government environment in the different parts of the world in general and Africa in particular.

Table 2-3 shows the search engines and filters applied.

Search Engines	Filters
<i>Google</i>	Year, Keywords
<i>Science Direct</i>	Year, Keywords
<i>Taylor &amp; Francis Online</i>	Year, Open-access content
<i>Wiley Online Library</i>	Year, Only Journal Papers
<i>SpringerLink</i>	Year, exclude preview-only content, Include only Journal articles

Table 2-3 Filters applied to the different search engines

#### 2.2.4 Literature Results

The benefit of using scholarly article databases is that the overall validity and credibility of the search results and research papers can be guaranteed to a high degree. With the help of filters, the number of papers retrieved was significantly reduced and some of the most relevant papers from the recent past were selected. After applying relevant filters discussed in the previous sub-section, the initial set of research papers found was significantly reduced. Table 2-4 highlights the different set of literature obtained from the initial set of results to the final set of research papers, which was selected based on the prescribed inclusion criteria to include the most important research insights for this particular study. The inclusion criteria for obtaining the final set of research papers was based on *relevance* (the level of correlation between the research content discussed (i.e. the abstracts) in the specific papers and the primary focus of this research) and currency. The overall process of search and selection of relevant research papers to include in this literature review has been detailed in Figure 2-2.

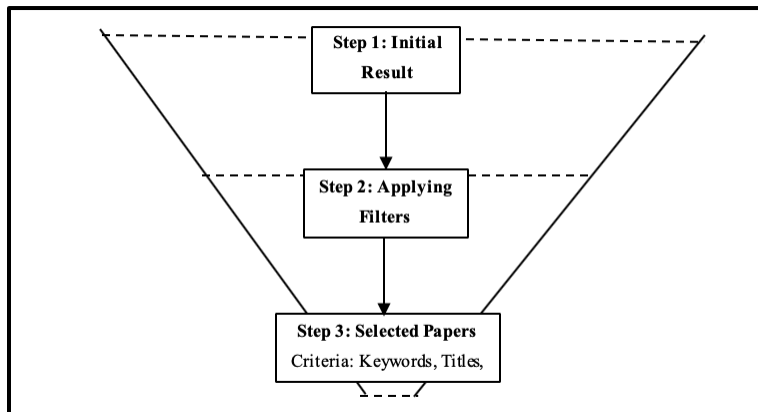


Figure 2-2 Different Steps in the Literature Search and Selection Strategy

In the first step of the literature search and selection given in Figure 2-2, the initial set of literature is collected based on the broad terms and keywords (e.g. ‘electronic government’, ‘e-government’, and ‘digital governance’) given in

Table 2-2. It can be seen from

Table 2-3 that this step has resulted in a large array of results pertaining to e-government and its implementations all over the world. At this stage, there is a large amount of redundant data that is included in the literature results at the end of stage 1. In order to exclude redundant data and narrow-down the scope and focus of the research to specifically highlight the research related to e-government in Africa, a specialized set of keywords is used (e.g. ‘e-Government initiatives in Africa’, ‘electronic government in Africa’ and ‘digital governance in Africa’) instead of the generalized keywords used in the previous step. At the same time, a number of different filters were also used, which varied from one search engine to another. These filters have been mentioned in

Table 2-3. After the utilization of filters and keywords in the stage 2, the overall results for literature has been considerably reduced in quantity.

However, even at this stage, it is virtually impossible to read through each and every research paper. Therefore, in the final stage, the keywords used were further reduced in scope to cover the contextual elements of the e-government situation in Africa in general and Liberia in particular. In order to further separate relevant papers, which discussed e-government in Africa or Liberia as the primary focus from the papers that mentioned these particular phrases once or twice in the entire research papers, the abstracts of individual research papers have been manually reviewed in

order to analyze the level of correlation between the context being examined in this research and the primary research focus of the different research papers.

The evaluation of abstracts was used to provide an overview of the different research papers and their suitability for inclusion in the literature review. In each of the search engines used for the search and selection of literature, the abstract of each research paper could be examined on the search portal without the need for downloading each of the research papers separately on to the local hard drive.

The final set of research papers was classified into high, intermediate and low priority based on the currency of the research. The foremost priority was given to research papers published between 2013-2018, followed by intermediate priority given to literature published between 2008-2013. The lowest priority has been given to research published before 2008, as any findings reported in those researches might not be relevant or accurate depending on the time of publication of the research papers. Insights from older research papers are added into the literature review, only if relevant insights cannot be obtained from recent literature sources. For example, relevant information from low-priority papers will only be considered for inclusion into the literature if there is no existing research from intermediate or high priority research papers to either substantiate or refute the findings from low-priority papers. Duplicated research papers were removed between the different scholarly databases.

Table 2-4 shows the number of papers retrieved from various search engines used. A total of 52 papers were selected for detailed analysis.

<b>Search Engines</b>	<i>Google Scholar</i>	<i>SpringerLink</i>	<i>Wiley</i>	<i>Taylor &amp; Francis</i>	<i>Science Direct</i>
Initial Results	1.5 x 10 <sup>8</sup>	2,602	1,099,384	651,935	469,483
Applying Filters	4.5 x 10 <sup>6</sup>	1,185	259,572	2,105	165,117
Selected Papers	16	5	10	5	12
Total Papers					52

Table 2-4: The details of the literature search using the different types of search engines

### **2.2.5 Concept Matrix**

In order to retain the relevance and quality of the information included in the literature review, only the most important findings from the search were selected.

Table 2-5 highlights the major emerging themes from e-government literature.

In accordance with the framework highlighted by Webster and Watson (2002), a concept matrix was developed (Table 2-6).

<b>Main Theme</b>	<b>Sub-theme</b>	<b>Description</b>
Design / Implement	IT/IS artefacts	Developing applications for various purposes (such as eVoting and eHealth)
	IT/IS frameworks	Developing a variety of conceptual frameworks for design/implementation (such as interoperability framework and eParticipation framework)
Adoption	Determinants	Identifying determining factors of adoption (such as trust, ease of use, usefulness, and citizen technical readiness)
	Processes	Explaining adoption using various concepts/models (such as stage model and adoption model)
	Problems	Identifying potential problems related to adoption (such as organizational readiness and citizen participation)
Impact	Instruments/ Frameworks	Developing an instrument to measure/assess impact without testing it in a real setting
	Assessments	Using an instrument to assess impact in a real setting
Evaluation	Technical	Evaluating eGovernment initiatives from technical aspects (such as website contents evaluation/analysis)
	Organizational	Conducting evaluation from organizational perspective
	Social	Evaluating implementation of eGovernment initiatives in a social context (such as agriculture market information eService)
	Success/Failure factors	Identifying factors that foster or hinder successful design/implementation (such as management support and infrastructure readiness)
Context	Technical/ Resource-level	Understanding technical issues in implementation (such as infrastructure and digital divide problems)
	Organizational institutional	Understanding organizational issues in implementation (such as the role of political leadership and inter-organizational collaboration)
	Social/cultural	Understanding social/cultural issues in implementation (such as corruption and local culture)
	Opportunities/ Prospects	Identifying contextual promises related to implementation (such as poverty reduction and public service improvement)
	Challenges/ Threats	Identifying contextual perils related to implementation (such as human resource readiness and corruption)

Table 2-5 Main themes and sub-themes of the e-Government research

This allowed the researcher to identify major themes and sub themes (shown in Table 2-5) from the existing literature. After a review of the overall literature retrieved from the various information sources, the concepts were divided into the following sections, which are given in the concept matrix (Table 2-6). The actual papers corresponding to the numbers are given in Appendix A.

It can be seen from Table 2-6 that some of the major themes have been highlighted, along with the presence or absence of those particular themes in the different literature sources examined. One of the first insights that can be gained from Table 2-6 and

Table 2-9 is that existing studies on e-government adoption do not rely on existing theories to either substantiate the adoption of e-government initiatives in different countries or to aid in the development of theories that can better explain the

emerging evidence related to e-government implementation and adoption. The discussion surrounding the development of e-government services in Africa has not been adequately discussed in the literature. As a result, out of all the different scholarly sources searched for relevant literature, only 35 papers could be included, out of which, many were of either low or intermediate priority. However, due to limitations in the available evidence, these papers had to be included in the literature review to fill in various gaps in terms of the existing scenarios in the various sub-Saharan countries in general and Liberia in particular.

From the 52 papers selected for this literature review, 35 research papers discussed e-government implementations in African countries in one way or another, while 17 papers discussed non-African countries and only 8 papers discussed e-government initiatives for African and non-African countries in a simultaneous manner. Out of the different emerging themes from the literature, some of the widely discussed themes were related to the wide-array of challenges (51 papers) and opportunities (32 papers) related to e-government implementations. Roughly close to half (20 papers) of the literature was focused on the single-country analyses and half (24 papers) focused on inter-country comparisons. With regards to the classification of research papers, majority (29) of the papers are of high priority, followed by some (16) intermediate priority and only a handful (7) of low priority research papers included in the literature review.

Paper	Characteristics								Priority
	Opportunities	Challenges	Africa	Non-Africa	Individual Country	Group Comparison	Theoretical Support	E-Government Strategies	
1							TOE		High
2							PVT		High
3							Info-culture		High
4							Grounded		Mid
5							Institutional		High
6									Mid
7									High
8									High
9									High
10							Actor-Network		Mid
11							Institutional		High
12							TAM		Mid
13							MDDDM		High
14									High
15									Mid
16									Mid
17									Mid
18									High
19									Mid



20									Low
21									Low
22									Low
23									Mid
24									Mid
25									Mid
26									Mid
27									Low
28									Mid
29									Low
30									High
31									Mid
32									Mid
33									Low
34									High
35									High
36									Low
37									High
38									High
39							E-Govt Maturity Model		High
40							Meta- theory		High
41									High
42									High
43									High
44									High
45							Culture Model		High
46									High
47									High
48									High
49							UTAUT		High
50							Culture Model		High
51									Mid
52									High
Total	32	51	35	17	20	24	15	24	29/16/7

Table 2-6 Concept Matrix for the sources of literature reviewed

## 2.3 E-GOVERNMENT: DEFINITION, MODELS AND DRIVERS

### 2.3.1 What is e-Government?

The concept of e-government was introduced and popularized in the 1990s after the adoption of Internet and world wide web in government institutions in the UK (Koontze 2003), when it was increasingly being viewed as a tool for cost reduction and administrative process simplification (Fountain 2008), increased government-citizen participation (Hague & Loader 1999) and government-level accountability (Bhatnagar 2003).

In the last two decades, a large number of definitions have emerged (Curtin, Sommer & Vis-Sommer 2003; Gibbins 2004; Gil-Garcia & Martinez-Moyano 2007; Heeks & Bailur 2007) with different choices of words but similar essential meaning.

According to Curtin, Sommer and Vis-Sommer (2003), e-government refers to “the use of any and all forms of information and communication (ICT) by governments and their agents to enhance operations, the delivery of public information and services, citizen engagement and public participation and the very process of governance” (p. 2). Similarly, according to Gibbins (2004), it facilitates the implementing governments to “strengthen the flow of information to citizens, and to improve citizen access to government programs and service. The resulting transformation makes the government more efficient, more responsive, more accountable and perhaps even more democratic” (p. 33).

E-government claims to positively impact the quality of life of individuals in the wake of open and transparent government-level decision-making, enhanced service delivery, improved interaction and inter-relation between governments, businesses and citizens (Gebba & Zakaria 2012; Ngulube 2007).

According to the UN Report (2018), e-government leads to:

- i. efficiency in government activities, processes and services,
- ii. greater public access to government services, and
- iii. increased accountability of government actions and decision-making.

A number of different terminologies are used interchangeably within the literature on discussions around e-government. Some of these terminologies include e-government, e-governance, electronic government, Internet-based government, and digital government (Gant 2008).

To highlight the difference between the terms ‘government’ and ‘governance’; the latter term refers to the execution of power for the smooth management of national-level functions, processes and activities, while the former term refers to the collective instruments (e.g. civil institutions, security, police force, banking, justice, etc.) used for managing government-level affairs (World Bank 1989).

The term digital government can be defined as an “umbrella term that comprises all uses of information and telecommunication technologies in the public sector”

(Garson 2006), while the term ‘e-government’ is one aspect of the various roles and responsibilities of a digital government. Meanwhile, the term ‘e-governance’ can be used to describe “a wide range of competing terms pertaining to use of new communications technologies, such as the Internet and mobile telephony, for political or governmental purposes” (Chen & Thurmaier 2008; Gant 2008).

### **2.3.2 Drivers of e-Government?**

The concept of e-government was coined in the West in the form of New Public Management (Dunleavy et al. 2006). At that time, IT was hailed as the essential ingredient towards the formation of the government of the future, as it was envisioned to “overcome the barriers of time and distance to perform the business of government and give people public information and services when and where they want them”(Tat-Kei Ho 2002).

With a potential to impact 80 percent of the global population, e-government has enabled governments, specifically in the developed world to revolutionize their communication and interaction with citizens (Chen et al. 2006).

Some of the earlier studies conducted in the developed countries focused on a wide range of relevant topics, such as discussion regarding citizen-centric government (Tat-Kei Ho 2002), hybridization of democracy through technology (Anttiroiko 2006), highlighting impact of e-government projects on government-citizen relationship (Lee, Tan & Trimi 2005), examining, investigating and predicting e-government adoption in different countries (Gunter 2006; Sipior, Ward & Connolly 2011), effects of e-government on service delivery, accessibility, efficiency and government-level transparency (Rodriguez Bolivar, Caba Perez & Lopez Hernandez 2007), and revolutionizing democracy using e-government (Forcella 2006).

E-government projects in many developed countries have been discussed in the previous literature, ranging from the United States (Norris & Reddick 2013; Seifert & McLoughlin 2007), Canada (Roy 2007), Australia (Dunleavy et al. 2008) to European countries and regions such as Flanders (Kampen, Snijkers & Bouckaert 2005), United Kingdom (McLoughlin & Cornford 2006), Italy (Nasi & Frosini 2010) and Greece (Hayes, Introna & Petrakaki 2014). The quality and quantity of interaction between government and citizens has been redefined by the adoption of e-government, especially in the developed countries (Chen et al. 2006).

In recent years, the concept of New Public Management has been replaced with Digital-era Governance (DEG), which has put increased emphasis on the governments towards providing holistic services to citizens (Dunleavy et al. 2006; Margetts & Dunleavy 2013). The three essential elements of DEG model outlined by Margetts and Dunleavy (2013) include Reintegration (revising the organizational hierarchies in order to reduce redundancies from process duplication, service-level simplification and cost reduction), Needs-based holism (restructuring government processes and functions to enhance agility and resilience at the government-end, while keeping the client perspective in mind) and Digitalization (facilitating the citizens by incorporating electronic accessibility and automation as the central agenda of the e-government model).

For the case of US, some of the factors contributing to the success of e-government initiatives at the state-level and national-level include strategies employed for e-government implementation, level of funding available for IT infrastructure, choice towards outsourcing (hiring external non-governmental contractors and experts towards IT infrastructure development and management) or in-housing (utilizing government-level skills and assets) of IT projects, state-level political and cultural environment towards facilitating e-government initiatives, leadership support, degree of interaction and communication between state-level and federal-level government components (Dwivedi & Bharti 2010; Seifert & McLoughlin 2007; West 2004).

At the global-level, the governments vying to incorporate e-government initiatives need to fulfill a number of pre-conditions that can foster the development of sustainable e-government within the country (UN Report 2018).

These preconditions include:

- i. political commitment at the different levels of government hierarchy towards transparency and service provision to citizens,
- ii. public trust in e-government initiatives,
- iii. national-level policy alignment between ICT adoption, innovation and e-government initiatives,

- iv. transforming government institutions at the local and national-level to enhance their effectiveness in achieving desired e-government-related targets and objectives,
- v. laying the foundation of sustainable societies by leveraging the existing human resources, institutional competencies and societal-level capacities to adapt to various shocks and uncertainties in the regional and global environment,
- vi. societal-level partnerships and cooperation between different stakeholders (e.g. citizens, government and non-government entities and firms),
- vii. policy-level integration between ICT adoption and e-government initiatives, and
- viii. effective cohesion between different projects and initiatives that aim towards a holistic national-level e-government framework (UN Report 2018).

Ziamba et al. (2016) in their research go beyond the preconditions stated above by providing critical success factors (CSFs) of a successful e-Government program. The CSFs provide a basis for stating which determinants should be followed and which barriers removed during the implementation of e-government projects and e-government successful adoption (Ziamba et al. 2016). The factors are:

- i. Financial situation of government units
- ii. Public outlay on hardware, networks, and telecommunications
- iii. Integration of front-office and back- office information systems
- iv. Electronic communication between government units
- v. Top management support
- vi. ICT competences employees of government
- vii. State standardization of solutions for e-government
- viii. Information security in government units.

Despite the various mentions of benefits and advantages reaped by governments, non-government agencies and citizens in the literature, there is a wide gap between the proposed, hypothesized plans and actual, on-the-ground implementation of e-government initiatives, even in the developed countries (Bekkers & Homburg 2007).

It has been posited that most of the claims established by the earlier studies towards the benefits of e-government are unable to substantiate their claims through empirical evidence (Coursey & Norris 2008; Norris & Reddick 2013). Survey results revealed that very few respondents believed that e-government had considerable impact on their respective societies with some of the impacts registered including customer service improvements, business process efficiencies, and better opportunities for communication between government and citizens (Norris & Reddick 2013).

This view is further reiterated by respondents in the Accenture Report (2014) highlighting the development of e-government in various developed and developing countries. Based on the survey results obtained from the Citizen Satisfaction Survey (opinions of citizens about the role of government towards providing service quality), Citizen Service Delivery Experience (level of interaction and communication established between governments and businesses as well as governments and citizens) and Service Maturity (the level of development of online presence by the respective governments), the ranking of countries from highest to lowest is given as follows: Singapore (7.4 out of 10.0), Norway (7.3), UAE (6.7), South Korea (6.0), Saudi Arabia (5.9), United States (5.9), United Kingdom (5.7), India (5.4), Germany (4.7), and Brazil (4.3) (Accenture Report 2014).

These findings further highlight that despite the level of maturity of e-government initiatives in the developed countries, some (such as the US and UK) primarily focus on e-government projects as ways to reduce costs, while Germany failed to develop an integrated framework of e-government services for businesses and citizens as well as the inability of the South Korean government to properly incorporate citizens in the decision-making process, which is one of the important aspects of e-government (Accenture Report 2014).

With rapid development in ICT and innovation, the concept of ‘digital divide’ has also diversified to impact communities in the developed and developing countries in a number of different ways (UN Report 2018). Recent studies have shown that the multiple ‘digital divides’ affect citizens; some of the different factors widening the gap include accessibility, affordability, age, bandwidth, content, disability, education, gender, migration, location, mobile, speed, and useful usage (UN Report 2018).

For this reason, many citizens in the developing countries are unable to take advantage of the e-government projects primarily due to lack of accessibility and

affordability. However, for the case of developed countries, there are many marginal communities within the developed countries facing ‘digital divides’ due to one or more of the aforementioned factors.

## **2.4 E-GOVERNMENT IN AFRICA: INITIATIVES AND CHALLENGES**

E-government adoption is receiving a lot of attention in developing countries despite the fact that it is still lagging behind that in developed countries (Kumar & Best 2006). In recent years, the focus has shifted to include some of the most under-developed countries, specifically in Africa and other parts of the world (Bwalya 2009; Coleman 2006; Fonou Dombeu & Rannyai 2014; Mutula 2012).

The existing e-government efforts in Africa adhere to one of the following models:

- i. Government-to-Citizen or G2C (increased participation of citizens into the public sector decision-making by incorporating transparency, accessibility, cost-effectiveness, and quality into the public sector service delivery, e.g. tax information filing, education results, birth/death certificates, etc.),
- ii. Government-to-Business or G2B (services dealing with the transfer of information between government and non-government organizations and businesses for the purpose of tax payment, licenses, and e-procurement), and
- iii. Government-to-Government or G2G (streamlining and enhancing efficiency of public administrative processes and functions using technological solutions to promote decentralization and inter-connectedness between national and local-level governments (Hafkin 2009).

### **2.4.1 Existing challenges being faced in Africa**

Based on the insights highlighted in the a Deloitte report (Deloitte 2012), the implementation of e-government initiatives in African countries was assessed from the following perspectives: (i) level of commitment to public service delivery, (ii) accountability, (iii) transparency, (iv) convenience and (v) efficiency in interaction and collaboration, (vi) leveraging ICT and other technological innovations as tools for social democracy, efficient service delivery and re-engineering of government processes and structures. According to Heeks (2002) and Heeks and Kenny (2002), some of the positive impacts of the existing e-government initiatives in African

societies include administrative processes improvement in terms of costs and performance efficiencies, connecting citizens using technological innovative services for information exchange and communication, facilitating collaborations and partnerships on a societal level between government agencies, citizens, businesses and other non-government entities.

Irrespective of the geographical location, e-government projects face a variety of challenges during their implementation, but the nature and severity of these issues vary from developed to developing countries (Brown 2005). The widening gap in the implementation of e-government in developed and developing countries is leading to the phenomenon of the *'digital divide,'* which is severely damaging the potential towards harnessing the power of technological innovation to streamline the government-level processes to facilitate provision of services for citizens (UN Report, 2018). Literature focusing on the overall development in e-Government in Africa has stressed the various challenges and inadequacies of the local environment towards facilitating the diffusion and adoption of e-government.

Some of the limitations are related to the *inputs* (due to heavy levels of public debt, there is a need for very large amount of public expenditure required to facilitate development in e-government), *outputs* (public sector in the different countries is unable to support growth and development in some of the major aspects of the society, such as education, industry, law and order, social welfare and agriculture, to name a few) and *processes* (lack of management, corruption, inefficiencies and long delays are common characteristics of the public sector that prevent adequate service delivery) (Adeboye 1995; Castells 2010; Olowu 1999).

At the same time, for the context of Africa, some of the challenges identified include *measurement issues* (relevance of metrics, statistic feasibility, cost of data collection, respondent bias, etc.), *lack of statistical comparability at the multiple levels of analyses* (local, regional, national and international), *hierarchical and functional variability* between the government departments in different countries and increasing technological advancements in global ICT sector (UN Report, 2014).

In investigating further into the myriad of challenges faced by the African countries, a number of studies have shed light on different factors leading to the failure of e-government initiatives with some divergences and similarities between the different studies. Some of the researchers are of the viewpoint that the failure of e-



government in Africa can be traced back to the Western point of origin of different ideologies (e.g. e-government), technologies, and models, along with lack of innovative e-government solutions, human resource skills deficiencies, and the stark variation on the value placed on quantitative information in African countries (Berman & Tetley 2001; Heeks 2002; Heeks & Kenny 2002; Minogue & McCourt 2001).

According to Heeks (2002) some of the challenges being faced by the developing countries towards facilitating e-government projects and initiatives include lack of accessibility and e-literacy, inefficiencies in infrastructure development, public policy deficiencies, poor level of education, managerial issues, overburdening costs, to name a few. Corruption has also been identified as one of the major inhibitors, which limit the effectiveness of the e-government initiatives in African countries, along with the exploration of good governance practices (Cubitt 2014; Hyden & Mease 2004; Kelsall 2011; Krishnan, Teo & Lim 2013; Rothstein 2011).

According to Khan et al. (2012), before implementing e-government initiatives, there is a need to address the various underlying socio-political deficiencies in Africa, such as controlling corruption, reforming regulations, capacity building in democratic and government institutions, to name a few pressing concerns. Therefore, it has been suggested that e-governance is not a holistic solution in itself, rather it should be taken as a single component within a larger framework aimed at radical transformation of the public sector within the country (Bhatnagar & Rama Rao 2007).

It is therefore important to understand that due to the impact of various social, cultural, economic, and governmental factors, the nature and severity of challenges faced vary from one African country to another.

Table 2-7 presents a non-exhaustive list of e-government implementation-related challenges in the different parts of Africa. These have been highlighted in the context of different studies.

Author	Context	Factors Affecting E-Government Implementation			
		Human	Infrastructure	Socio-Cultural	Political
Bwalya (2009)	E-Govt. Adoption in Zambia		Lack of ICT infrastructure, change management, high costs	Non-availability of information in local languages	Lack of political initiatives
(Mitrovic &	E-Govt. and Small business development	Lack of awareness	Gaps in services, Reduced Quality of services		

Bytheway (2009)					
Ochara (2010)	E-Govt. Projects in Kenya		Lack of resources, lack of transparency		Lack of ICT practice adoption and E-Govt. strategy
Kyem (2016)	Mobile- and E-Governance in Africa	Trust issues, privacy	Non-existent communication Unequal access Lack of resources		
Cubitt (2014)	Good Governance in Africa				Political Hardening, Failed State
Dolan (2014)	E-Govt. Situation in Egypt	Lack of trust, high illiteracy			Lack of transparency and regulations
Effah and Nuhu (2017)	Ghana Barriers to Digitization		Low bandwidth	Organization culture in public sector	Failure to update existing laws
Ruhode (2016)	Zimbabwe E-Govt. Development	Lack of skilled workforce	Shortage of resources		Lack of political readiness
Osei-Kojo (2017)	E-Govt. and service quality in Ghana	Illiteracy, user preferences, low ICT skills	ICT infrastructure, power outage		
Huggins and Frosina (2017)	Kenyan E-Govt. framework	Corruption		Poverty	Lack of regulations
Okunola, Rowley and Johnson (2017)	Digital divide and E-Govt. Portal in Nigeria	Age, education, employment, income, location			
Zamani et al. (2017)	Lagos E. Govt. implementation	Lack of training and ownership		Cultural and religious diversity	
Furuholt and Sæbø (2018)	E-Govt. services in rural areas of Tanzania		Lack of infrastructure and resources, high costs		
Verkijika and De Wet (2018)	E-Govt. Adoption in South Africa	Computer skills, trust, perceived risk		Social influence	
Olumoye and Govender (2018)	E-Govt. in Nigeria for housing/urban development	Trust, e-readiness	Technical support, communication, digital divide		Lack of leadership support and regulations
Verkijika and De Wet (2017)	E-Govt. websites in Africa	User trust	Accessibility, guidance available, website navigation		

Table 2-7: e-Government implementation-related challenges in the different parts of Africa

In discussing the challenges faced by African countries in implementing e-government programs, the challenges can be generalized into the following categories.

**Human Factors:** A large number of challenges and issues are related to the human-level limitations, which include lack of awareness, low citizen participation, inadequate training and skill development, unavailability of learning material, gender inequality, and lack of user trust in technology (Adeyemo 2011; Alshehri & Drew

2010; Bwalya 2009; Bwalya & Healy 2010; Dada 2006; Olumoye & Govender 2018; Schuppan 2009; Schwester 2009).

***Infrastructural Factors:*** There are challenges such as lack of power supply, ICT infrastructure, digital divide in society, security, privacy, information sharing, data storage and management systems (Adeyemo 2011; Bwalya & Healy 2010; McGrath & Maiye 2010; Nkohkwo & Islam 2013; Olumoye & Govender 2018; Singh & Travica 2018).

***Socio-Cultural Factors:*** Various cultural and social aspects inherent to a particular society and culture can inhibit or facilitate e-government implementation. Some of these factors include demographics, poverty, corruption, language barriers, e-literacy, level of competition in the market, perceived IT value, and unemployment rate (Cubitt 2014; Krishnan, Teo & Lim 2013; Olumoye & Govender 2018; Rothstein 2011).

***Political Factors:*** The political situation of the country can impact the favorability of investment and utility of e-government initiatives. Some of the different political factors include leadership, policy-making, legal framework, resource allocation, political hardening, data safety and protection standards, law-and-order situation, administrative reforms. (Abrahams & Newton-Reid 2008; Bwalya & Healy 2010; Cubitt 2014; Schuppan 2009; Schwester 2009).

## **2.5 LIBERIA: A BRIEF OVERVIEW**

In this section, different aspects of the country Liberia are explored. The discussion begins with the examination of the various social, economic and political scenario prevalent in the country, followed by the exploration of the existing e-government initiatives, which are being spearheaded by the local government together with its foreign partners such as the USAID, World Bank, International Monetary Fund (IMF) and United Nation Development Program (UNDP). In the final sub-section of this section, the various challenges are examined, which provides a better insight into ways Liberia can benefit from a successful e-government program.

### **2.5.1 Country-Level Overview**

Liberia is Africa's oldest republic. The country has a population of about 4.9 million people (in February 2019 based on the latest United Nations estimates). Liberia

is one of the poorest countries in the world. The country was founded in 1822 by American Colonization Society (ACS) as a colony for American free blacks who elected to immigrate to Africa in search of freedom, believing that full equality as citizens was unattainable in racist American society (Oyebade 2013). Liberia became Africa's first independent republic in 1847. The country enjoyed political stability till 1980 when the country experienced its first military coup d'état and ushered the country into a period of military rule (Oyebade 2013).

Figure 2-3 shows the map of Liberia.

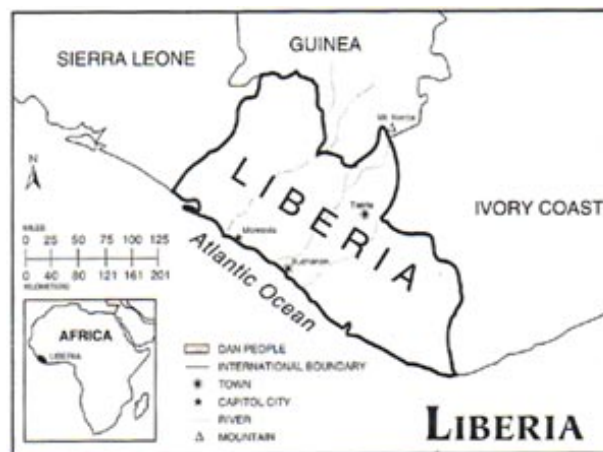


Figure 2-3 Map of Liberia

In the past few decades, Liberia has emerged from two prolonged internal civil conflict situations between 1989-1997 and 1999-2003, which resulted in a considerable loss of lives and property as well as large-scale displacement of local population. After the cessation of hostilities in the aftermath of Accra Comprehensive Peace Agreement (ACPA), efforts towards stabilization and recovery have been affected by a number of hurdles (Dwan & Bailey 2006), are discussed in the proceeding sections. Similar to other African countries, one of the pressing challenges relates to the mismanagement and corruption in relation to the appropriate allocation of public funds, financial aid and donations from international donors and financial agencies (Dwan & Bailey 2006).

Consequently, the local government, namely the Transitional Government of Liberia, in collaboration with the UN, USAID, IMF, European Union (EU), African Union (AU) and the Economic Community of West African States (ECOWAS) formulated a strategy termed as the Governance and Economic Management Assistance Program (GEMAP) to prevent the reversion of Liberia into another crises

through effective revenue collection, financial management, expenditure controls, auditing and transparency (Dwan & Bailey 2006).

In the aftermath of civil war that ravaged the country, the economic, social and political situation has improved considerably in Liberia, but recurrent violence and instability has revealed the fragility of the peace and ensuing prosperity in the country (African Development Bank 2013; Benner & Blume 2008). According to the African Development Bank (AfDB) Report (2013), some of the factors facilitating the development in post-civil war Liberia include high levels of Foreign Direct Investment (FDI) from the global community aiming at the recovery of the local economy, growth of the services sector (e.g. agriculture, trade, hotels, government services, transport, communication and construction), increasing exports of raw material (e.g. timber, rubber, iron ore), and FDI directed towards the exploration and exploitation of local reserves for the growth of local mining industries (e.g. oil, gas, iron ore) and creation of large number of jobs to support the development of the local industries.

Table 2-8 outlines some of Liberia’s key development indicators highlighted by the World Bank Report (2017) which show that with a population of 4.5 million in 2015, half of which live in the urban areas, the Human Development Index (HDI) is one of the lowest in the world at 175th place out of the total number of countries amounting to 187 (World Bank Report 2017).

Indicators	Statistics of Liberia over the past decades			
	1990	2000	2010	2016
<i>Population</i>	2.1 million	2.88 million	3.95 million	4.61 million
<i>Urban Population</i>	N/A	N/A	N/A	49.3% (2015)
<i>Population Growth Rate</i>	-1.6%	5.3%	3.5%	2.5%
<i>Life expectancy</i>	47 yrs.	52 yrs.	60 yrs.	63 yrs.
<i>HDI</i>	N/A	0.386	0.406	0.427 (2015)
<i>HDI ranking</i>	N/A	N/A	N/A	175 out of 187
<i>UN Education Index</i>	N/A	N/A	N/A	0.367
<i>GDP</i>	\$0.38 billion	\$0.53 billion	\$1.28 billion	\$2.1 billion
<i>Aid per capita</i>	N/A	N/A	N/A	\$124.4
<i>Poverty</i>	N/A	N/A	68.6%	54.1%

Table 2-8 Statistics of Liberia for the past few decades

Being one of the poorest nations in the world, Liberia is primarily dependent on foreign aid towards post-civil war rebuilding of the country as well as to lay the foundation for a sustainable and emerging economy in West Africa. The amount of foreign aid

investment inflow to Liberia is more than three times the average for all the other African countries (AfDB Report 2013).

The UNDP provided a total of \$47.5 million as foreign aid in 2011, which was distributed to the following key program areas, namely democratic governance (\$23 million), poverty reduction (\$5.5 million), crisis prevention and recovery (\$10.2 million), energy and environment (\$1.1 million), HIV/AIDS prevention and awareness (\$6 million) and gender equality and related issues (\$1.5 million) (UNDP Report, 2012).

## **2.6 THE RESEARCH CONTEXT: LIBERIA AND ITS E-GOVERNMENT PROGRAMME**

The following sections provides a narrative on e-government program and initiatives in Liberia including the challenges the country is facing.

### **2.6.1 E-Government Development in Liberia**

In 2014, the Government of Liberia developed a document to serve as a guide to the government and donor community for the implementation of electronic government “e-Government” in Liberia. The document called “e-Government Strategy document (2014-2018)” is closely aligned with the Liberia National Agenda for Transformation. It represents an important milestone in the evolution of e-government in Liberia. Using lessons learned from Liberia’s initial phase of e-government, and leveraging global good practices. The strategy document aims to contribute to Liberia’s economic and social development, as well as the transformation into a competitive, innovative knowledge society.

E-Government in Liberia is dedicated to delivering services to people cross society, irrespective of location, economic status, education or ICT ability. With its commitment to a customer-centric approach, the e-government program objective is to transform government and contribute to the nation’s economic and social development. With this in view and in consultation with key stakeholders the following vision was crafted for the Liberian e-government strategy:

*"Harness the potential of ICT to bring the government closer to the people through effective governance, improved service delivery and socio-economic growth".*

Ten key outcomes identified in the Liberia e-Gov strategy document to enable the realization of the vision are listed in

Table 2-9.

<b>Strategic Outcome</b>	<b>Description</b>
<b>Outcome 1:</b>	Establishment of Online Government Services
<b>Outcome 2:</b>	Diversified Civil Service Channels
<b>Outcome 3:</b>	Standardized Government Administration Process
<b>Outcome 4:</b>	Connected Government
<b>Outcome 5:</b>	Growth of ICT Entrepreneurship
<b>Outcome 6:</b>	Increase Private Sector Participation in e-Government
<b>Outcome 7:</b>	Expand Nationwide ICT Infrastructure
<b>Outcome 8:</b>	Digitalized Community
<b>Outcome 9:</b>	Well-defined e-Governance Structure
<b>Outcome 10:</b>	Established e-Government Regulatory and Legal Framework

Table 2-9 Liberia e-Gov Strategic Outcomes (USAID 2014)

## 2.6.2 E-Government Projects in Liberia

The Liberia Government planned the implementation of 22 projects over a five-year period (2013-2018). It also proposed service delivery through four channels (online portals, call centres, mobile applications and citizen-centric computer centres). The delivery of e-government services is to be strengthened through core projects including the Integrated Financial Management Information System, e-Government Portal, Centralized Email Management System, Human Resource Management Information System (HRMIS), e-Procurement, Electronic and Mobile Payment System, e-Office and e-Identification (USAID 2014).

Table 2-10 presents projects identified in the strategy and the Principal Ministry responsible to implement the projects related to the development of e-government services.

<b>No</b>	<b>Project</b>	<b>Principal Ministry</b>
1	E-Government Portal	Ministry of Post and Telecommunications
2	Call Centre	Ministry of Information, Cultural Affairs and Tourism
3	Mobile Gateway	LIBTELCO
4	E-Agriculture	Ministry of Agriculture
5	E-Transport	Ministry of Transport
6	E-Land	Ministry of Lands, Mines & Energy
7	E-Health	Ministry of Health
8	E-Labor	Ministry of Labor
9	E-Trade	Ministry of Commerce
10	E-Justice	Ministry of Justice

11	E-Education	Ministry of Education
12	E-Passport & Visa	Ministry of Foreign Affairs
13	Centralized Email System	Ministry of Post & Telecommunications
14	Human Resource Management Information System	Civil Services Agency
15	National E- Payment System	Ministry of Finance / MoPT
16	E-County	Ministry of Internal Affairs
17	Business Portal	Ministry of Commerce
18	ICT Business Incubator	Ministry of Posts & Telecommunications
19	E- Procurement	PPCC
20	National Broadband Network	LIBTELCO / LTA
21	Government Wide Area Network (GovNet)	LIBTELCO MoPT
22	Government Shared Service Centre	MoPT
23	Community Computer Centers	Ministry of Internal Affairs
24	IFMIS	Ministry of Finance and Development Planning

Table 2-10 Liberia E-Government Projects

There is however very little empirical evidence and findings to explore the actual progress of the Liberia e-government strategy. Due to support from the donor community some of the proposed e-government initiatives have progressed. According to the United States Agency for International Development (USAID) Report (2018), some of the existing implemented projects in relation to e-government include incorporation of Asset Management IS by General Services Agency, development of e-government-related communication plan for Ministry of Post and Telecommunication (MoPT), integration of Financial Management Systems at various government departments, and formulating guidelines and documents for enhanced ICT communication to facilitate e-government initiatives in the country.

### 2.6.3 Existing Challenges

At a country-level, Liberia is faced with a number of different social, political, economic and cultural challenges with the potential to destabilize the country in the future. Some of these challenges are described next.

The Ebola virus outbreak not only highlighted a number of inherent and structural deficiencies within the country (e.g. government response to a national-level emergency, which it was ill-equipped to handle, lack of adequate healthcare facilities, and lack of skilled manpower to diagnose, treat, quarantine and contain the epidemic



situation), but also had a considerable impact on the progress of a war-torn country towards economic development and sustainability (BTI Report, 2016).

The Liberian society is suffering from deprivation of basic necessities for day-to-day survival. Some of the issues that limit the implementation of a nation-wide e-government initiative include widespread poverty with more than two-thirds of the population surviving with daily income below the poverty line, high-level of illiteracy that is exacerbated by the under-developed educational infrastructure, unemployment, destruction of the social and physical infrastructure, and various other challenges related to resuming agriculture and other activities in a post-civil war scenario (Stiftung 2016).

In order to further the discussion regarding the adoption of e-government in Liberia, it is important to highlight the models and theories adopted for this research. Therefore, the proceeding section will introduce and discuss the theoretical foundation of the research.

## **2.7 THEORETICAL FOUNDATION**

This section covers detailed discussion regarding the theoretical frameworks adopted for this research. This discussion links with the previous one, as it shifts the focus from viewing e-government implementation from an organizational perspective to highlighting the different factors affecting adoption of e-government technologies using some of the most widely utilized technology adoption models and theories in the recent past. For the adoption of technological applications and services, a considerable number of different theories have been developed and empirically evaluated in the past. Some of the most widely utilized theoretical frameworks for evaluating the technology adoption include, but are not limited to Technology Acceptance Model (TAM) (Davis, Bagozzi & Warshaw 1989), Theory of Planned Behavior (TPB) (Ajzen 1991), Innovation Diffusion Theory (Rogers 1995), Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003).

TAM, UTAUT, TPB are used after the roll out of the technology to evaluate adoption but Process Virtualization Theory is used before the implementation of a process and not necessarily technology. This study focuses on pre-implementation of e-government initiatives. Therefore, the primary research question will be evaluated in the context of two different theoretical perspectives. They are Process Virtualization

Theory (Overby 2008) and EVPT (Barth & Veit 2011) for highlighting the feasibility of virtualization of selected e-government processes in Liberia. The salient features of these two theoretical perspectives will be evaluated in the next sub-sections.

### 2.7.1 Process Virtualization Theory (PVT)

Society is changing, many activities which required a personal contact between a process and a participant a few years ago are now being handled in virtual not physical ways (Boughzala, Assar & Romano Jr 2010). The Internet has led to an increasing number of virtualized processes in recent years (Barth & Veit 2011).

Process Virtualization Theory (PVT) is based on the premise of the widespread digitalization and the manner in which this disruptive change is impacting the ways in which physical processes are being virtualized in a wide number of different contexts, e.g. electronic commerce for online shopping, gaining formal education via distance learning, and communicating and socializing using online websites (Overby 2008). A number of different studies have attempted to evaluate the practical and empirical feasibility of the proposed theory (Balci, Grgecic & Rosenkranz 2013; Barth & Veit 2011; Mburu, Franz & Springer 2013; Overby & Konsynski 2010).

The main assumption of PVT states that the transition from a physical to a virtual process is more accessible for some processes than for others, and thus not all processes are equally well virtualizable (Overby 2012a). Therefore, “process virtualizability” is the dependent variable in PVT (Overby 2008).

In his research work, Overby (2008) highlighted a number of factors that determine the feasibility of physical processes and their virtualization, along with highlighting the importance of developments in IT capabilities, which allowed the diversified implementation and virtualization of physical processes from different domains.

Some of these factors utilized for highlighting the feasibility of transformation of physical processes into virtual processes include the following: (i) **sensory requirements** (the needs of the participants towards engaging in a full sensory experience through sense of taste, touch, hearing, and smell with the other participants in a particular process), (ii) **relationship requirements** (the need for physical, face-to-face interaction between the process participants), (iii) **synchronism requirements** (the need for accomplishing a particular process in real-time with minimal delays), and

(iv) **identification and control requirements** (the degree to which users of the particular process need to validate their unique identification as well as the level of control to be exerted by the users over their behavior) (Overby 2008).

It is important to understand that all of the aforementioned factors negatively impact the overall feasibility of transfer of processes from the physical to virtual world, which means that the higher each of the process requirements, the lower the chances of successful adoption of that particular process in the virtual world. Apart from these constructs, there are technology-related moderating factors, which are dependent on the type of technology being used for process virtualization (Balci & Rosenkranz 2014; Overby 2012b).

These moderating factors include **representation** (the level of accessibility to relevant information during the process, such as objects and actors, along with the various properties and characteristics, along with interaction between the different aspects), **reach** (the ability of technology towards facilitating participation across space and time) and **monitoring capabilities** (the technological capabilities that allow accurate authentication and activity monitoring of participants) (Overby 2008). Unlike the four model constructs, the three moderating factors facilitate the virtualization of the processes.

A number of different studies have attempted to use PVT as a theoretical framework in order to examine a host of different research phenomenon in the past studies. However, in comparison with the other theories attempting to investigate the different factors associated with the adoption of technology (e.g. (Ajzen 1991; Davis, Bagozzi & Warshaw 1992; Rogers 1995; Venkatesh et al. 2003), PVT is an emerging theoretical framework, which means that there are very few studies discussing the theoretical development and empirical validity of the different constructs and moderating factors. On the other hand, only a handful of researchers have attempted to use PVT as a theoretical model to test their hypotheses and evaluate their empirical findings.

In this respect, Barth and Veit (2011) investigated the different characteristics of the processes, specifically for the case of e-commerce, which made it difficult for the consumers to adopt them in practice. Mburu, Franz and Springer (2013) utilized a multitude of theoretical frameworks, including PVT in order to develop a conceptual

framework for mobile health solutions, specifically designed for customers in the developing countries.

Similarly, many other studies in the past have utilized a combination of different theoretical frameworks (e.g. Task-Technology Fit (Overby & Konsynski 2010), Media Richness Theory (Felden, Chamoni & Linden 2010), Collaboration Virtualization Theory (Fan, Sia & Zhao 2012), Diffusion of Innovations (Nedbal & Wetzlinger 2012), Technology Acceptance Model (Serrano 2011) and others), apart from PVT in order to explore the adoption of virtualization in different contexts. While, for the case of digital retail banking, PVT was used in order to explore the various inhibiting factors that affected the quality of digital banking services for customers (Graupner & Maedche 2015). Another study attempted to empirically evaluate the various aspects of PVT for the case of online banking and its adoption (Balci, Grgecic & Rosenkranz 2013).

In order to evaluate the adoption of green IT tools and technologies to enhance firm-level sustainability, the empirical analysis of 251 European firms was conducted and analyzed with the help of a conceptual model with technology-organization-environment TOE, PVT and Diffusion of Innovation theories (Thomas, Costa & Oliveira 2016). Another recent research explored the adoption of Software-as-a-Service (SaaS) using an integrated theoretical framework, which include PVT, TOE and institutional theory (Tomás, Thomas & Oliveira 2018).

However, the potential of utilizing PVT towards explaining the adoption and evaluating the various challenges in the domain of e-government services has not been properly utilized in the past studies (Barth & Veit 2011). Only a single study focused on the adoption of e-government services (e.g. drivers' license) in Ghana, along with some of the challenges, which limited its usability and utility for citizens of that country (Ofoeda, Boateng & Asmah 2018).

In order to evaluate the effectiveness of PVT towards assessing the feasibility of virtualization of physical processes related to e-government services adoption in Liberia, this research will utilize PVT extended PVT as the theoretical frameworks to explore virtualization. The next section provides a literature review on EPVT.

### 2.7.2 Extended Process Virtualization Theory (EPVT)

Following the key idea of PVT that from the users' perspective not all processes are equally amenable for virtualization, EVPT investigates characteristics of processes, which are causing users' resistance towards the virtualized process (Barth & Veit 2011). EPVT augments the original PVT with highly relevant constructs inspired by risk literature, e-Government, E-commerce research and applications of media richness theory in the public sector (Barth & Veit 2011).

The new constructs introduced are 'process complexity', 'process ambiguity' and 'need for consultation'. These constructs are from literature on e-Government (Barth & Veit 2011). Another modification introduces two constructs i.e. performance risk' and 'privacy and security risk' replacing the construct 'identification and control' originally in PVT. This was influenced by research conducted by Featherman and Pavlou (2003).

A final change leverages E-Commerce literature with the dependent variable changed from 'virtualizability' in PVT to 'citizens resistance' in EPVT (Barth & Veit 2011). Figure 2-4 shows the conceptual model of EPVT.

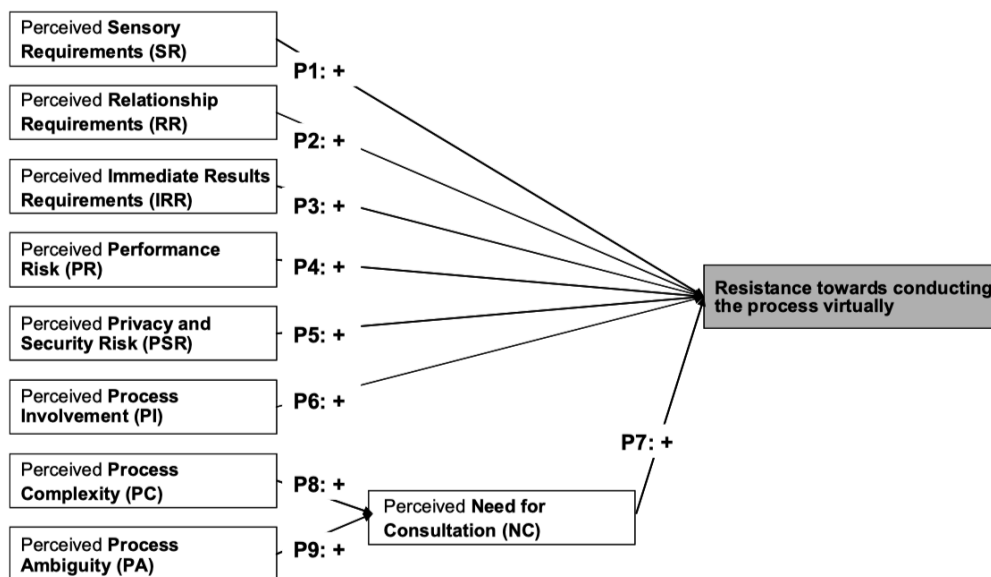


Figure 2-4 Conceptual Model of EPVT

Table 2-11 presents the propositions Barth and Veit (2011) towards virtualizing. The variables are independent and assumed to have (direct or indirect) positive influence on the dependent variable 'resistance towards conducting the public process virtually'.

<b>Variable</b>	<b>Proposition</b>	<b>Source</b>
<b>Sensory Requirements (SR)</b>	<u>Proposition 1</u> : The greater the perceived Sensory Requirements (SR) of a public process, the higher is the citizens' resistance towards conducting this process virtually.	(Overby 2008)
<b>Relationship Requirement (RR)</b>	<u>Proposition 2</u> : The greater the perceived Relationship Requirement (RR) of a public process, the higher is the citizens' resistance towards conducting this process virtually.	(Overby 2008)
<b>Immediate Results Requirements (IRR)</b>	<u>Proposition 3</u> : The greater the perceived Immediate Results Requirements (IRR) of a public process, the higher is the citizens' resistance towards conducting this process virtually.	(Overby 2008)
<b>Performance Risk (PR)</b>	<u>Proposition 4</u> : The greater the perceived Performance Risk (PR) of a public process, the higher is the citizens' resistance towards conducting this process virtually.	(Grewal, Gotlieb & Marmorstein 1994)
<b>Privacy and Security Risk (PSR)</b>	<u>Proposition 5</u> : The greater the perceived Privacy and Security Risk (PSR) of a public process, the higher is the citizens' resistance towards conducting this process virtually.	(Featherman & Pavlou 2003)
<b>Process Involvement (PI)</b>	<u>Proposition 6</u> : The greater the perceived Process Involvement (PI) of a public process, the higher is the citizens' resistance towards conducting this process virtually.	(Zaichkowsky 1985)
<b>Need for Consultation (NC)</b>	<u>Proposition 7</u> : The greater the perceived Need for Consultation (NC) of a public process, the higher is the citizens' resistance towards conducting this process virtually.	(Ebbers, Pieterse & Noordman 2008)
<b>Process Complexity (PC)</b>	<u>Proposition 8</u> : The greater the perceived Process Complexity (PC) of a public process, the higher is the perceived need for consultation.	(Ebbers, Pieterse & Noordman 2008)
<b>Process Ambiguity (PA)</b>	<u>Proposition 9</u> : The greater the perceived Process Ambiguity (PA) of a public process, the higher is the perceived need for consultation.	(Ebbers, Pieterse & Noordman 2008)

Table 2-11 Propositions towards virtualization

This research seeks to further extend EPVT and not PVT for the following reasons. Firstly, EPVT was the first study to employ PVT in the public sector, thus demonstrating PVT's transferability to this field and laying the foundation for further investigations in this particularly promising application area (Barth & Veit 2011).

Secondly EPVT investigates different processes, instead of focusing on a single one. Thus, it was the first quantitative study that analysed differences in ‘resistance’ for varying processes on the basis of process characteristics as suggested by PVT (Barth & Veit 2011).

The study on EPVT by Barth and Veit (2011) focused on the perspective of the citizen which is the customer of the public service but does not consider the perspective of the service provider. Barth and Veit (2011) further stated that since the question of how to prioritize the right services for virtualization is the same for many countries, they encourage researchers to replicate the studies in other domains to further support the generalizability of the theory to other processes.

This research seeks to investigate and develop a framework for virtualization of government processes from the perspective of the service provider, in this case the IT practitioners of GOL. The data for the research is collected via survey, focus groups, observations and document analysis. The next section presents a discussion on mixed-methods study.

## **2.8 MIXED-METHODS RESEARCH IN IS**

The combined use of quantitative and qualitative methods in the same research is becoming an increasingly popular approach in the field of information systems. Mixed methods provide an opportunity to develop novel theoretical perspectives by combining the strengths of quantitative and qualitative methods (Tashakkori, Teddlie & Teddlie 1998). This approach offsets the weakness and draws on the strengths of both methods (Bryman 2006). A research based on purely quantitative approach may not always provide rich insights into IS phenomena. Similarly, a research based on purely qualitative approach may not provide findings that are robust and generalizable to other settings. The reason is the difficulty in collecting qualitative data from many different sources (Venkatesh, Brown & Bala 2013). A mixed-methods approach provides an opportunity for IS researchers to develop novel theoretical perspectives (Venkatesh, Brown & Bala 2013). Also the mixed-methods approach helps in understanding complex data and gives a more complete and comprehensive account of the enquiry (Bryman 2006; Creswell et al. 2003).

Combining quantitative and qualitative types of research into integrated framework has been criticized because these research approaches are said to be

incompatible (Bryman 2006). Perhaps this explains the limited application of this method in the IS field (Venkatesh, Brown & Bala 2013).

Despite calls for use of quantitative and qualitative research in IS, the use of mixed-methods in IS has seldom been studied (Venkatesh, Brown & Bala 2013). In response to this need, Venkatesh, Brown and Bala (2013) developed a set of guidelines for conducting mixed-methods research together with an illustration of its applicability.

In their paper they propose six steps as guidelines for conducting mixed-methods researcher. The guidelines are:

- Step 1: Decide on the appropriateness of a mixed-methods approach
- Step 2: Develop strategies for mixed-methods research designs
- Step 3: Develop strategies for collecting and analysing mixed-methods Data
- Step 4: Draw meta-inferences from mixed-methods results
- Step 5: Assessing the quality of meta-inferences
- Step 6: Discuss potential threats and remedies.

These guidelines were followed by the researcher to select best mixed- method design for this research.

## **2.9 SUMMARY OF CHAPTER TWO**

This chapter has provided a comprehensive overview of the literature on the different topics related to the research being conducted. Firstly, the overall process for reviewing literature was highlighted, which shed light on the different steps to search, acquire and filter relevant research papers from peer-reviewed sources. Secondly, the concept of ‘e-government’ was defined, along with the discussion regarding different models and drivers of e-government for other countries of Africa in general and for the case of Liberia in particular. A total of 52 papers were selected for the literature review, out of which 35 discussed e-government programs in Africa. The researcher extracted themes relating to challenges and opportunities of e-government implementation in Africa.



For the context of this study, the existing developments towards e-government services in Liberia in the past decade have also been highlighted. Apart from that, the main theoretical aspects of the research were also discussed, which include Process Virtualization Theory (PVT) and Extended Process Virtualization (PVT). The findings from this chapter are critical for the overall insights related to the evaluation of the current situation as well as charting future developments of e-government services in Liberia.

The literature review revealed that there is a lack of theoretical and practical knowledge on PVT in the context of e-government implementation in sub-Sahara Africa. Furthermore, to date, there is no empirical evidence of applying a pragmatic academic method and model to select e-government physical process to virtualize.

This chapter also provided a discussion on set of guidelines for conducting Mixed-Methods research in IS.

The next chapter presents the research action plan as it relates to the research philosophy, design, methods, and approach.

# Chapter 3: Research Design

---

## 3.1 CHAPTER INTRODUCTION

Chapter 2 reviewed the literature associated with this research to demonstrate the need for this study. The literature review included discussion on e-government adoption in Sub-Saharan Africa with focus on Liberia and Process Virtualization Theory. The literature review demonstrated there is little academic research on use of PVT in e-government implementation in Sub-Saharan Africa.

This chapter details the research approach and methodology employed for this study. This includes explanation of the research philosophy, methodology, design and data collection method used in this study. There are several research approaches and techniques that can be used, but the choices made in this study are related to the research aim and research question: *“How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business processes supporting e-government services?”*.

Chapter 3 consists of eleven sections. The first Section 3.1 gives an overview of the chapter. The details of the research philosophy are provided in Section 3.2 followed by a description of the research methodology in Section 3.3. This section also describes the data collection techniques which include survey, focus group discussion, observation and secondary data analysis. The research design is discussed in Section 3.4 followed by research methods in Section 3.5. In Section 3.6 the data collection procedure is presented, followed by the methods for analysis of data in Section 3.7. The design of framework for identification of e-government processes to virtualize is presented in Section 3.8, followed by the role of the researcher in Section 3.9 and ethical considerations in Section 3.10. The summary and conclusion are in Section 3.11.

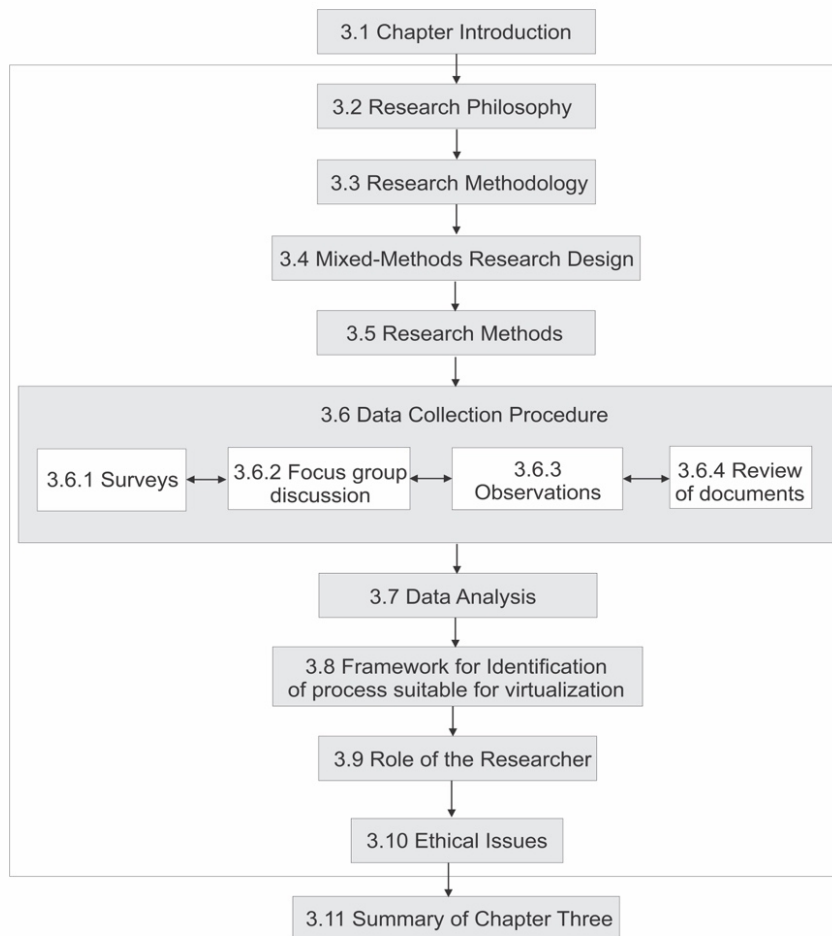


Figure 3-1 Chapter 3 Overview

## 3.2 RESEARCH PHILOSOPHY

This section presents the philosophies underlying this research. The research philosophy provides the grounding for any research assumptions that can guide the different choices made during the research process. There are three sets of assumptions essential to any research procedure, namely ontological, epistemological, and methodological (Saunders, Lewis & Thornhill 2012).

**Ontology** is associated with the nature of things which is the belief of reality (Floridi 2004). According to Bryman (2001), there are two fundamental philosophical stances on ontology: positivism and constructivism. Positivism assumes the social phenomena is independent or separate from the actors within it. Constructivism portrays reality as a social construction where social phenomena and their meanings are continually being changed and revised through social interaction (Bryman 2001).

**Epistemology** examines what is the best way to study the world, how knowledge should be acquired and interpreted. This philosophical stance is applied through various research paradigms (Saunders, Lewis & Thornhill 2012). The three paradigms relevant to the current study are: positivism, interpretivism, and pragmatism.

1. **Positivism:** Kuhn (2012) stated that the positivist approach is based on the belief that a single reality exists. This approach deals with verifiable approach, there is no room for subjective opinions of the researcher. Positivist research is normally associated with quantitative rather than qualitative research (Creswell 2009).
2. **Interpretivism:** Bryman and Bell (2011) stated that interpretivism involves access to reality which is only available through social constructions such as language and shared meanings. There is no single reality. Interpretivism is generally associated with a qualitative research approach that attempts to understand phenomena via the meanings assigned to them by participants (Thanh & Le Thanh 2015; Walsham 2006).
3. **Pragmatism:** Pragmatism adopts the philosophical assumption that there are many ways of looking at the world and that there is no single view that can describe the entire picture (Saunders, Lewis & Thornhill 2012). Pragmatism is widely associated with mixed-method research (Ivankova, Creswell & Plano Clark 2007). The IS field has seen an increased growth in the use of mixed-methods which highlights the practical relevance of the pragmatic approach (Creswell 2009; Saunders, Lewis & Thornhill 2012).

### 3.2.1 Research Philosophy of this Thesis

The ontological stance of this thesis is predominantly constructivism but also combines some characteristics of positivism. The focus of this research is to investigate e-government implementation in Liberia from the perspective of IT practitioners of the GOL MACs, and develop a framework/tool to assist them in selection of processes to virtualise. In order to achieve this, the research requires insights and experiences of the GOL IT practitioners who are directly implementing e-government initiatives. From the literature review, it was established that there is no such framework, however there are some studies in e-government implementation in Africa. Hence this study incorporates positivism dimension.

The epistemological position for this research can be described as pragmatism. It allows the researcher to concentrate on usefulness of outcome of the research to practice using the most appropriate and applicable methods. As e-government implementation is influenced by the context such as the country where it is being implemented, it is important to gain an in-depth understanding of the meaning that is assigned by IT practitioners of the MACs regarding the implementation of e-government in Liberia.

In this research, the researcher is also a practitioner in the Liberia e-government program and therefore very close to the actors. The unit of analysis in this research is the MACs of Liberia which are providing e-government services managed and controlled by the IT practitioners. These IT practitioners of the MACs are recognized as the lead drivers or implementers of e-government in Liberia. To understand in depth, the shift from manual delivery of government services to the automated approach, the viewpoints of these IT practitioners are important.

Therefore, the pragmatism approach is the most useful approach to adopt in understanding this process. A pragmatist stance provides the researcher a greater opportunity to uncover the richness of the factors that influence and impact the delivery of e-government services in Liberia.

### **3.3 RESEARCH METHODOLOGY**

“Research methodology” is the means used to find the answers to the problem being investigated, by taking the steps needed to conduct the study. To enable the researcher to gain the necessary information and insights into the dynamic nature of factors influencing e-government implementation in Liberia, the mixed-methods approach is used.

The mixed-methods approach to research is applied to combine the procedures, methods, methodologies and language of both quantitative and qualitative in a single study (Johnson & Onwuegbuzie 2004). Creswell et al. (2003) mentioned different types of methods or strategies that can be used to conduct the mixed-method approach. They are the: sequential explanatory strategy, sequential exploratory strategy, sequential transformative strategy, concurrent triangulation strategy, concurrent nested strategy, and concurrent transformative strategy.

This research uses the sequential explanatory strategy where quantitative data is collected first and then followed by qualitative data. The quantitative data provides the big picture, while the qualitative data provides analyses of the specific and significant aspects of this picture.

The e-Government area, both in general and within Liberia in particular, is still a relatively new phenomenon (Kamara 2011). Implementation is still very much in the early stages and there is a scarcity of published studies on the factors that influence the successful implementation of e-government. The researcher aims to gain deep and broad understanding of e-government implementation in SSA countries and Liberia in particular; hence the use of the mixed-methods offsets the weakness inherent in using a solely quantitative or qualitative approach.

The e-government project in Liberia is considered a complex phenomenon in terms of the size of the project, the budget assigned to it, the great variety of stakeholders and the effect of success or failure of the project on the citizens and country as a whole. The use of triangulation, which is an advantage of using mixed-methods, allows the researcher to use several means to collect, verify and validate data. The findings of the research describe the participants' understanding of e-government implementation in Liberia.

In this research, one of the objectives is to investigate the implementation of e-government in Liberia. The information gathered is used to determine the factors that contribute to the implementation of an integrated e-portal across the MACs. The study focuses its analysis on the perceptions and experiences of the MACs' IT practitioners who are considered as lead implementers of the e-government project in Liberia. The analysis of their responses is key to addressing the research question.

The research is conducted using two study methods which are survey (quantitative) and focus group discussions (qualitative). The focus group discussion is used to further understand the factors identified from the perspective of the IT practitioners of the MACs. In research conducted by Gilbert (2008), he mentioned that participants in a group might raise issues relevant to the matter being investigated that had not been realized by the researcher previously. The technique used in the focus group discussion is the Nominal Group Technique (NGT) which is a method for group brainstorming that encourages contributions from everyone (Gallagher et al. 1993).

This technique can provide both qualitative and quantitative information and as such is a mixed-method approach (Potter, Gordon & Hamer 2004).

Table 3-1 summarises the research methodology providing insights into the study by introducing the following criteria: methodology, data collection method, objectives of study and sample design.

<b>Criteria</b>	<b>Study</b>
<b>Philosophical worldview</b>	Pragmatism
<b>Methodology</b>	Quantitative (Survey) and Qualitative (Focus group discussion)
<b>Objectives</b>	Build framework to identify processes that are good candidates to be transformed into virtual processes.
<b>Sampling design</b>	Non-probability sampling
<b>Sample</b>	IT practitioners of the MACs of Liberia Size (n=40)

Table 3-1 Research Methodology

### 3.3.1 Rationale for adopting a Reflective Practitioner method

The researcher is employed as a member of the USAID Digital Liberia and e-Government project team in Liberia, and is thus able to immerse himself into the life experiences of the stakeholders and actors under study. The research seeks to satisfy two aims, namely addressing or solving a ‘real world issue’ or problem and contributing to the development of theory (Adelman 1993; Lewin 1946). This research involves 40 IT practitioners across 16 MACs of Liberia.

Reflective Practitioner method is chosen for this study because the research aims to contribute to the real-world situation of the e-government actors of Liberia to gain feedback from their understanding in an immediate problematic situation. Kemmis (2006) described quality practitioner research as not just a matter of technical excellence but “a matter of addressing important problems in thought and actions, in theory and practice”. Groundwater-Smith and Mockler (2005) argued that practitioner research should be “collaborative in its nature and transformative in its intent and action”.

In practice, the reflective practitioner methodology will allow the researcher, who is a practitioner in government IT of Liberia, to be integrally involved with the e-government stakeholders and actors of Liberia in designing, planning, implementing, measuring, and recording change initiatives. There is also the need to feedback learnings into the GOL without delays inherent in normal academic research to

facilitate an ultimate improvement in service for stakeholders, an objective supported by the reflective practitioner research method.

After reviewing the overall research methodology in this section, section 3.4 introduces the research design by presenting the different steps followed in conducting the research.

### **3.4 MIXED-METHODS RESEARCH DESIGN**

A “research design” describes the required steps that should be taken by the researcher in answering the research questions adequately, accurately and validly. The study focuses on analysing the experiences of the IT practitioners of the Liberia ministries, agencies and commissions who are in one way or another implementing or supporting an e-service in their MAC. Analysis of the responses of participants in this study will contribute to fill or address the gap in literature regarding e-government adoption in a post-war developing country. The research follows recommendations by Bélanger and Carter (2012), where they encourage practitioners in e-government to consider more design science work and action work in e-government.

The study is conducted in sequential stages, with the survey preceding the focus group discussion followed by the artefact design and evaluation. Figure 3-2 depicts the integration of survey, focus group and design science methodologies into the research design.



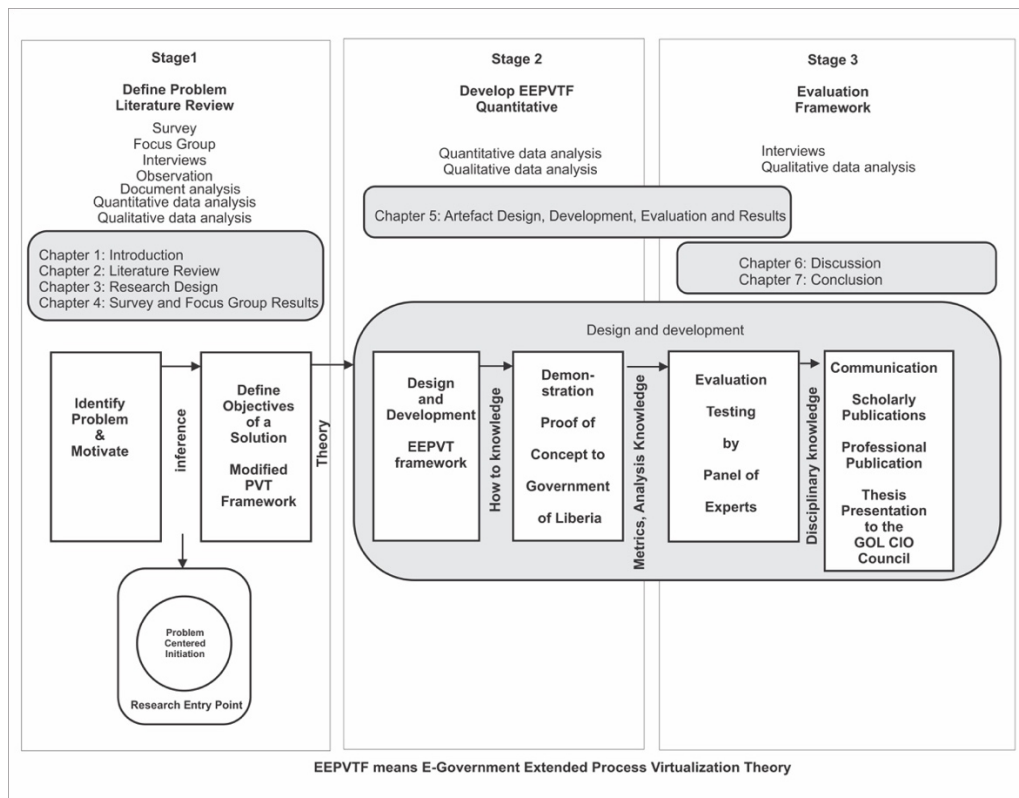


Figure 3-2 Study design framework

### 3.5 RESEARCH METHODS

The primary and secondary data gathering methods are: survey, focus group discussions, observations and the Liberia e-government project documents analysis.

In order to address the research problem, the research involves stages, each stage aligned with, and represent a project stage in the work being done by the researcher in Liberia. The objective of the study is to develop a preliminary framework to assess the suitability of physical government processes as candidates to be converted to virtual process. This framework is grounded in PVT. The framework will be provided to the GOL for their future use. The researcher has access to documents such as the draft Liberia National ICT Policy (2018-2023), e-Government strategy, e-Government communication strategy, Project Management Office (PMO) technical Framework, and the Government of Liberia ICT handbook.

Observation at the various MACs on how IT practitioners implement and provide support for e-services is also part of the study. Due to the role of the researcher as a consultant for the USAID Digital Liberia project, it provides him not only access to the MACs but also approval to use documents in the study.

The choice of data collection method is guided by the nature of the research questions since the research questions give rise to the type of data that is eventually collected (Onwuegbuzie & Leech 2006). Survey, focus group discussions, observations and document analysis are the primary research methods used in this study. The study also includes document reviews. These documents include policy papers, acts of law, frameworks, studies, and other relevant materials. Document reviews are an integral part of qualitative research because of the document reviewers' ability to provide insight into how the participants view issues relating to the study (Creswell, 2003). Document reviews also allow the researcher to garner a model source of information that enables him to provide a corroboration of data gathered through other methods. Table 3-2 illustrates the structure of the research method.

<b>Method</b>	<b>Relevance to study</b>
<b>Survey</b>	Participants (n=40)
<b>Focus Group Discussion</b>	IT practitioners from key ministries, agencies and commissions providing e-services
<b>Observation</b>	IT practitioners of the MACs providing support to citizens on the deployed e-services
<b>Document Analysis</b>	Strategy, Framework, Policies, Guides, Handbook etc.

Table 3-2 Research Method

### 3.5.1 Sampling Method

Sekaran and Bougie (2016) defined sampling as: “the process of selecting a sufficient number of elements from the population”. Sampling is a key research process where the selected elements can be used as the foundation for estimating or anticipating a fact, situation or outcome regarding the population. By scientifically choosing an appropriate sample of sufficient size, a generalization can be made about the whole population from which a sample is obtained.

Creswell (2009) and colleagues mentioned that since a sample should be representative of the population, it is important for the researcher to be cautious in defining sample size in order to ensure accurate findings. As the objective of the study is to provide a framework to facilitate the successful implementation of e-government in Liberia, it is therefore necessary to gather information from IT practitioners of the MACs who are the lead implementers of the e-services deployed at the MACs.

***Sampling strategy*** This study uses non-probability sampling. This kind of sampling is different from probability sampling in that the population does not have an equal probability to be chosen in the study.

***Sampling process*** The purposive sampling technique which is a form of non-probability sampling is adopted in the research for the administration of online surveys and focus groups. The purposive sampling technique also known as judgment sampling is “the deliberate choice of an informant due to the qualities the informant possesses” (Tongco 2007).

This kind of sample is used when the purpose is to gain information from particular target groups. Due to the objective of the research, the IT practitioners do not come from just any MAC, but are intentionally selected from the key MACs providing e-services.

Convenience sampling is used to collect data within the purposive sampling. Convenience sampling involves: “collecting information from members of the population who are conveniently available to provide it” (Cavana, Delahaye & Sekaran 2001).

### **3.5.1.1 Pre-test surveys**

Based on recommendations from (Collis & Hussey 2013), the questionnaires are tested and piloted as fully as possible before distribution. Questionnaires should be pre-tested with colleagues and with those who are part of the target population (Collis and Hussey (2013). Colleagues, who may know little about the subject, can often detect glaring errors. Those who are part of the target population can also help in improving the clarity of instructions; identifying unclear or ambiguous questions or questions that respondents may feel uneasy about answering; commenting on unclear and unattractive layouts; and adding any other comments (Saunders, Lewis & Thornhill 1997).

### **3.5.1.2 Pilot survey**

The pilot of the survey was conducted in the study. The pilot questionnaires had a cover letter and feedback page asking participants to describe any problems they encountered when completing the questionnaires and to add any comments.

Saunders, Lewis and Thornhill (1997) stated that the pilot test refines the questionnaire so that respondents have no difficulties in answering the questions. In a similar vein, Oppenheim (1992) stated: “Questionnaires do not emerge fully fledged; they have to be created or adapted, fashioned and developed to maturity after many abortive tests”.

First, the questionnaires are sent to the researcher's academic supervisors (2) who have many years' experience in designing questionnaires. In the second phase they are sent to five senior IT heads of the GOL MACs. The third is the project manager of the e-Liberia Programme Management Office (PMO) also going through the questionnaires to add comments. All respondents have considerable experience on the subject matter.

Comments are received from the three phases on the wording of some questions, and the layout of the questionnaire. All suggested changes are made to ensure the clarity of the questionnaires. The questionnaires are in English because Liberia is an Anglophone country. The final version of the questionnaires is provided in Appendix C.1

### **3.6 DATA COLLECTION PROCEDURE**

Data collection is done through both primary and secondary sources. Primary data sources include focus group discussions and online surveys which are administered to key IT practitioners of the MACs leading the delivery of e-services in Liberia. Secondary data sources are mainly Liberia e-government project reports, technical documents, and annual reports of previous USAID Liberia projects and the on-going Digital Liberia project. Valuable insight is also gained from the National ICT Policy of Liberia which sets out the direction and framework for developing the government's ICT efforts. The Figure 3-3 shows the methods of data collection which is explained in the subsequent sections

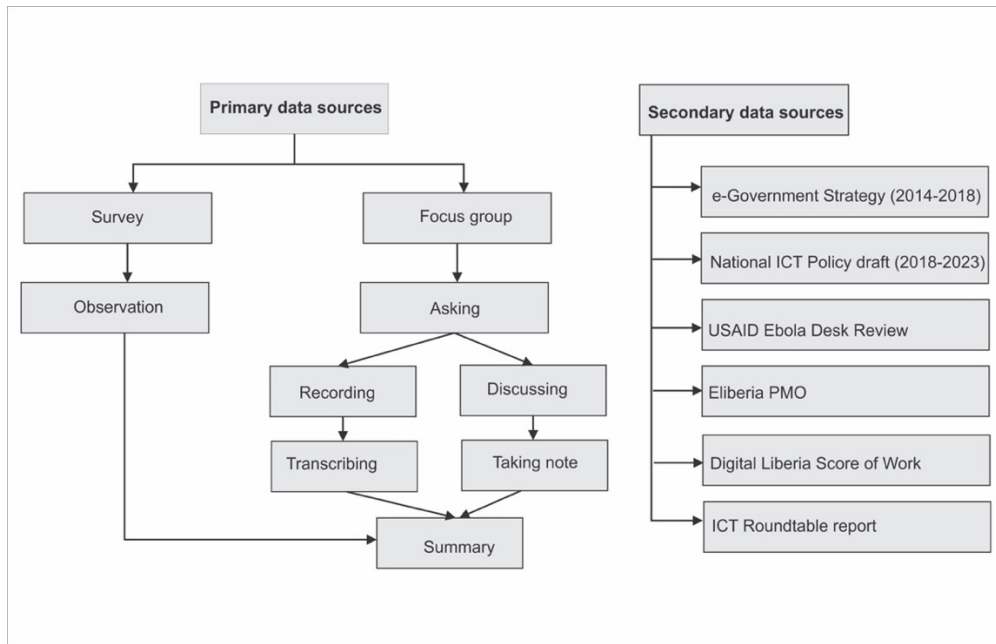


Figure 3-3 Data collection methods

### 3.6.1 Surveys

Survey research is popular and an accepted method that is used for gathering data. The aim is to obtain views or concerns in a structured manner. Bryman (2008) showed that questionnaires and structured interviews are the most common methods applied in survey research. Oates (2006) identified observations and documents as additional data generation methods related to survey research. The distinctive feature about survey research is its capability to include a wide coverage of people or events within a specified period. Creswell et al. (2003) in his research further states that survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a same of that population. The survey in this study is in the form of an online questionnaire. According to Brown (2001), questionnaires in general are any written instruments that present respondents with a series of questions or statements to which they are to react either by writing out their answers or selecting from among existing answers. This type of written survey allows for flexibility on the part of researchers to include both open-and closed-ended types of questions and can serve a variety of purposes.

The survey questionnaires are designed to be concise, unambiguous, and easy for a respondent to complete. Clarke and Dawson (1999) mentioned that the questionnaire is an instrument for measuring the ideas that go into its design. Therefore, the questionnaire must not only reflect the survey’s aims, but also must be

understood by the respondents in a clear and unambiguous way. Clear and well-structured questionnaires are important for obtaining valid results, since poorly framed questions or badly structured questionnaires can easily discourage respondents and lead to a low response rate.

The survey in the study is designed to collect data to answer the research question:

*How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business processes supporting e-government services?*

To achieve this, the research evaluates the constructs of the PVT and Extended PVT theory based on research by Overby (2008), Barth and Veit (2011).

The structure of the survey focuses on e-government processes supported by the IT practitioners of the MACs. This structure is adopted to enable respondents to better understand the questions, since it is put in the context of e-services being provided at the various MACs. An online questionnaire together with a cover letter is sent via email to all the MACs IT practitioners. Prior to that, the survey is tested before it is sent out to make sure that the respondent will be able to understand and answer questions. The survey questionnaire is guided by the literature review, feedback from the researcher's academic supervisors, selected IT heads of the GOL MACs, and the manager at the eLiberia PMO.

Kumar (2011) explained that a 50 percent response rate is usually considered to be high, and it may be as low as 20 percent. In order to make sure there is an adequate response rate, the research employs different techniques such as ensuring well-designed survey questionnaires and easy response format; a coversheet and informed consent to ensure the confidentiality of the respondent, state the importance of the study for participants, and inform them that this research is conducted in accordance with the USQ statement on ethical conduct in research involving humans. The survey is distributed to IT practitioners of the MACs who understand and work in English, therefore the language of the survey is English only.

This research mainly uses self-administered web-based questionnaires offered online which is sent to the email addresses of the participants. However, in situations where participants may not readily check their mails, a link to the questionnaires is

sent via 'whats app' encouraging them to use a computer to fill the questionnaires. The researcher sending personal emails and 'whats app' messages to the participants is to ensure rate of response is high at the first round of data collection.

### **Following up the Surveys**

Follow-up is important in order to achieve a high response rate (Stewart, Roth & Kirkbride 1995). The follow-up is done in three ways: following up by sending a reminder email, by calling participants, and sending 'whats app' messages.

The first way is contacting participants by email and reminding them to complete the questionnaires. Participants are then given one week more to do so. A link to the questionnaire is added to the body of the mail sent.

The second way is to call participants to remind them of mail sent and need for a response. The third way involves contacting participants using 'whats app'.

Participants are asked if they have any queries regarding the questionnaires, and are then reminded to fill out the survey. Participants are given another week to do so.

After introducing options to follow up survey participants, 3.6.1.1 presents the procedures to be followed in the questionnaire design.

#### **3.6.1.1 Questionnaire Design**

Clarke and Dawson (1999) defined questionnaires as a valuable research tool which is capable of producing large quantities of highly structured, standardized data. The process of creating the questionnaires in the research involves writing and editing the content in MS word before migrating to the online survey platform "LimeSurvey" which is hosted and managed by USQ. The questionnaire is pre-tested and pilot tested to reduce any unnecessary or ambiguous questions. This method is suitable for a number of reasons, including the low cost of conducting questionnaires compared with other methods, such as interviews. Since there is no face-to-face interaction with respondents, this method provides greater anonymity, compared with interviews. Moreover, the questionnaire, is a data collection instrument which has been used previously in e-government research in other countries.

The researcher will have a half-day session with the research participants to clarify the purpose of the questionnaires and the purpose of any questions. The objective of the meeting is to ensure all questions are well understood by the

participants, as the many years of civil war has affected the level of education of citizens in the country.

The questionnaire is structured in ten (10) groups including a group of demographic questions on the background information of the respondents such as gender, age and educational background. Further, questions regarding the e-government processes in the MAC are included in order to identify the specific e-government process the respondent is implementing or supporting.

Table 3-3 shows the various groups of questions, the description and number of questions asked based on the constructs of PVT. The items are measured on a five-point Likert-type scale with ranges from strongly disagree (1) to strongly agree (5). According to Hair et al. (1998), the five-point Likert-type scale is advantageous in providing correct reliable results. There is an open question at the end of the questionnaire to allow participants to provide a written response on any other issue which is not captured in the questionnaire. The strength of the questionnaire is that the questions asked and statements used are directly linked to the aim and research questions of the study.

<b>Group Name</b>	<b>Description</b>	<b>Number of questions asked</b>
<b>Background Information</b>	This section comprises questions that gather general information about the respondent. The questions relate to knowing the specific MAC of the respondent, the position at the MAC, gender, age and educational background.  Further, questions regarding the e-government processes in the MAC are included in order to identify the specific e-government process the respondent is implementing or supporting.  Respondents are also asked to indicate how long they had been aware this government process.	8
<b>Sensory Requirements</b>	Based on the experience of the IT professional in transforming the selected process from manual to e-Liberia, respondents are asked to give their opinion of the citizen's perceptions regarding their use of the Internet-based public process.	2



<b>Relationship Requirements</b>	This is explained as the need for a citizen to interact with one another in a social or professional context.	3
<b>Synchronism Requirements</b>	These requirements are defined as the extent to which various activities that are in a process need to occur quickly with minimal delay.	2
<b>Performance Risk</b>	This refers to the possibility that the process will not function as expected and/or will not provide the desired benefit when accessed by the citizen.	1
<b>Privacy and Security issues</b>	This is defined as the “potential loss of control over personal information, such as when information about the citizen is used without their knowledge or permission”.	1
<b>Process involvement</b>	The construct refers to the citizen’s perceived relevance of the process based on inherent needs and interest.	2
<b>Need for consultation</b>	This is defined as the citizens' need for assistance when performing the process.	1
<b>Process Complexity</b>	This refers to the number of interrelated actions a citizen has to take in order to solve their problem; The more interrelated actions the more complex the process.	2
<b>Process Ambiguity</b>	The construct is about the citizen not feeling sure of how to interpret information explaining what to do.	3

Table 3-3 Research Questionnaire Development

### 3.6.2 Focus group discussion on e-Government adoption

Focus group design is common to qualitative designs and there are many studies in the literature that have used this approach to collect data. The process involves formulating research questions, developing protocols, soliciting participants, arranging venues, facilitating focus groups, transcribing, analysing data, and reporting the findings.

For the purpose of this study two focus groups discussions (FGD) are held, each meeting representing a stage of the research.

The participants were informed about the purpose of the study verbally, through email, and subsequently through the informed consent forms, which all of them had to sign before the discussions begin. In the study, the participants responded to questions on PVT and EPVT in a focus group meeting. The questions for the focus group

discussions in the study were formulated based on findings from data collected through the online survey of the research. The focus group participants were chosen from the survey respondents who had agreed to participate in the follow up study.

The FGDs were audiotaped and the researcher transcribed the recordings. Transcripts were compared with the recordings for accuracy. All items transcribed were checked to ensure they were valid representations of the FGDs.

### **3.6.3 Observations**

When collecting data in reflective practitioner research, critical participant observation is essential (Cosh 1999). Yin (2013) divided observation into two main categories: direct observation and participant observation. Direct observation takes place when a researcher makes a visit to the case study site; this visit can include a range of data collection activities from formal to casual. Participant observation, on the other hand, takes place when a researcher considers him/herself as an active observer by assuming a variety of roles within a case study situation and may actually participate in the event being studied. Observations provide information about a physical environment and behaviour; therefore, they bridge certain gaps in interviews or questionnaires (Sapsford & Jupp 2006).

In this study, the researcher uses planned observations, casual and unplanned ones. An example of qualitative data that is collected through observation is how IT practitioners of the MACs have deployed the service desk tool on portal at their MACs, and how they are using it to support their customers. The researcher keeps a diary to record notes. The visits to the MACs offices are a good way to obtain first-hand information from research participants and give the researcher the opportunity to meet other IT practitioners providing support on the government e-services. During the visits, the researcher further elaborates aim of research to the IT practitioners at MACs. Before conducting any observation session, the researcher visits the heads of IT of the MACs and informs them in advance of the date and time of any intended observation.

The site visits allow the researcher to meet and build good personal relationships with the e-government implementers within these MACs. Some of the visits are arranged a few days beforehand, others take the form of drop-in visits to friends within the organizations. The researcher is able to do this due to his extensive stay in Liberia

and work with these IT practitioners. The visits provide a clear picture of the e-government environment in the MAC.

### 3.6.4 Review of documents

The analysis of documents is another source of information in research. Various documents are collected and reviewed to understand e-government implementation in Liberia. The documents are divided into three categories: ICT and e-government strategy plans; e-government project details and GOL ICT reports.

Table 3-4 shows some examples of documents to be reviewed.

Document Category	Example
<b>ICT and e-Government strategy document</b>	e-Government Communications strategy e-Government Web Development strategy e-Government strategy (2014-2018) GOL Universal Access strategy
<b>e-Government project details</b>	Agenda 2014-2018 GOL Enterprise Architecture eLiberia PMO GOL e-initiatives possibilities Digital Liberia and Electronic Governance (DLEG) scope of work
<b>GOL ICT Reports</b>	ICT Policy 2011-2016 ICT Policy 2018-2023 (draft) ICT Roundtable Report 2015 IT Budget -201516 IFMIS Report USAID Ebola Desk Review

Table 3-4 Reviewed Documents

In the first category of documents, the researcher is seeking information on the overall GOL e-government strategy plans, the timelines and deliverables. Most of this information is in electronic format hosted on DLEG project SharePoint document repository hosted online.

Documents within this category include the e-Government strategy document, the communication strategy and Web development strategy. The Agenda (2014-2018) is a vision of the government of Liberia to harness the potential of ICT to bring the government closer to the people through effective governance, improved service delivery and socio-economic growth. Within these documents the researcher is identifying the key outcomes of projects over the last 4-5 years in order to find out which have been successful and which ones have failed or have been difficult to implement. The objective is to identify patterns and themes in e-initiatives which were

successful and those that were not. The researcher will compile lists and compare with results from the online survey and focus group discussions.

The documents about project details are reviewed to gain information of specific system solutions such as call centre, mobile gateway, centralized email system, community computer centres and e-government portal and how they contribute to the development process.

Assessing the GOL ICT reports is important to understand the government's vision of e-government for development and impact made by the USAID since the inception of Liberia USAID GEMS (Governance and Economic Management Support) and USAID DLEG (Digital Liberia and Electronic Governance) projects.

### **3.7 DATA ANALYSIS METHODS**

Data analysis procedures used in this study are drawn from the outline of Creswell and Clark (2007): preparing data for analysis, exploring the data, analysing the data, representing the data analysis, and validating the results. The aim is to find answers to the stated research questions.

The quantitative and qualitative data, generated from the research methods used in the study are analysed separately and then integrated for a complete picture.

In this study the analysis of data is done through activities such as, collecting relevant data, organising, inter-relating various sources of information, attributing meanings to the data, and building a readable story that can be published in conferences and journal papers.

Before starting the analysis process, it is important to screen and "clean" the data, for example, to check for errors (Pallant 2013) or checking of returned questionnaires for incompleteness.

#### **3.7.1 Survey analysis**

The responses from questionnaires are exported from the online survey tool (LimeSurvey) to Excel® format (.xlsx) for coding and analysis. Frequencies are used to describe how many respondents gave each response. Likert scores for the statements are calculated in order to get the overall results for the statements. The Likert scores are calculated by multiplying the number of respondents for each preference with the score for each statement, where here 1=strongly disagree, 2= disagree, 3= neither agree

nor disagree, 4=agree, and 5= strongly agree, in line with Spacey, Goulding and Murray (2004). The results are then presented in tables and graph forms created in Excel®.

### **3.7.2 Focus group discussions analysis**

The analysis of qualitative data may take different forms, but it is fundamentally non-mathematical in nature. Bogdan and Biklen (1992) in their study mention that qualitative data analysis is about working with data, organising them, breaking them into manageable units, synthesising them, searching for patterns, discovering what is important and what is to be learned. The researcher initially listens to the recorded focus group discussions and then uses an online transcribe service to convert the audio to text. Transcription from the interviews is saved in Rich Text Format (RTF) in a way that allows the participants to review their session (member checking). A separate list of participants and the codes assigned to them is kept confidential. Then NVivo, a qualitative analysis software tool is utilised to support and analyse the data collected from the focus group meetings. All transcripts are loaded and saved in the tool as documents.

The objective of the validation process is to allow participants to read through the transcription to ensure the researcher clearly understands the participant's intents on everything discussed at the focus group meetings. To support the validation and reliability of the research, the researcher uses member checking, as suggested by Carlson (2010) in her article on "Avoiding traps in member checking". Member checking is a popular approach used to ensure and validate data collected. During the focus group discussion, the researcher takes notes as backup in the event there is a problem with the recordings.

In order to take out any form of preconceptions from the research, the researcher uses the bracketing procedure. Bracketing is a method used in qualitative research to mitigate the potentially deleterious effects of preconceptions that may taint the research process (Tufford & Newman 2012). Bednall (2006) notes the clear recognition of the researcher's personal opinions and experience are necessary to enable a reduction of the possibility of both the former and the latter impacting the data that is being analysed or the data analysis process.

### **3.7.3 Observations analysis**

The observation takes place at the MACs who have deployed any form of electronic service. The researcher conducts a structured observation using codes and a scale. The researcher begins by reading the situation at the MACs as a text, the behaviour of the IT practitioners is systematically classified into distinct categories. The categories are coded against a scale in order to ensure the data collected can be easily counted.

The analysis is done in Microsoft Excel® and results compared with the other sources of information.

### **3.7.4 Documentation analysis**

The document analysis begins with the identification of themes emerging from the e-government project documents in Liberia. The goal is to create categories through which the implementation of e-government can be translated into a story line. The analysis includes the collection of Liberia e-government documents from 2003, from various sources as described earlier and organizing them on the basis of the time of the occurrence of the event and accompanying themes. This will enable the researcher to construct a history of how GOL e-government initiatives have evolved. The identified themes are then joined to what has been identified in survey, focus group discussions and observations and inter-linkages built across all themes.

## **3.8 FRAMEWORK FOR IDENTIFICATION OF PROCESSES SUITABLE FOR VIRTUALIZATION**

Design Science Research Methodology (DSRM) offered by Peffers et al. (2007) is used to develop the framework for selection of government manual processes that are most suitable for virtualization. In order to increase the successful implementation of e-government projects in sub-Saharan Africa, it has been acknowledged in the literature review (Chapter 2) that there is no existence of an out-of-box system to specifically select e-government processes to virtualize. This problem can be addressed in the context of Design Science Research, as it requires the development of an artefact. The DSRM, as defined by Peffers et al. (2007), is based on the practical guidelines defined by Hevner (2007), the first and most important guideline being the “Design as an Artefact” Peffers et al. (2007). Peffers et al. (2007) further mentions DSR “requires the creation of an innovative, purpose artefact”.

In this research, the artefact created will be the prototype of a spreadsheet template using the idea of a checklist with a list of characteristics to identify government processes that are most suitable candidates for virtualization. As defended by Zheng (2009), prototyping should be considered a vehicle to learn about the problem domain, seek a solution and, finally, to create knowledge.

Although the main approach of the research is reflective practitioner, a design approach methodology is essential to create a fully functional prototype for the selection of e-government processes. This study blends the six stages design science research methodology (DSRM) method as suggested by Peffers et al. (2007).

***Problem identification and motivation:*** The research problem (Chapter 1) represents the first DSRM phase of problem identification and motivation. Despite the many benefits of e-Government, the implementation of e-Government initiatives in African countries has in most cases failed. According to Heeks (2002) almost half of e-government projects in developing countries are a total failure. It has been identified in literature that there is the need for e-government practitioners and implementers to shift from intuition-based mode of selecting government processes to virtualize to analytics based. The lack of an out-of-the-box solution or tool to select processes is clearly a problem that should be addressed.

***Definition of solution objectives:*** The aim of this activity is to identify literature (Chapter 2) on process virtualization in IS and its requirements. The research will build on the existing PVT and EPVT theory to propose an extension for the purpose of using it in an e-government setting.

***Design and development:*** In the scope of DSRM, having identified the need to design a framework, the next step is to design and develop a framework. The format of the framework will be a Microsoft Excel® template with embedded guidance on its use. A template is a preformatted workbook which includes standard styles, formulas, macros and other settings. Microsoft Excel® is a common spreadsheet program available on almost every computer in the MACs. Also, GOL staff are familiar with spreadsheets. The framework will make use of macros written in Visual Basic for Applications (VBA) programming language. When completed the framework will be hosted on the e-Liberia portal. On the site the instructions and help files will be hosted. The development of the framework will involve three iterations. In each iteration, based on the feedback, the spreadsheet will be modified and presented for evaluation

by IT practitioners. The first iteration will be the development of a “model” based on the PVT model using the identified constructs. The artefact will consist of 5 primary components: Category, Question, Requirement, Weight and Score. The category component will have nine (9) sections (from PVT constructs) each linked to a question. The requirement component will be based on a 3-scale measurement (low, normal and high). The weights will be calculated against the scale selected and final score will be totalled indicating the virtualization status using colours red, yellow and green.

On subsequent iterations the prototype will move from a model to “instantiation”, and finally the resulting artefact. Iterations 2 and 3 will be the incremental “delivery” of functionalities based on feedback (from IT practitioners of the GOL MACs) from the survey and focus group discussions of the research (presented in Chapter 4). This will also include determining the score and weights of items in the artefact. This will answer the research question.

***Demonstration:*** Five experienced senior GOL IT practitioners will be recruited to assist in identifying the weights to be allocated to each question. They will be guided by the results from survey and focus group discussions. The weights will be entered in the spreadsheet.

***Evaluation:*** The objective of this activity will be to assess the usability and utility of the framework. This will be done by populating the template with one process, seeking feedback from five of the most senior and experienced IT practitioners of the MAC. The researcher will make some changes based on their feedback and then evaluate again using two processes.

***Communication:*** The research findings will be presented and discussed in Chapters 6 & 7. The tool will be communicated to the GOL CIO Council, which is a body consisting of IT heads of the MACs. The mandate of the council is to achieve unified information technology systems and solutions across the MACs. The council meets once every month. Articles will be written for scholarly publications and professional publications. Also, the researcher will communicate the utility and novelty of the e-government extended PVT (EEPVT) tool, the rigor of its design and effectiveness to e-government implementation in Liberia to the USAID.



### **3.8.1 Design Principles of EEPVT Framework**

The primary objective of the EEPVT framework is to enable IT practitioners implementing e-government initiatives to identify the most suitable processes to virtualize. After a careful analysis of the requirements of artifacts based on challenges faced by IT practitioners in Liberia, the design principles for EEPVT are:

1. The framework should be operational and simple to use (developed in Excel®) to assist IT practitioners in Liberia to select appropriate physical processes or service to virtualize.
2. The artefact should be anchored on a recognized theoretical framework.

Two imperative aspects are questioned in the research. First, the framework should be easy to use and clear for the actual users. The second important aspect is the actual outcome of the framework. When the scores are calculated in the framework, certain processes should result as most suitable to apply. It is important to know if these resulting processes are in accordance with the expected outcomes. If this is not the case, it is interesting to know why they differ.

In this research the objective of the EEPVT framework is to produce a simple useable tool for the IT practitioners of Liberia.

## **3.9 ROLE OF THE RESEARCHER**

The role played by the researcher cannot be ignored. The researcher is the Change Management Advisor to the USAID Digital Liberia E-government project. His role requires him to develop and implement change management plans and provide project management assistance to the MACs implementing e-initiatives under the Liberia e-government program. The research has elements of positivism which allows the researcher to remain detached from the participants of the research by creating a distance. This is important in remaining emotionally neutral to make clear distinctions between reason and feeling.

The role of the researcher in the USAID Digital Liberia e-government project provides him the fluency and the ability to engage the IT practitioners of the MACs without approaching participants as interrogative.

In order to sharpen the researcher's research skills a mock focus group discussion is undertaken with 10 IT practitioners at the PMO meeting room of the

Ministry of Post and Telecommunications. The researcher also holds a pre-research meeting with the 40 research participants to make sure they understand the research objectives, questionnaire and format of focus group discussions. This is very important because the education level of participants varies and some although very good technically, lack comprehension or good understanding of English.

### **3.10 ETHICAL ISSUES**

In undertaking this research study, ethical considerations are of paramount importance. Ethics refers to "the appropriateness of [the researcher's] behaviour in relation to the rights of those who become the subject of [his/her] work, or are affected by it" (Saunders, Lewis & Thornhill 1997). Ethical considerations are significant because such issues are directly linked to the integrity of the study (Bryman 2008). Ethics clearance was provided by USQ (Appendix B.1).

Various ethical issues need to be considered while formulating the research plan. In this research, anonymity and confidentiality, which encourage the participants to give more open and honest responses, were strictly assured, as proposed by (Collis & Hussey 2013).

The research aims and objectives are explained to participants and efforts are made to ensure that participants understand the general aspects of the research. The principle of voluntary participation is also assured and individuals' wishes are respected. Individual differences concerning the understanding and interpretation of questions are also respected and clarified as politely as possible.

The following outline describes the ethical principles followed in relation to the research project overall and also in regard to the reflective practitioner research component of the study, which requires a separate description.

#### **3.10.1 Informed consent**

The researcher before embarking on this research project obtains informed consent from each of the research participants. Informed consent as an ethical principle means that potential participants are made aware of the research study and understand what the research study is about. In the context of this study, the IT practitioners of the MACs are invited for a meeting at the conference room of MoPT where they are given

a verbal outline of the proposed study. This is followed up by a PowerPoint presentation outlining the nature of the research study and the research design.

During this session the researcher also highlights the voluntary nature of participation in the study and the option for participants to terminate their involvement at any time during the research. Participants who agree to take part in the study are then asked to complete a signed consent form in relation to their involvement in the study. A copy of the consent form is included in Appendix D.2

The process of involving participants from this grouping is governed by the need to ensure that they are making an informed decision to participate in the research study and that their participation is voluntary in nature.

### **3.10.2 Confidentiality/Anonymity**

The issue of confidentiality is an important and sensitive issue in the context of social research. The IT practitioners who agree to participate in this research study are informed from the outset by the researcher that they will not be identified by their names but rather allocated identification codes.

### **3.10.3 Security of data collected**

Research participants are given assurances by the researcher that any data collected in the course of the study will be securely maintained at all times. Assurances were also required under the ethics approval obtained from USQ, Australia by the researcher that any data collected would be securely stored and accessible only to the researcher.

### **3.10.4 Reflective Practitioner: Ethical considerations**

As this research study incorporates the use of reflective practitioner research components, the researcher places particular attention on ethical considerations arising from this process. The reflective practitioner approach is unpredictable in relation to the identification of issues and problems to be addressed and solved.

In addressing issues in terms of ethical considerations, at the outset of the research, the researcher informs the research participants about the reflective practitioner research process and the dynamics involved including the degree of unpredictability inherent in the process. This information is stated in the Participant Information sheet found in Appendix B.2.

The research participants are also aware of the voluntary nature of the process and that participants can terminate their involvement at any time during the process.

### **3.11 SUMMARY OF CHAPTER THREE**

In this chapter the researcher provided a comprehensive and detailed explanation of the methodology used in this mixed-method research. The researcher discussed the research design, sample size of the population and the role of the researcher. The researcher also detailed the approaches used to collect and analyse data and discussed the ethical implications of the study.

Survey and focus group discussions are the primary data collection instrument while observations and document analysis provide additional data for the study.

Chapter Four provides an analysis and presentation of data collected in the study, followed by Chapter 5 which outlines the development of the artefact.

# Chapter 4: Survey and Focus Group Analysis and Results

---

## 4.1 CHAPTER INTRODUCTION

The previous chapter established the research method that would be utilized in the study. The chapter also presented the plan to design, build and evaluate a framework to identify government physical processes that are suitable candidates for virtualization.

This chapter provides a detailed description of the research data collected, the results of the survey and focus group discussion of the research.

The data collection was performed with the use of questionnaires and focus group discussions over a period of five months (October 2017 to February 2018). The target participants of this study are the IT professionals of the Ministries, Agencies and Commissions (MACs) of Government of Liberia. The questionnaire was used to test constructs of the PVT Overby (2008) and EPVT theory by Barth and Veit (2011). The structure of the survey focused on e-government processes supported by the IT professionals of the MACs. One focus group discussion was used to complement the survey findings.

In this chapter, the data arising from the exploratory survey is presented. The findings from the survey shaped the questions for the focus group discussion. The results and findings that emerged from the focus group are presented in the next sections.

This chapter is structured as follows: Section 4.1 introduces the chapter while Section 4.2 presents the preliminary analysis of survey data. The next section, 4.3 discusses the demographic profile of the research participants. In Section 4.4, the research presents the results from the survey and how data was analyzed using Excel®. Section 4.5 presents results from the focus group session. Section 4.6 presents the findings and discussion. Section 4.7 provides the chapter conclusion. Figure 4-1 illustrates an overview of Chapter 4.

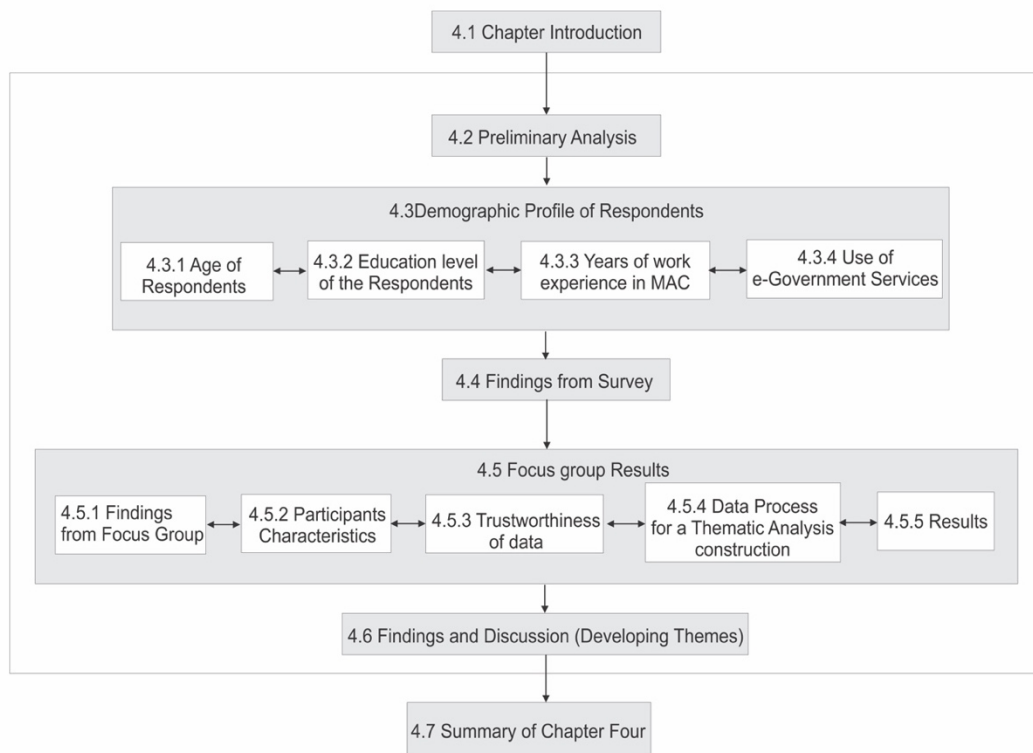


Figure 4-1 Overview of Chapter 4

## 4.2 PRELIMINARY ANALYSIS OF SURVEY DATA

A questionnaire was sent out on November 2017 to 40 IT professionals of the MACs using the tool LimeSurvey. Based on advice from Field (2009), before any statistical analysis is carried out, the data collected must be examined. The data file generated from the “LimeSurvey tool” was inspected to identify errors and missing data. The data was cleaned by removing records with missing entries. The reason for data cleaning was to prevent missing information from negatively impacting the statistical analysis and then leading to inaccurate or misleading results. This step is highly recommended in authoritative data analysis text books by authors such as Field (2009), Tabachnick and Fidell (2007) and Pallant (2007).

The researcher visually checked the entered data and corrected spelling errors detected in comments. To ensure an error-free data set, the frequencies for all variables were checked to confirm that input errors had been corrected.

### **4.2.1 Response Rate**

The study targeted to collect data from 40 senior IT professionals of the MACs of Liberia. The overall target for the study is limited to the 20 MACs who currently have some form of IT infrastructure and are providing services to the citizenry.

With 30 complete and usable responses the response rate of this study was calculated at 75 percent. This response rate is considered to be acceptable and fit for analysis and reporting. According to Mugenda and Mugenda (2003), a response rate of 50 percent is adequate for analysis and reporting; a rate of 60 percent is good and a response rate of 70 percent and above is excellent. It is recognized that the targeted respondents are senior IT professionals of the MAC who are busy and tend to be over-surveyed by donor agencies in Liberia.

## **4.3 DEMOGRAPHIC PROFILE OF RESPONDENTS**

A profile of the demographic variables for gender, education, age and work experience are presented in this section. The profile shows that males and females constituted 93 percent and 7 percent of the respondents respectively. The gender distribution proportion of males to females is wide in this study. This gender distribution could generally be attributed to the current trend in information technology sector in Liberia where females are traditionally under-represented.

### **4.3.1 Age of Respondents**

The researcher made the decision to divide respondents' ages into three different reasonable ranges from 18 to over 55 years. The results showed (see Figure 4-2) that the majority of the respondents (i.e. 20) were in the 35 to 44 age group representing 67 percent followed by 6 respondents in the 25-34 age group representing 20 percent, and over 45 years' age group were 5 presenting 13 percent.

This representation indicates that the people who participated in the study are matured and therefore an indication that the information obtained is reliable.

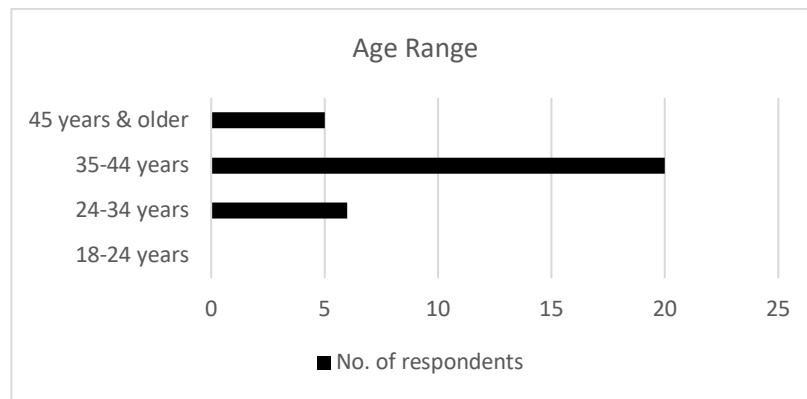


Figure 4-2 Age of respondents

### 4.3.2 Education level of the respondents

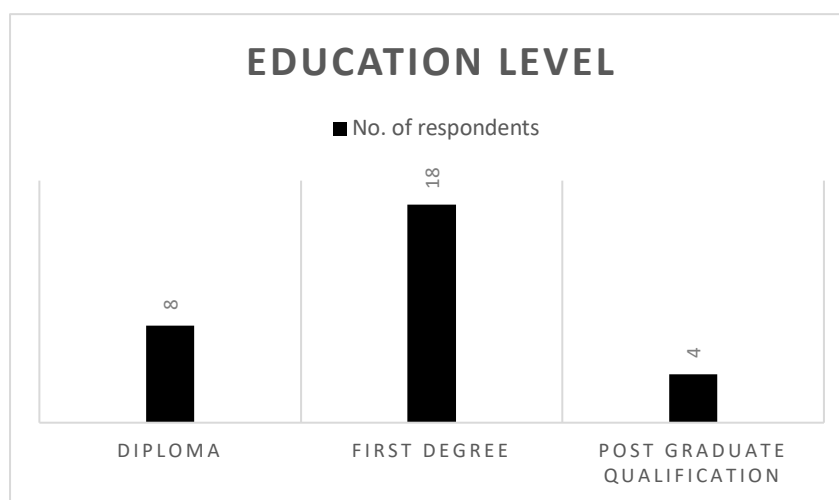


Figure 4-3 Education level of respondents

This study had an interest in establishing the education level of the respondents. From the results shown in Figure 4-3 it can be deduced that most of the respondents (i.e. 60 percent) had attained a first degree, 13 percent had postgraduate qualifications and 27 percent of the respondents had attained diploma education level. This is an indication that most of the senior IT practitioners in the MAC have the prerequisite education levels for their roles. It also indicates that the respondents are well-educated and therefore well informed to furnish this study with proper information.

### 4.3.3 Years of work experience in MAC

Similarly, the study was interested in the length of time that the respondents have worked in their respective ministries and agencies. The findings shown in Figure 4-4 indicate that 67 percent of the respondents had worked in the MAC for 6-10 years, 20 percent for 11-15 years, and 13 percent had worked in the MAC between 1-5 years. These results indicate that most of the respondents have been with their MAC for



enough time to have gained a full understanding of the MAC and IT environment, how it works and its operations.

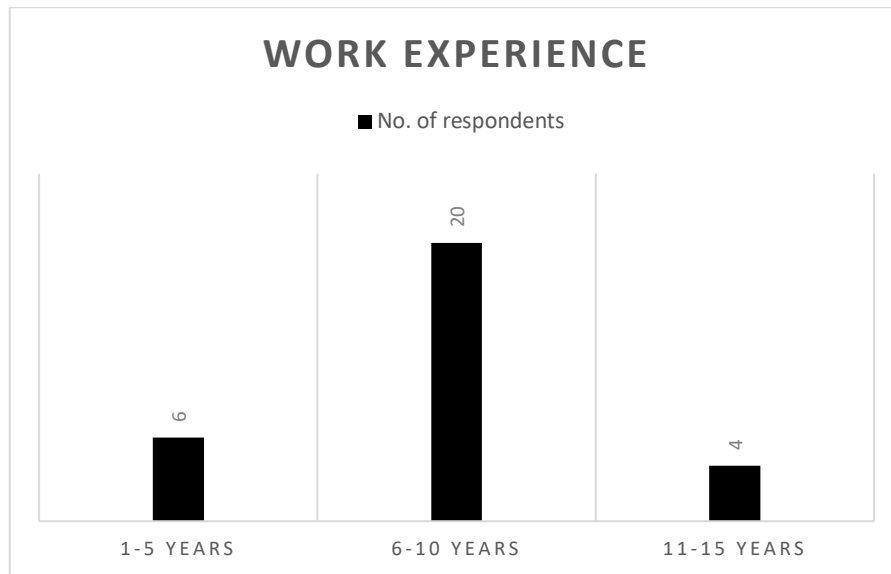


Figure 4-4 Years of work experience of respondents

#### 4.3.4 Use of e-Government Services

Respondents were asked to list the e-government services in which their MAC is primarily involved. Almost all (85 percent) of the respondents listed a number of government services which have been virtualized at their MAC. It was reported that 15 percent of respondents work for a MAC that has not yet virtualized any services. This suggests that e-government services are widely known to the respondents.

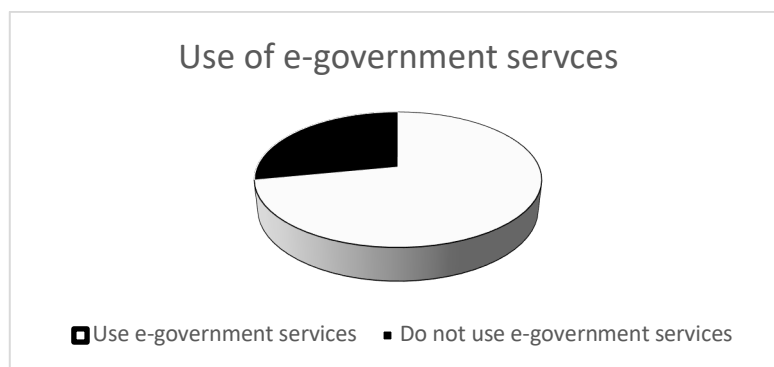


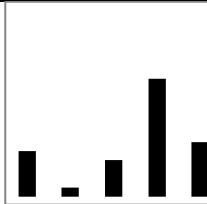
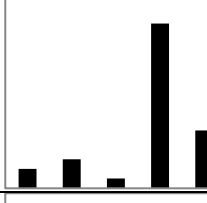
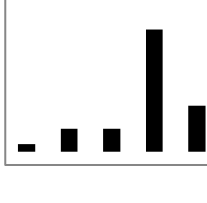
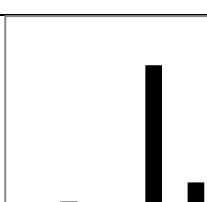

Figure 4-5 Use of e-government services

#### 4.4 FINDINGS FROM SURVEY

In Part B of the questionnaire, the respondents were asked to give their views and perspectives on the e-Services that the Government of Liberia provides on the e-Liberia portal. As described in [Chapter 3 section 3.6] these constructs were examined

through positive and negative statements using a Likert scale. The Likert scale scores were calculated in order to compare respondents' perceptions of each construct.

Table 4-1 presents the distribution and analysis of the participants' level of agreement with the statements. A weighted average scoring method was used to provide an approximate overall perception of the participants for each statement.

	Statement	Strongly disagree(-2)	Disagree(-1)	Neutral(0)	Agree(+1)	Strongly agree(+2)	Distribution	Overall weighted average score	Binomial Test. Test proportion 0.50 Exact Sig. (2 tailed)	Generalized Overall perception
Sensory Requirements	SR1: While a citizen is conducting the public process, he/ she likes to be able to see and touch relevant documents and/or forms.	5	1	4	<u>13</u>	6		0.4828	0.015	Agreement
	SR2: While a citizen is conducting the public process, he or she will like to personally see and hear the responsible personnel.	2	3	1	<u>17</u>	6		0.7586	0.001	Agreement
Relationship Requirements	RR1: The social interaction with the responsible personnel or citizens who are present is important to the citizen during the public process, because he/she will be kept informed of current events and requirements.	1	3	3	<u>16</u>	6		0.7931	0.001	Agreement
	RR2: It is important to the citizen, to establish a personal relationship of trust with the responsible employees of the public process.	0	4	1	<u>18</u>	6		0.8966	0.000	Agreement
	RR3: The citizen enjoys talking to the responsible employees or other citizens who are present during the different processing steps of the public process.	1	3	4	<u>18</u>	3		0.6552	0.001	Agreement

Synchronism Requirements	SCR1: It bothers the citizen, if the administrative office does not directly start with processing the documents required for the public process when the citizen has provided all necessary data.	1	2	2	11	13		1.1379	0.000	Agreement
	SCR2: It bothers the citizen, if they do not directly receive the outcome of the public process (e.g. certificate/registration).	1	0	2	9	17		1.4138	0.000	Agreement
Performance e-Risk	PR1: Do you think the citizens trust that the public process will be handled without problems on the Internet	1	8	5	12	3		0.2759	0.307	Neutral
Privacy and Security Issue	PSR1: Do you think that citizens are concerned about the risk that their data and documents of the public process, conducted via Internet, are only used and forwarded in accordance with legal necessities.	0	2	8	12	7		0.8276	0.000	Agreement
Process Involvement	PL2: The public process is so important to citizens that they can retain the knowledge of the process steps.	0	4	1	22	2		0.7586	0.000	Agreement
Need for consultation	NC1: For the public process, most of the citizens will likely need support from a staff member of the MAC to complete the process through e-Liberia	0	2	1	18	8		1.1034	0.000	Agreement
Process Complexity	PC1: Citizens assume that many individual formalities are necessary to conduct the public process, e.g. Scanning of ID documents, purchase of payment voucher from the bank, etc.	1	2	7	18	1		0.5517	0.001	Agreement
Process Ambiguity	PA1: During the public process, most of the citizens will probably need the confirmation of the employees of the MAC that they have understood the forms, the necessary procedure or the technical terms correctly.	0	2	0	19	8		1.1379	0.000	Agreement

Table 4-1 Participants perception about e-services

A weighted average of responses provided an approximate measure to rank the level of agreement. According to a binomial test (test proportion= 0.5, CI=95%) the proportion of 'Average or High' responses was significantly more than 50 percent for the 11 statements.

The most popular (first ranked) statement was SCR2 and a binomial test indicated that the proportion of 'Average or High' responses (0.96) was significantly more than 50 percent for this statement. The binomial test indicated that the proportion of 'Average or High' responses was significantly more than 50 percent for all of them: PA1 (0.93), SCR1 (0.89).

One statement did not show clear tendency towards either 'Average or High' or 'Low or below low': PR1. Participants' perceptions on none of the statements were proven to be skewed towards disagreement. Therefore, out the 11 statements, the statement on participants' perceptions on Performance Risk was neither that of agreement or disagreement.

#### **4.5 FOCUS GROUP RESULTS**

This qualitative study was designed to explore the lived experiences of participants (IT professionals of the MAC) when working and developing government e-services in Liberia. A meeting was scheduled where pre-set questions were answered by participants in the form of discussions. The discussions were recorded in video and audio and then they were duly transcribed in order to analyze using thematic analysis as the approach used to reveal the content and meaning of qualitative data. This analysis allowed the researcher to obtain a more detailed and meaningful understanding of the research problem.

##### **4.5.1 Findings from Focus group**

The researcher developed focus group interview questions and previously obtained the consent of each participant for the interview. A total of fifteen (15) people participated from the sample of 30 who completed the survey. Although the study targeted 40 senior IT professionals of the MACs of Liberia, 30 participated in the survey. The 30 who successfully completed the survey were then invited for the focus group discussions, out of which 15 honored the invite.

In the focus group discussion, the participants agreed to be video-audio taped during the encounter. The discussion was video recorded and their contents transcribed before being analyzed. No personal information was recorded during the interview process or in the transcripts.

#### **4.5.2 Participants Characteristics**

The people who participated in this research were 15 IT professionals from the Liberia MACs who have in-depth knowledge of different electronic processes that are being implemented by the government of Liberia, in order to facilitate the citizenry's access to different public services, including obtaining a birth certificate, passport, visa.

The focus group interviews took place in a tranquil and quiet environment, which favored communication and a greater exchange between participants. All the participants had very positive attitudes and were very collaborative throughout the research.

It can be said that all of the participants accepted and were comfortable with the research purpose, as well as with the interview and the questions prepared. In this way, the researcher obtained the best and sincerest responses from them. Also, the confidentiality of the participants was assured, since each participant was assigned a code - PT (Participant), PT1 (Participant 1), PT2 (Participant 2), etc. - in order to identify their responses.

#### **4.5.3 Data Process for a Thematic Analysis Construction**

The results of the study came from the process of coding and categorizing data. The codification of data began by importing the transcribed focus group discussion in Microsoft Word document into a qualitative analysis software (Nvivo) for coding and analysis.

Yin (2017) noted that identifying codes or themes and creating categories and keeping track of the frequency of different statements that are similar can assist the researcher in the data analysis. The variety of codes that emerged from the data were grouped into categories. A category can be defined as a data storage unit, that is, a category hosts a series of codes that share similar characteristics. Just as the researcher assigned codes to the ideas of the participants, in the same way he also named the categories. The name given to a category had to synthesize its content, that is, the name

had to be sufficiently representative of the codes contained within. The category given name had to be amply and plentifully significant to represent the group of codes that were hosted in it.

The focus group recording was broken into five videos: each video represented a segment of the full discussion. Video 1 was introduction of participants, Video 2 was reading of rules and giving a background to the research, Video 3 and 4 were where the actual discussions were done, this included asking questions under each construct and finally closing and thanking participants in Video 5.

Figure 4-6 Codification of Video 3 Figure 4-7 and Figure 4-8 represent the initial codification of the videos using Nvivo.

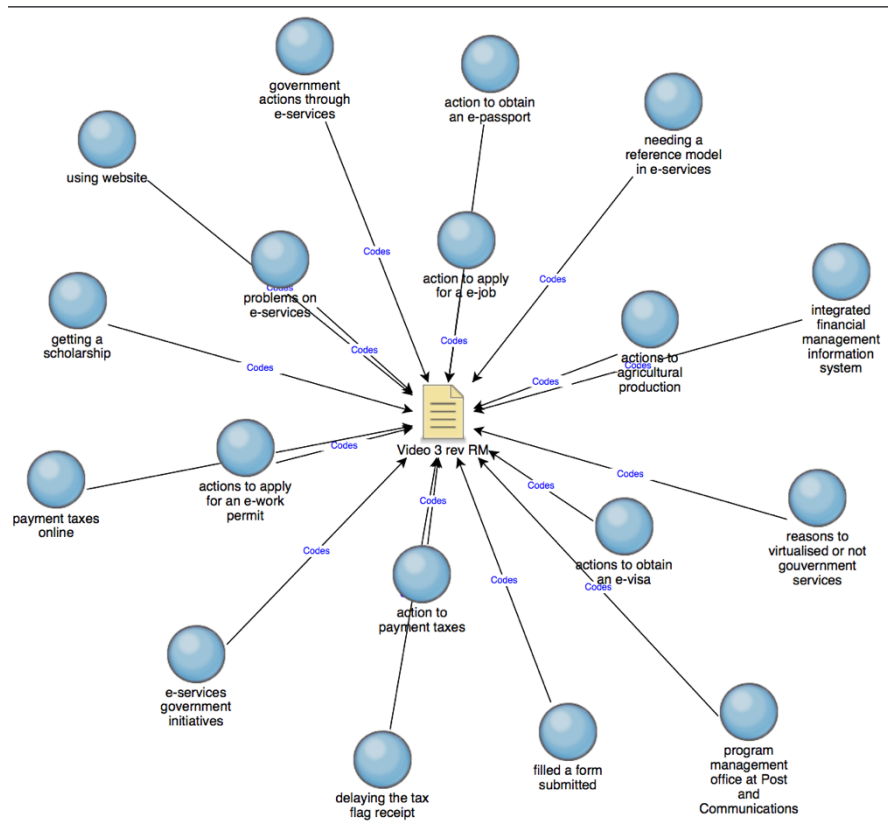


Figure 4-6 Codification of Video 3

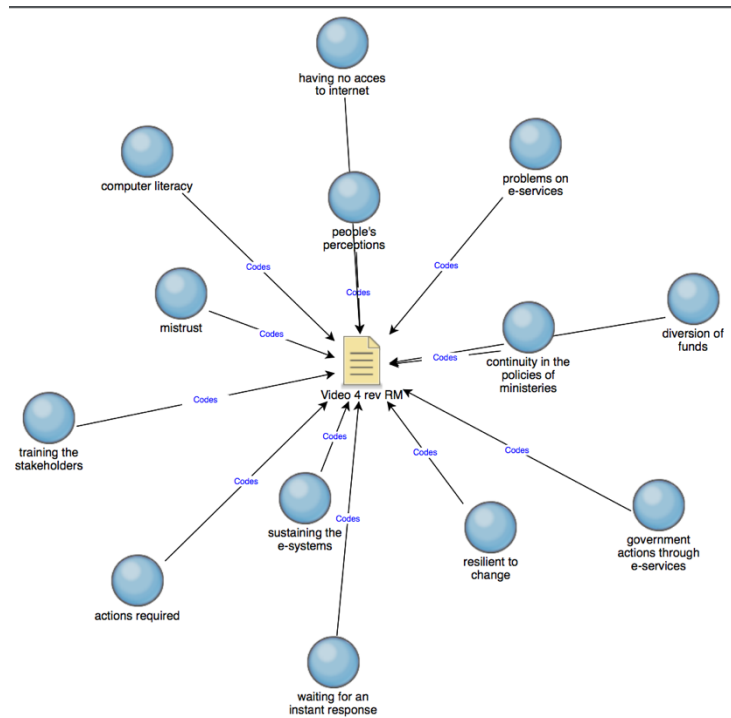


Figure 4-7 Codification of Video 4

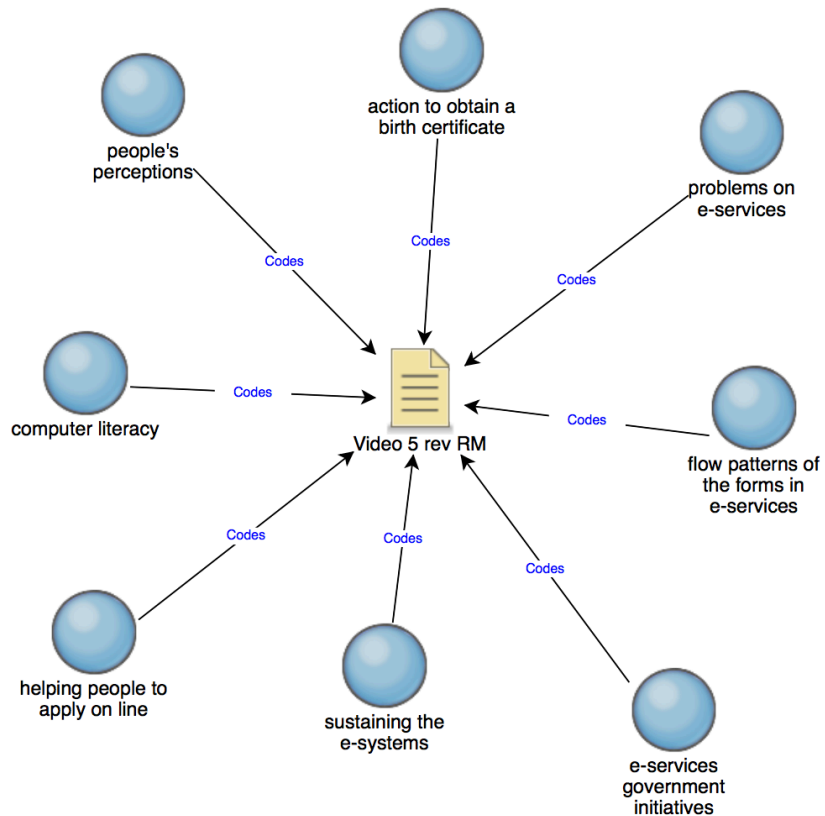


Figure 4-8 Codification of Video 5

#### 4.5.4 Results

The research results are presented using a figure in order to illustrate the category and the codes fostered by it. Then, the category is defined and every code is described on the basis of the participants' interview excerpts.

##### 4.5.4.1 Categories and codes from government employees

In this section, the researcher presents the definition and descriptions of six categories that emerged from the data analysis. In order to gain clarity and understanding, each category is accompanied by a figure that illustrates the codes comprised; therein below the figure, a description of the category is presented along with excerpts of the participants' interviews that endorse such descriptions.

In this sense, the first category is named **Actual Performance of E-Government Services**. This category can be defined by the interviewees' words regarding the different e-services that are already being used and how this process has been developed. *How is the performance of the current e- government services?* This category fostered many codes, for example **applying for e-job, e-passport, e-visa, taxes.**

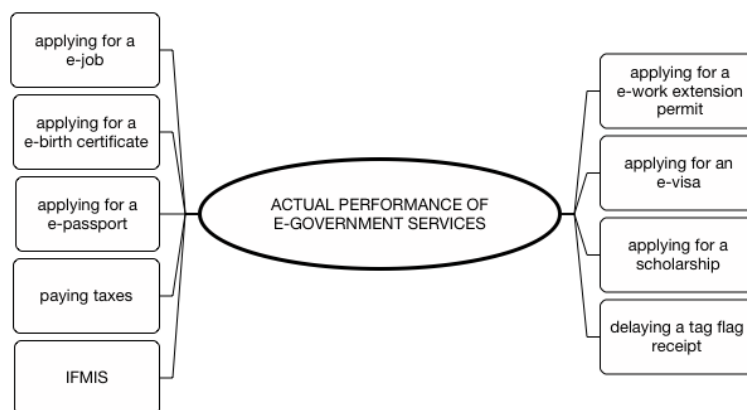


Figure 4-9 Category: Actual Performance of E-Government Services

Indeed, currently the government of Liberia offers many online services. For example, the researcher observed that a passport can be obtained in this way, as mentioned by one participant: *“When my boss wanted a passport, she went online filled a form submitted and printed it out...”* (PT1). Another participant pointed out the facility to apply for a job on-line: *“I think, just like what he said about the vacancy process. People apply for a job, you know, through the emansion (www.emansion.gov.lr) website...This is site which is working in Liberia”* (PT2). Also,



the researcher found that people can submit an online application: “... *are you thinking about getting a scholarship, why can't you, you know, check there? And so on. So, for me that's what I think it's, it's working...*” (PT2).

Likewise, an extension of the visa or work permit may be obtained by using the online government service: And then their labor system as well for foreigners who reside in Liberia they can apply for extension or stay, a work permit, Liberia work permit... *So, they have the forms online. Pretty much you can download the form and then email them then they contact you. They give you some type of notice where you show at the airport ...* (PT4).

In addition, some participants mentioned the progress reached by some Liberian institutions that offer advanced e-services, as pointed out by PT4 when he said: “*So I think the IFMIS (Integrated Financial Management Information System) will rank on top of that and the information system effectively...*” (PT4).

Moreover, an interesting and useful factor is that Liberians can pay their taxes using the webpage offered by the Liberia's government: *Previously when you want to pay your taxes, you will have to use a cheque. But now they introduce the online platform where you can key but you have to put it bank and key. After that it will give you receipt and you scan all those things and send it to the LRA (Liberia Revenue Authority) to the specific email it gave... And once you receive you will authenticate your transaction and later send you a flag receipt to your email. I've tested that so many times* (PT3).

It was observed that Liberian citizens and visitors normally use e-government services. However, the participants also indicated many other aspects of the virtualization process that are not positive, and represents an obstacle to reach the goal of establishing a generalized use of the e-services by the Liberian community. In this sense, the researcher found some issues regarding the payment of taxes, like the receipt not being issued. One participant highlighted an example of this situation:

*... the only problem I was having a problem with that thing was that at times it delays for it to send the flag receipt... So, the three occasions I did it I have to call them that I've not received my flag receipt so they key in...* (PT3).

Another problem that was mentioned by the interviewees were the changes that are being implemented on the forms to be filled online. Indeed, if an institution is going

to modify their application form, they need to be coherent and make the same changes in the equivalent online application. On this issue, one participant agreed in mentioning that:

*One thing we should take into consideration is if some changes are done, they should be known as well, because I think it's the same problem just a few days. I want to do birth certificate. I print out a form in my office, fill it out, attach photos, everything. And then when I submit, when I go there, they say the form had been changed, which of course the old one is still online and still like that. So, I had a new form. I lost... (PT4)*

Finally, some required actions in order to obtain e-services could be challenging for some citizens. For example, the case of getting an e-passport was mentioned by PT8 as being difficult:

*The thing there is there are certain technical aspect of it that you might not understand because if you're doing the, the online, ah, visa stuff, the photo, the photo aspect right, the photo, okay, you have to crop the photo a certain size and all that (PT8).*

Hence, effort is being made by the government of Liberia to virtualize government services. However, they need to confront a great problem: the poor perception that its citizens maintain towards the use of e-services. In this sense, the next category offers a clear description of this problem. The category is named **People's Perceptions about E-Government Services.**

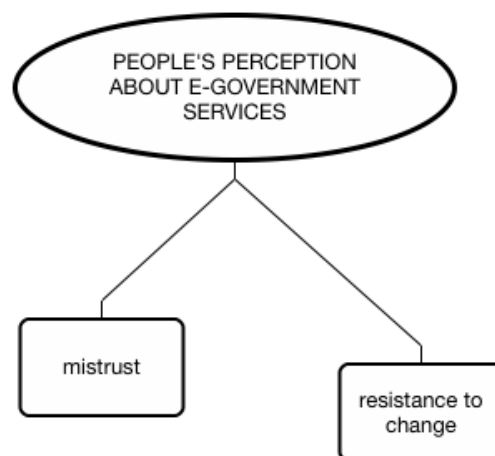


Figure 4-10 Category: People's Perceptions About E-Government Services

This category can be defined by the interviewees' words in regards to the attitudes, behaviors, beliefs and values that the general public maintains against the use of e-services. In this regard, the participants highlight two major characteristics: the **resistance to change** and the **mistrust**. Indeed, the interviewees agree to say that people are reluctant to switch to the use of e-services. Simply, participants are accorded with the idea that people seem to feel more comfortable with the old way requesting government services and that they are reluctant to use computer and the Internet. Certain ideas seem to be self-imposed, like the need to visit an Internet Cafe in order to use e-government services They insist that you should go to said places, because it is there that people know how to fill out the form: *So even if some of the services they're offering now like the passport service and all of that, people will actually go to cafes and then they pay to just fill out this form online...*" (PT5). In this sense, one participant mentioned:

People have a perception that they have to go to certain place to do certain things. *Even the... To fill up the, when you apply for your passport form, a person telling me you have to go to this café to go and fill a form. I was like, why?... And I'm telling you people have got computer, they got Internet, still they feel you have to go to a café to fill a certain form because the people there know how to fill the form* (PT9).

In the same fashion, there was the point raised on people's insistence in following their old habits:

*One key reason is lack of patience. Some people are very impatient when it comes to process. Like just say because you know someone at that place and then you want this thing to be done in a certain time, so you must use that person you know, contact to get it done at the time you want to be done* (PT6).

Thus, the lack of patience, the essential feeling that they have to move to a specific place (e.g. Internet cafe) and the fact that in this location there is a 'trusted person' who will help them, represent some of the reasons why people continue to follow the old schemes and paths to access government services.

Likewise, it was observed that another participant stated that people are resistant to any change: *"You see you are just resilient to change. Sometimes it's because maybe they felt doing too comfortable doing one thing over and over again. They just don't want to change... So, changing that person will be difficult..."* (PT2). Another

example was provided by PT3 when he highlighted: *I ran a parallel system with the service desk implementation at my ministry. I printed out the same form you will otherwise fill online and put it at the front door of IT office. So now they fill the manual form, we use that to fill online system. But also, people just don't like to use the online system...The reason is people are resistant to change* (PT3).

Thus, there is the argument that people are clinging to the way of 'doing things'. However, the researcher appreciated the words of another interviewee, who mentioned the caution that people claim about the privacy and confidentiality of their transactions. For example, PT2 stated: *“I had an experience at a government organisation, where the head of training and research. We said: okay, can we migrate your email to corporate one. He said people will spy on him...”* (PT2). Also, another interviewee mentioned:

*So, people resist change. You have all these facilities even if you tell... Like, what you say, not many people are using the email, that is official. And even you tell if you have official communication, use the official email. You want to use private something, do it. They say, no, probably people are going to spy on you... That mentality is just difficult. How... I don't care how you say it, some of them will not use it...* (PT1).

Another case of resistance to change can be observed from the statement of PT2, when he said:

*And that's what I see in government agencies, because people come to work, they bring their own equipment, and that's why I see most government agencies. You buy a computer for a minister, he takes it as a personal computer. He doesn't want to put that computer on the domain* (PT2).

Also, the researcher observed resistance when the interviewees mentioned that they tried to work with other government agencies in order to collect information for the e-government portal. The general response was really interesting from the point of view of what people were able to imagine when they were thinking about online services. The statement of PT5 is especially presented to illustrate this type of response:

*We said want a few to collect the information, the revenue streams, and place on the web portal. We met with resistance . People... We're trying to take their jobs from them. Then we went to, uh, Liberian business registry, those guys never talked to us*

(PT5). *We're trying to take their jobs, went to LEC (Liberia Electricity Corporation), the same thing... A lot of places we went* (PT5).

However, this resistance to change is also accompanied by a fear, an inconsistent thought that through online services your personal information and other details can be traced. An example is given by PT9 when he said: *"People still come with hard copies... Let me say, the issue is about exposure, people don't want to be traced... People... The hard copy can be destroyed, isn't it? You know, we, are online, you can... Somebody can trace them..."* (PT9).

In this sense, the lack of confidence is present in the people and some interviewees affirmed that there is a need to create a national policy, as observed from this excerpt:

*Everyone will do their own thing, because the first thing we need is a national policy, people see these things as a way of checking up on them, so they don't want to use this system. They see the transparent system as one that will make them accountable so they do not want to use it* (PT4).

Finally, the resistance to change was fortified by the reduced ability demonstrated by citizens when they tried to use online services. As mentioned by PT5:

*I got to spend a lot of time with it because business process is a very complicated form. You may see it as being easy but... Okay I'll tell you why it's complicated simple. You even have to fill the form within a certain time slot. If not, it expires. Okay. So that's one thing I will tell you many people ordinarily they wouldn't know. So that would be something that inconveniences them, you know* (PT5).

The researcher argues that this characteristic of 'quick actions' typical of many online services play a role by influencing the peoples' ideas and acceptance of e-services.

Hence, the poor perception of people regarding government e-services claims for some action to be taken, i.e. educational information about the digital world and the advantages it can offer. In this sense, the next category is named **Literacy** and will explain what were the interviewees' ideas in regards to the need to have a good level of computer literacy.

The next category is called **Literacy** and it is composed by two codes: **training** and **computer literacy**.

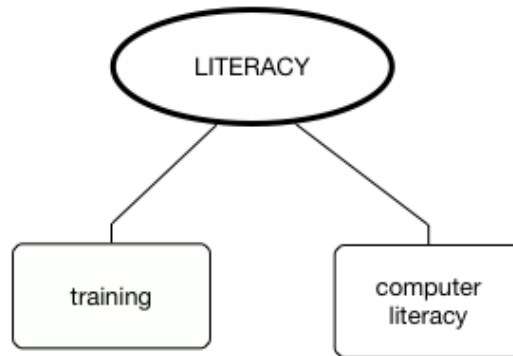


Figure 4-11 Category: Literacy

This category can be defined by the interviewees' words concerning the urgent necessity to educate the people as well as government employees in computer skills and Internet rudiments. The interviewees specifically mentioned it: *“So regarding the services, there might be issue around basic computer literacy...”* (PT5).

Indeed, first of all, from the interviewees' words it was observed that an important aspect to be considered is the absence of Internet service in some areas outside of Monrovia, the country's capital. In this way, the researcher retained the words of PT8:

*So, uh, people out of Monrovia, the capital area, they may not necessarily be able to access any online service. So, it may not be computer-based... maybe it might be something like SMS... So, when these people go to a particular government agency, there's likely somebody will be there to provide some kind of help* (PT8).

The discussion about the facilities to access Internet services led the participants to point out another issue: the absence of an adequate computer educational system, which would be able to provide the adequate knowledge for people to become computer literate. In this regard, some interviewees mentioned:

*The education is what is lacking... Yes, the education, because most people what website they used, though they web is on the, is on the tracking number, but yet still they're not educated on using it. So, they will have to come back to the you know, to keep track on their mail how far they have gone, why they have not reached and what have you* (PT8).

From the following words of PT8, the researcher understood the necessity for a better development of IT services, as well as the inclusion of IT education throughout the educational system in Liberia. This participant argued that Liberian institutions dedicated to the teaching of Internet are at its beginning:

*And also, literacy in a broader sense for... IT, so something like accessing the Internet... We'd really have to do deal with the whole academic side of computer literacy across our... Our institutions. I mean, it's still emerging... you just have your universities providing full degree programs, IT, this was not existent some few years ago... And then in the high schools, we expect that people will come with a very basic knowledge accessing a computer. So, those type of skills maybe lacking in might contribute to... (PT8).*

Another interviewee also commented:

*...there are problems from all the way to from secondary education. I don't know how many people in the room even have any kind of introductory computer. And this not high-level computer. I mean just basic computer literacy. I'm not sure many people will say that in high school they had access to, ah, any computer or something like that. I would definitely say that is something that is changing... (PT5).*

The researcher observed that all interviewees agreed to say that computer and Internet literacy is at its beginnings and they also pointed out that the level of literacy is not as high as it should be in order to assure a well-balanced behavior from its citizens. In this regard, a participant underlined: *“For me, from the question of the online discussion, I just see it as a way of education, you know, Yeah, educating the proper representative...”* (PT11). However, the reality is that there are educated people that are not computer and Internet literate. In this sense, participants mentioned that:

*People can be educated but not educated to using the Internet. There are people that are educated to using the Internet, and other people they're educated but they're not Internet literate. So that's the distinction there. So, people that are not Internet literate will come back to the post office to track (PT8).*

This seems to be a common characteristic, given that without computer and Internet literacy, people cannot use the e-government services. Instead, they must go to the physical institution in order to be helped, as was mentioned by PT8: *“...some*

*services especially like the mailing process, okay, people that are not educated won't be able to track their mail. They will have to come back to the post office...*" (PT8).

Another participant also highlighted:

*So, regarding the services, there might be issue around basic computer literacy. So even if some of the services they're offering now like the passport service and all of that, people will actually go to cafes and then they pay to just, just fill out this form online* (PT5).

Despite the lack of access to the Internet or its illiteracy, participants also signaled other reasons why it is difficult for people to use the e-government services: *"I can tell you why. I can comment on why Because... I got to spend a lot of time with it because business process is a very complicated form. You may see it as being easy but..."* (PT5). It seems that additionally to the reasons already mentioned, the intrinsic issues of the e-services have to be considered, like for example, the reduced time allowed to write or fill some forms online.

Likewise, interviewees also commented that computer illiteracy is changing and, at the current moment, Liberia is increasing its possibilities to have computers and Internet literate citizens. As such, these educated citizens would be able to use the e-government services without requiring the assistance of others: *"... that is changing I mean... we have... two or three universities offering IT degrees... I know some high schools we actually have literacy program now... So that is something... that is a work in progress and is changing..."* (PT5). A way of changing is the citizen's common use of mobile phones, as was mentioned by some participants: *"And I've seen that, especially with a lot of young girls in Ghana... Because a lot of people actually start learning computer from the phone* (PT8). Another interviewee also completed the idea by saying: *"There's a change in pattern"* (PT5). Certainly, there is a change in the manner in which many young people are 'learning' how to deal with the new technology. Youth is evolving in their technological knowledge as a way to incorporate themselves and keep-up with new advances. In this sense, a participant also said: *"Yeah, yeah, I've seen that a lot... No, they can't. And the apps, they're brilliant at the apps. They know everything. Everything..."* (PT8).

Finally, the participant PT5 summarized the discussion about literacy when he said:



... in our own Liberian context regarding some of the services it will come down to, ah, both literacy and access. So, somebody may be literate but they may not have access. That's one thing. And we can have more access, but for some services it's just very difficult. So, you need access, and also nobody knows about how you can actually connect. I mean of course something like that require a little bit of IT understanding (PT5).

Thus, it can be concluded that computer and Internet literacy is an issue that needs to be addressed immediately. However, at the moment, e-government services are facing some specific issues that also need to be considered. This will be the treated in the next category.

The next category is named **Actions Required for a Better Performance of E-Government Services**. Figure 4-12 illustrates the category.

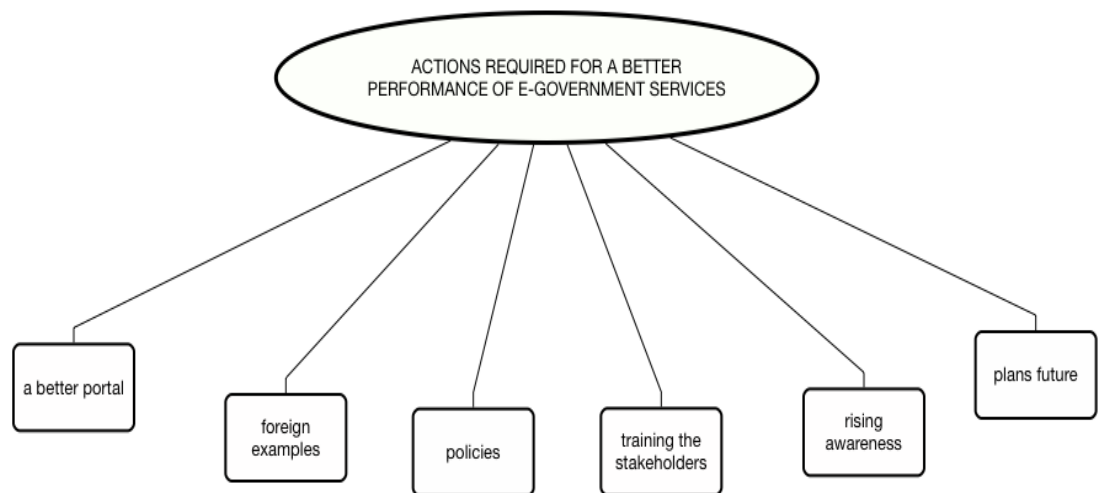


Figure 4-12 Category: Actions required for a Better Performance of E-Government Services

This category can be defined by the interviewees' words in reference to the immediate actions that are required to enhance or improve the current e-government services. Indeed, the code **'a better portal'** concerns the expressed necessity to maintain a good-running and well-performing of the e-government website. As expressed by PT5 when he said: *"You need a better portal, definitely, oh man, you can't be punished that, or... Whatsoever"* (PT5). Also, another participant mentioned:

*One of the reasons are, because the systems, all they are... They have tried, most of them will only work for maybe one year... Short time. So, people, they are adjusted to the system and then one day they wake up and the service is down* (PT2).

Along with the need of a better portal, the code named **'foreign example'** arises in reference to the wish to take examples from other countries. In this sense, the words of PT5 are interesting for the analysis, because he summarized the purposes treated by the group when talking about their own system and how it can be improved.

*There should be a study tour of other countries to understand how e-government has worked... Then they will know the importance of, you know, all of these things (PT5).*

Following this necessity, the researcher also found the requirement for **new policies** around the e-government services. Indeed, many of the participants mentioned that new policies would be needed, as pointed out PT4: *"Policies, have to be implemented by our bosses. Insisting that this thing should be done in this way in the various Ministries and Agencies"* (PT4). However, the **training of stakeholders** was declared as being an issue, as mentioned by PT2: *"The next point is getting technology driven bosses. The knowledge of politicians in ICT and so on..."* (PT2). Indeed, it seems that supervisors do not have enough knowledge to understand the importance of the e-services offered by the government. Many participants agreed to say:

*Yeah, I think one key thing with that thing... How we succeed there. The stakeholders, like our bosses, they need to be trained for to these things... Here. So, lack of training, you know, is affecting the resources of the program... So, if they are trained in all of these things, call them to a training... Then, they understand the working of this e-government thing, I think we move forward (PT5).*

The same participant completed his idea by saying: *"... the main reason why these guys need to be trained because once they are trained with these things, definitely, you can use up that money internally for some other things"* (PT5).

Nevertheless, along with the training, participants also stated the need of **rising the stakeholders' awareness** in regards to the importance of having an excellent computer and Internet level of knowledge as it was highlighted by many participants:

*So, if we can call all of these stakeholders together... And then create the awareness... Let them know the importance of these things. That's the only way we can succeed. Because, one they don't know the importance of. e-services or benefits. You know, or the benefits which they accrue at the end of the day, definitely, we meet with the least resistance from the MACS (PT5).*

However, not only the community rejects the use of online services, but the chiefs of departments also have exhibited the same behavior. In this sense, a participant specifically mentioned the limited knowledge that the heads of departments can have in the different ministries:

*And people who are at that level you expect to be level-headed, you know what I mean, not just this... Are resisting to even go online. Even if you post something on your website, for them to even read it. Think about those who are outside of Monrovia, you know, this Monrovia area, you know, if you're talking about e-governance where you expect superintendents that maybe are on that side to read information online...(PT1).*

Also, another participant mentioned to this issue:

*... we work for a very long time, doing a lot of manual processes. So, some of the information, we have gotten feedback from some of the government agency is that even you have email systems for example for government and some people still will refuse to use that. For a number of different reasons, they will refuse to do that (PT6).*

There is a wrong perception about the digital world and e-government services present in society and unfortunately, in those individuals working in key government positions. A management change needs to be developed and implemented, even if participants mentioned that some initiatives have been taken in this sense:

*So, from Post Authority experience I know that... there were some services... And there were network services that were deployed, for example we created a file server, and I understood that people didn't even want to save that data, on such a platform for security reasons in there. So, I will see that entire aspect which has to do with change management is something that we're having (PT6).*

Finally, the participants commented about the **new plans** they have in mind in order to improve and develop the e-government services. As mentioned by some participants, there are plans to: “Digitizing our land tendencies where they can go online. Like land authority you can go online and just check a particular (PT14). Other participants also mentioned: “Actually, you know, we do some few processes and like for get permits on food all over the counties” (PT12) or “We’re trying to help the e-forestry in the running...” (PT6); also, another interviewee indicated: “We’re trying to integrate the school licensing, to get the school licensing to be online” (PT3).

Likewise, another participant pointed out the new project concerning the delivery of mail in the country. In this sense, he specified the following:

*... for the ministry, one of our business processes actually to deliver mail across the country. So, we have, ah, an international tracking platform, so when a mail leaves Liberia you can actually track it. The ministry has had challenges actually delivering mail across outside of Liberia... part of the reform, whatever system, we're trying to attach with an online tracking system in the same context as the ministry starts delivering mail across most of Liberia... I mean Monrovia. So, we'll be considering a system around that... (PT5).*

Despite the actions that are immediately required in the e-government services in Liberia, the participants also highlighted the obstacles they observed in the performance of these services, as we will display in the next category named **Impediments for the Performance of E-Government Services**. This category is illustrated by Figure 4-13.

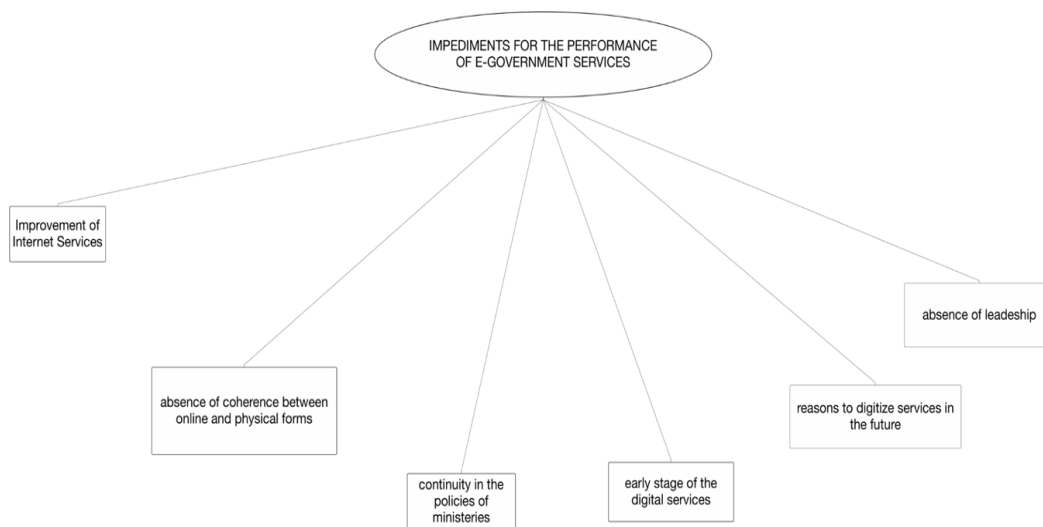


Figure 4-13 Category: Impediments for the Performance of E-Government Services

This category can be defined by the interviewees' words regarding the different difficulties and issues mentioned about the suitable performance of the e-government service system. Indeed, the first issue that participants highlighted was the necessity to **improve the Internet service** throughout the country. As PT8 mentioned: *"Sometimes people do not have access to Internet, you open up an application for both online and manual, you have 1000 people bringing physical forms but just a few applying online"* (PT8). A generalized lack of Internet services was mentioned before as an issue in regards to the people's perception about e-government services.

However, the participants insisted in pointing out that the lack of Internet services is one of the current problems confronted in Liberia.

Another issue was the **absence of coherence between the online forms** and new **physical** ones. As specified by PT8: *“The forms online are outdated, so you have citizens going to the ministry after completing a form online and are told to fill another one because the one online is old”* (PT8). Certainly, as it was mentioned before, this type of deficiency does not help to improve the public perception about the digital services offered by the government. In this regard, PT2 mentioned:

*Why I think people don't trust the online service is like because you got one form for online and you got another one physical. So, you download the one for online, you fill it up, just to go and see something different. So, you tend to wonder, am I getting the actual information for online* (PT2).

Also, another participant pointed out:

*One thing we should take into consideration is if some changes are done, they should be known as well, because I think it's the same problem just a few days. I want to do birth certificate. I print out a form in my office, fill it out, attach photos, everything. And then when I submit, when I go there, they say the form had been changed, which of course the old one is still online and still like that. So, I had a new form* (PT4).

These types of issues affect both the suitable performance of these services and the public perception about them. Likewise, other issue is related to the **continuity in the policies** followed by the ministries. Indeed, some participants mentioned the absence of consistence and congruence between the policies applied by one minister and those implemented by his successor. In this regard, an interviewee highlighted: *“Continuity is also a problem causing problems. One example is the Ministry of (name withheld), a new minister came and discontinued all the progress made in 2015”* (PT6).

Additionally, there is a statement concerning the fact that **digital services** are in an **early stage**, but with potential for further development. As was mentioned by PT6 when he said:

*So, ah, I mean from our end fundamentally I would, I would want to believe that the, the concept of e-governance is still in the early stages in Liberia... And then*

*technology, technology is still picking up in Liberia... Even though we have had some progress at a couple of government agencies, but... we are still at the early stages (PT6).*

A final question was posed to the interviewees asking about the **reasons** why some government services are **digitized** and others are not. Some interesting responses arose offering different reasons to explain this situation. For example, **the absence of leadership** represents a serious impediment that needs to be solved if, the Government of Liberia want to extend the virtualization of its services. The commentaries of PT6 are especially illustrative of this:

*So, in terms of governance that leadership has been lacking across government... So, the Ministry of (name withheld) where I come from, maybe may not have provided that type of leadership to coordinate, ICT programs across government. I see that as being one of the impediments... I mean even minimum service across government, that leadership, was lacking and, those are some of the work we're doing right now... (PT6).*

Another example shows us that some participants agreed on the fact that there is an inordinate quantity of people using these types of services:

*I think because they started, the point to give that the person started newly so like the resource person needed they weren't enough to be able to manage the volume of transactions... Because they at least expected that people. And the volume of people who started pay through that medium was large than they expected. They were expecting maybe to be a low patronage, but it beat their imagination that most people started applying through that (PT3).*

Also, another participant said that the **absence of leadership** was the cause of the partial virtualization of services. We take, for example, the assertion of PT6 when he mentioned:

*So pretty much the, the, the knowledge that should be provided even for automating the different services... I mean even minimum service across government, that leadership, was lacking... Financing would be the other side of that. So, if I'm ranking them, I would tell you the government leadership aspect has been lacking (PT6).*

Also, the statement of PT1 was interesting and helpful to understand the deficiency of leadership:

*Because that gives you the drive to measure that even those who are, the under ones, those in lower ranks, can be forced to do those things. But we discouraged to do certain things, but you cannot implement those things if the top management does not really give you the things to push... I hear a lot of leadership issues... (PT1)*

According to these statements, it seems that the absence of leadership in regards to the digitalization process was a reason to justify that some services are digitized while others are not.

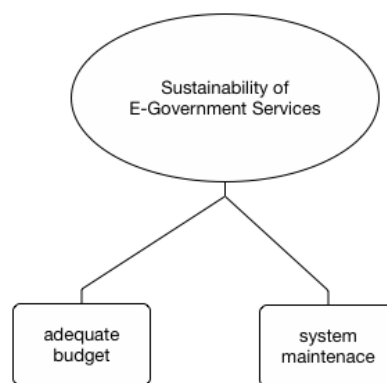


Figure 4-14 Category: Sustainability of E-Government Services

Another impediment that was widely commented by the interviewees was the **sustainability of the e-government services**. Sustainability refers to the capacity to support the online services by giving them the adequate maintenance:

*...So, at the end of the day, you install the most robust system, mostly you don't have the support and budget to maintain the systems. So, you can have 10 e-government services running but the major thing should be how to sustain the system... So, I think that is a very important aspect of this because, after all, hmm, if you bring all these and there is no budget. It's useless (PT4).*

Another example of the same impediment was also provided by PT6:

*... the battery banks that the USAID GEMS project installed, they are down, the reason because the ministry could not sustain. For every e-service implementation we need to ask the question if there is a way of sustaining the system... The government don't have a budget to maintain these... At the end of the day, the government pushes*

*it aside because they can't sustain them. Trust me, if, if IFMIS is no more supported by the World Bank, it will go down (PT6).*

Hence, in order to guarantee the performance of the e-government services already offered, it is necessary to have the **adequate budget** and invest these resources to assure the maintenance of these services. In this way, the budget will be expended in e-service maintenance and it will not have to be returned to the government at the end of the fiscal year, as said some participants:

*... at the end of the day, some ministry agencies take money allocated for IT for other things... they will take it back, because then, at the end of the budget year, if you can't spend or budget, you must take your money back to government (PT5).*

In the same fashion, the researcher observed that an inadequate maintenance carries out unwanted consequences. Indeed, when participants were discussing this aspect, they agreed to point out that the **maintenance of systems** is an important issue to be attended. In this regard, they mentioned, for example: *"It went down for almost six months... They went down for almost, almost two years"* (PT2). Another interviewee completed this idea by saying: *"Okay. So that was, that was maintenance issue"* (PT5). To this answer, the first participant responded:

*It was, I think they, they even changed their website and all... The system went down... The whole website, everything... They didn't pay the people. They shut the website down. They went back, they went to a different hosting service. They had to redo the website over (PT2).*

The final aspect of this discussion provides an interesting conclusion, as it was mentioned by PT7:

*We need to have sustainability of all these systems and craft a national policy... Where when a minister leaves, a new minister comes... A new minister comes; you are not allowed to just do away with what you previous has done... You have to look at it, if it's in the national interest, it must not be modified... but if it's not in national interest, you can modify, or you can change it. So, I think policy needs to be effected... (PT7).*

The researcher has presented the six categories that emerged from the data analysis. Then, due to the nature and definition of each category, they have been grouped into three themes discussed in the next section.



#### 4.6 FINDINGS AND DISCUSSION (DEVELOPING THEMES)

In this section, the main themes revealed in the data analysis are discussed. There are three themes that explain the process of digitalization of the Government of Liberia. The researcher argues that digitalization can be conceived as a process, because the researcher could identify the progression as well as the different obstacles currently confronted when trying to increase the quality of this type of services. Finally, a possible solution is offered in order to improve the government's digital services as a whole in Liberia.

The first theme is named: **Current Situation of the E-Government Services in Liberia**. This theme was confirmed by the category Actual Performance of the E-Government Services that we explained before. Figure 4-15 illustrates **Theme #1**.

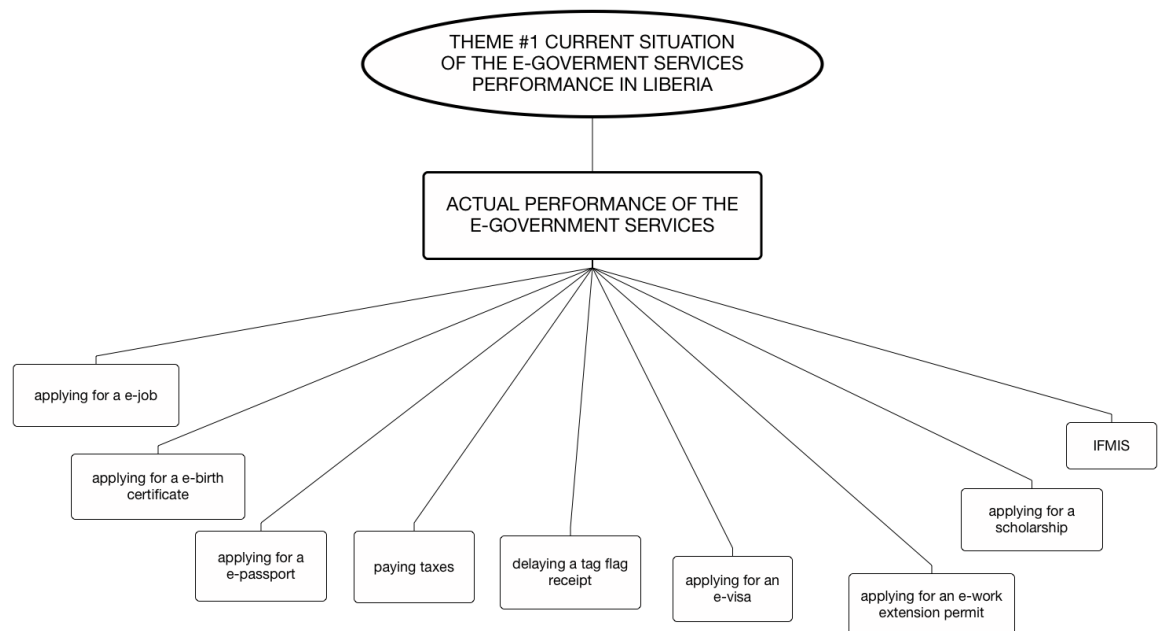


Figure 4-15 Theme #1: Current Situation of the e-Government Services Performance in Liberia

**Theme #1** concerns the e-government services that are currently in place in Liberia. Indeed, the researcher argues that the Government of Liberia has displayed a great effort in order to digitize many of the services that it offers. The variety of digital services is extensive ranging from birth certificates to the extension of visas and work permits. In this way, the rapidity and effectiveness of the government services have been improved. Also, the researcher observed a lightening on the citizen efforts required to achieve this type of services.

The researcher expected that the digitalization process in Liberia would be well received by its citizens given the consequent easing of the effort; however, this is not the case. Indeed, it was observed that there are several types of problems, some of which seem to have an easy solution. Nonetheless, the existence of other difficulties that merit an in-depth action from authorities have been confirmed; some of these actions seek to correct inefficiencies that contaminate the vision of the citizens. Indeed, we confirm that citizens far from feeling enthusiastic about obtaining these services online have had a poor perception in relation to the use of digital services; the reasons exposed are related to the mistrust that people hold towards the use of computers and other digital mechanisms, as they frequently think that of these as tools the government uses to spy on their lives. Therefore, citizens retreat and cling to their old habits, i.e. they prefer to follow the old way of obtaining these types of services. The obstacles are discussed in the next theme.

The second theme (**Theme #2**) was named **Obstacles Currently Confronted on E-Government Services in Liberia**. Theme #2 involves the minor and major problems confirmed in the data analysis as well as the poor perception demonstrated by citizens. This theme was confirmed by four categories: **Actions Required for a Better Performance of E-Government Services**, **People's Perception About E-Government Services** and **Impediments for the Performance of E-Government Services** and **Sustainability of E-Government Services**. Figure 4-16 illustrates **Theme #2**.

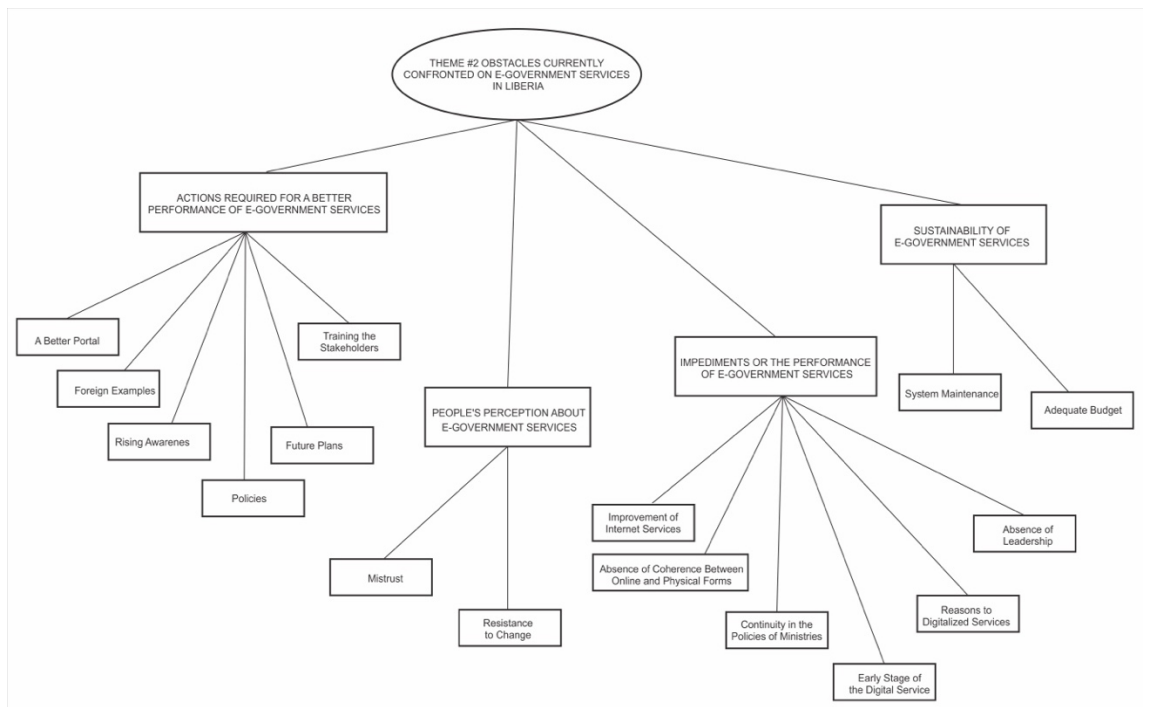


Figure 4-16 Obstacles Currently Confronted on the E-Government Services in Liberia

In order to achieve a better comprehension of the difficulties confronted by the e-government services in Liberia, the researcher divided the theme in three parts, as illustrated by Figure 4-16. Indeed, the theme showed that there are some minor issues that can be immediately addressed to improve the performance of the e-government services. However, the researcher also confirmed the existence of two major difficulties that will need more than an action in order to be redressed and achieve the expected performance on digital services.

Some of the minor inconveniences detected included the need for a better portal and the necessity to create national policies in regards to digital services, their use, and commitment. Plans are in place in order to guarantee the future of digitalized services and foreign examples are reclaimed as a way to learn from digital practices outside of the country. However, an aspect that involves great importance is given by the concern of training the stakeholders on the basics of Internet and virtual services. Indeed, according to this issue, it seems that even the stakeholders do not possess the knowledge to ponder and assess the importance of digital services in modern life. If stakeholders do not possess the necessary knowledge to evaluate the importance of digital services, much less can be expected from the information and comprehension that ordinary citizens can have. Another aspect that is also important for the researcher concerns the manifested necessity to raise the awareness regarding the importance of

having a minimal virtual education. It was argued that it is essential for the Government of Liberia to engage in a wide-range campaign of information that would seek to reach both the stakeholders and other officers of the government and the general public.

In this fashion, and given the absence of leadership, it was confirmed to contribute towards a serious lack of sustainability in the digital services; the researcher argued that it plays the most important role in the complex process of improving and extending the e-government services in Liberia.

It was also argued that the absence of sustainability betrays the commitment given by the Government of Liberia to maintain the online services that are already in place, as well as extending these types of services to other components of the government that deserve to be digitized. Therefore, it is absolutely necessary to allocate monetary resources that guarantee the sustainability of digital systems that are already in operation, keeping in mind that any future virtual service is likely to need its own financial funds.

Finally, the researcher observes that inconsistencies usually occur between physical and virtual forms that need to be filled in order to access most governmental services in Liberia. This situation does not encourage development of the trust and confidence that users of such services should develop. Indeed, virtual services do not provide well-balanced performance and we can argue that this situation enhances the poor perception that citizens hold regarding these services. For example, repeatedly, citizens find that the fulfilment of forms becomes difficult because new forms or procedures are implemented without updating them digitally. Consequently, the people fill out the digital version of an outdated form and follow the overused procedure, but when they want to submit their requests, these are rejected. Therefore, rather than accepting these services, citizens prefer to refuse them and they privilege the use of traditional ways to access government services.

It is important to keep in mind the aforementioned issues and difficulties, because they undoubtedly affect and impoverish the public's perceptions about digital services. Public perceptions refer to both common citizens and stakeholders and officers that work in the government, because mistrust was demonstrated by the majority of people that were asked to use any online service. In this regard, the public perceptions against digital services in Liberia qualify as being mistrusted and resistant

to change. It was observed that a great distrust is quickly installed in the people spirit and seizes the users of the digital service, given that they have the conviction that in this manner the government will spy on their lives and possessions.

In this sense, the research argues that the absence of an adequate Internet access and computer literacy among the people contributes to maintaining this type of perceptions. Therefore, the recommendation seeks to offer to the citizens a wide crusade in order to ‘educate’ them about the actual functioning of digital services and the advantages that these services offer them. The theme #3 **Proposed Solutions to Improve the E-Government Services in Liberia** implies a discussion about public literacy and education and will be developed in the next paragraphs. Figure 4-17 illustrates this theme.

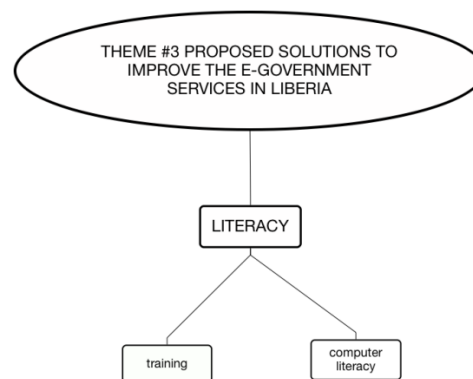


Figure 4-17 Theme #3: Proposed Solutions to Improve the E-Government Services in Liberia

The problem of the limited knowledge regarding computer and Internet rudiments that was manifested among the citizens of Liberia must be addressed from different perspectives. Indeed, one perspective consists in developing education at an early age, even in elementary school. It was proposed that this type of knowledge needs to be taught as part of the initial education of children in Liberia.

It is also known that some efforts are being made at the High School or secondary level; however, it is necessary to develop a curriculum in which the subjects and contents related to Internet and computers are included. Similarly, it was confirmed that the Liberian youth uses digital services with more confidence than their seniors, given that they are already familiar with cellular phones.

## **4.7 SUMMARY OF CHAPTER FOUR**

In this chapter, quantitative and qualitative data drawn from survey and focus group session were presented. The first part of the Chapter highlighted some demographic information including participants experience at their MACs, their level of education, and eservices they support. The subsequent section presented analysis of survey results. This was followed by analysis of focus group session to validate and confirm the findings from the survey.

The findings from the analysis of the focus group discussion revealed that PVT and EPVT theory can provide some of the elements for virtualization but it does not cover all the factors that influence successful virtualization of processes in Liberia's e-government services. The GOL IT practitioners were not entirely satisfied with the already existing PVT and EPVT framework, there is the need for an extended framework that includes constructs to help understand environment and context.

The next chapter presents an explanation of the design and development of the EEPVT artefact. This is informed by the design science research process that was discussed in Chapter Three.

# Chapter 5: Artefact Design, Development, Evaluation and Results

---

## 5.1 CHAPTER INTRODUCTION

Chapter 3 discussed and justified the research design and method. Based on the analysis of survey and focus group discussion in Chapter 4, where the GOL IT practitioners gave their views on e-government implementation in Liberia. This chapter outlines the design, development and evaluation of the framework that was developed as a proof of concept artefact that serves to assist IT practitioners in Liberia to select suitable government processes to virtualize. The process to design and develops the framework followed a Design Science Research approach. This chapter provides details of how the framework was designed and instantiated.

At the end of this chapter the framework is presented to assist GOL IT practitioners in selecting suitable government processes or services to virtualize based on characteristics of the process.

The following sections explain the process used to develop the framework. As mentioned in Chapter 3, the design process comprised three stages. The first stage is understanding/analysis of e-government failures in West Africa. The second stage is to design and develop a framework based on analysis of quantitative and qualitative studies. The final stage is the evaluation of the framework which includes testing by an expert panel consisting of five GOL senior IT practitioners and finally, communication to the GOL CIO Council. The GOL CIO Council consists of all the IT heads of the MACs of Liberia. They meet at least twice every quarter to discuss e-initiatives and activities in the GOL ICT space. Figure 5-1 illustrates an overview of Chapter 5.

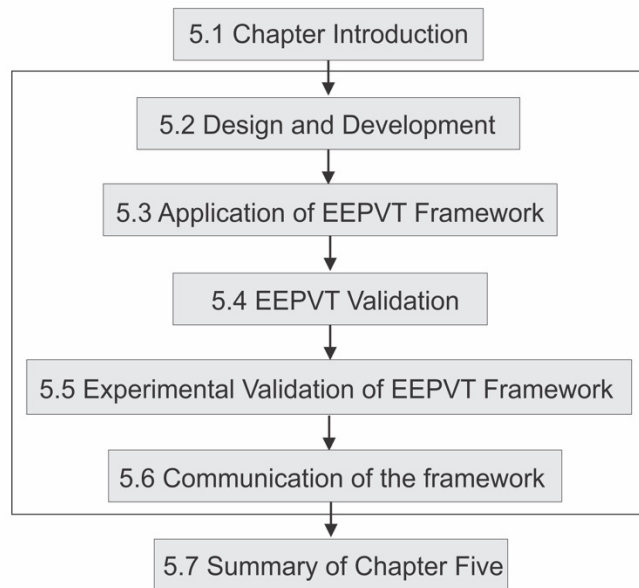


Figure 5-1 Overview of Chapter 5

## 5.2 DESIGN AND DEVELOPMENT

The objective and goal of the framework under development are guided by the results of the findings from the survey and focus group discussions in Chapter 4. This identified a gap in e-government implementation in Liberia in the selection of suitable government processes or services to virtualize. The focus group discussion further provided understandings of the research problem, for which a utility framework could be useful. This section explains the basic design of the decision framework.

The EEPVT framework referred to as the e-Government Extended Process Virtualization Theory (EEPVT) consists of two dimensions: The Technology Dimension and Authorizing Dimension. It is an extension of the PVT model created by Overby (2008) and extended as EVPT by Barth and Veit (2011).

The information systems design research (ISDR) approach as proposed by Peffers et al. (2007) is used as the foundation to develop the framework. It is intended that the proposed framework will improve the success of e-government implementation in Liberia by helping the MACs IT practitioners easily select viable e-initiatives for reform.



The expectation of the researcher is that if the framework is properly implemented it will ease current problems in the GOL e-Government program where the government has struggled to virtualize most government processes.

The design and development process of the framework were guided by design science research approach as discussed in Chapter three (Section 3.4). Figure 5-2 shows the design research process model methods used.

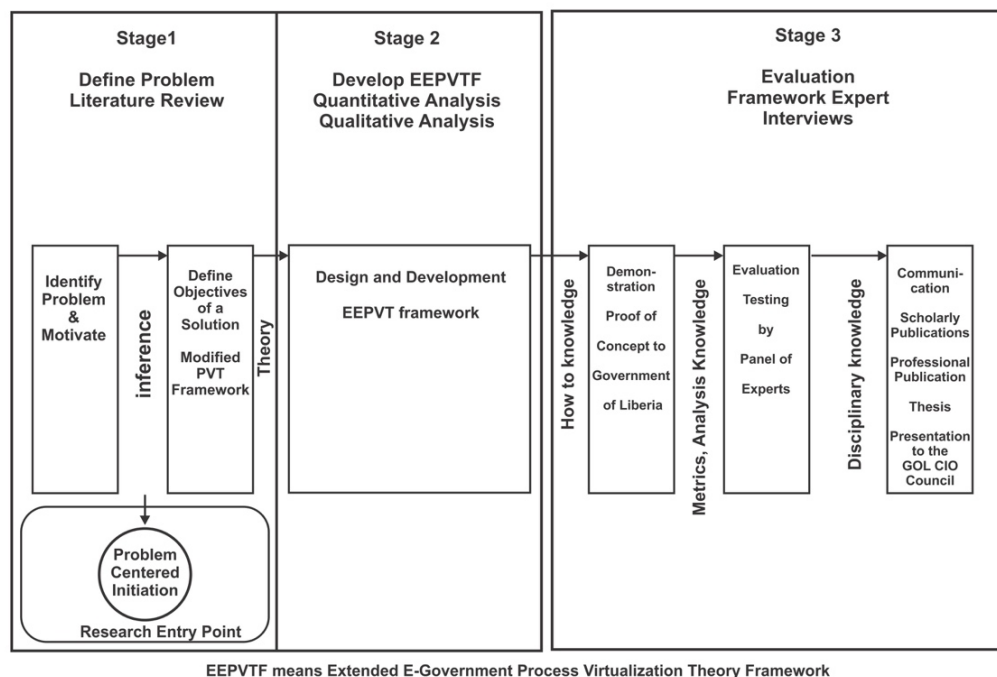


Figure 5-2 Design science research methodology process model (adapted from Peffers et al. (2007))

**Stage 1: Awareness of the problem.** This stage involved an extensive and systematic literature review to define the problem and the need for the framework. Details of the problem identification and motivation can be found in Chapters 1 and 2. The findings revealed that IT practitioners in Sub-Saharan African countries have a major challenge in identifying the most suitable government processes to virtualize. Hence there is need for a tool to help select manual processes that can be virtualized. The suggestion was to apply the PVT framework by Overby (2008) and extended PVT by Barth and Veit (2011). This triggered the need to investigate PVT and EPVT in detail by analysing the constructs through a survey and focus group session with IT practitioners at the GOL MACs.

Stage 2: Initial design. In the literature review, both PVT and extended PVT model by Barth and Veit (2011) were reviewed.

Table 5-1 presents the original PVT (by Overby (2008)) and extended PVT constructs (by Barth and Veit (2011)). EPVT posits that these independent variables affect process characteristics which eventually affects how to prioritize ‘the right’ services for virtualization.

<b>Construct</b>	<b>Source</b>
Sensory Requirements	Overby (2008)
Relationship Requirements	Overby (2008)
Synchronism Requirements	Overby (2008)
Performance Risk	Overby (2008)
Privacy and Security Issue	Overby (2008)
Process Involvement	Barth and Veit (2011)
Need for consultation	Barth and Veit (2011)
Process Complexity	Barth and Veit (2011)
Process Ambiguity	Barth and Veit (2011)

Table 5-1 Extended PVT Constructs

These constructs were extensively analysed through the survey and focus group session. It was discovered that another dimension needed to be introduced to the EPVT framework in order for it to represent the very difficult and complex government environment in sub-Saharan Africa such as Liberia. Most governments in Africa do not lend themselves to the best practice government models shown by more developed and advanced countries in the world.

In order to navigate through this complex situation and identify a change space, the research considered the use of Problem Driven Iterative Adaption (PDIA) developed by Harvard professor Matt Andrews and his colleagues (Andrews, Pritchett & Woolcock 2013). PDIA claims to offer a new approach of undertaking reforms that allows practitioners and policy makers to make institutional reforms differently and with a greater degree of success.

A new dimension, “Authorizing Dimension”, was identified and added to the framework leading to the extension of the existing EPVT framework (EEPVT) to include constructs for the authorizing environment. The proposed framework is illustrated in Figure 5-3.

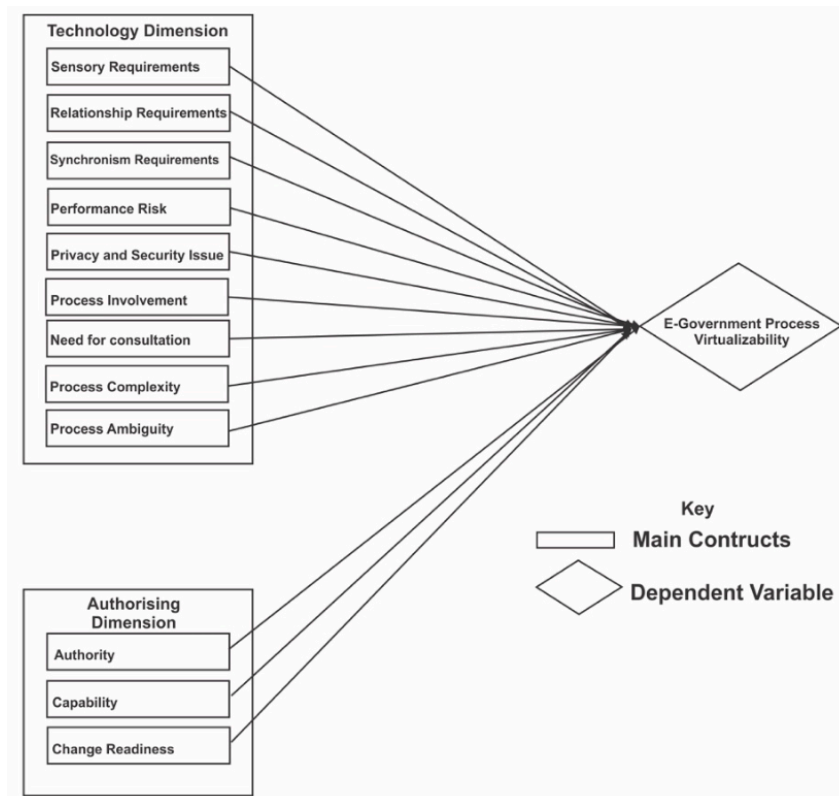


Figure 5-3 Extended e-Government PVT (EEPVT) framework

As shown in Figure 5-3, the constructs are grouped into two main dimensions, the Technology dimension and the Authorizing dimension. A list of questions is compiled to measure the constructs.

**Technology dimension:** This is the first step in the selection of processes to virtualize, this dimension articulates the PVT / EPVT construct needs / objectives that should be supported explicitly by the process characteristics.

Because the process of virtualization involves obtaining the buy-in of all relevant stakeholders, this leads to the need to assess the authorizing environment.

**Authorizing dimension:** This is the creation of an appropriate authorizing environment. The EEPVT Authorizing dimension measures three constructs: Authority, Capability and Change Readiness. EEPVT is specifically designed for SSA countries and therefore leans more towards the importance of defining an authorizing environment.

The process of navigating the local authorizing environment to ensure the e-government initiative is locally led (or authorized) and politically smart (meaning, inter alia, that it has broad support and authorization) was evident from the focus group

sessions. The following independent variables were developed to measure the three “Authorizing Dimension” constructs.

**Authority:** This addresses the level of authority of the person, team or committee in power or influence who is authorizing the change. Understanding and knowing this helps to avoid long bureaucratic processes associated with change. The assumption is that the authorizer sits at the top and decisions are communicated downwards and implemented as ordered. Understanding the environment helps to ensure that ideas flow through the GOL MACs in a manner that is conducive to accomplishing goals and diffusing throughout the MAC.

**Capability:** It involves the determination of the kind of capability required in order to virtualize a process. Capability needs differ depending on context, roles, and responsibilities. An assessment of capability involves detailing the activities required to virtualize a process. To determine the composition of the required capability, questions asked include does the process impact one or more MACs (cross-cutting), the level of common interest in the activity to avoid pitfalls of corruption and the financial resources available to build the capacity. Answering these questions helps to determine the kind of capabilities required for implementation of the government virtual process.

**Change Readiness:** In assessing change readiness of the selected MAC, the current capacities of MAC that ‘owns’ the service to be virtualize is evaluated, and the MACs that will be impacted, their roles/responsibilities, processes, technology, resources required in terms of funds, capacities, and technology, key performance measures for continuation, resistance to change and stakeholder commitment.

### **5.3 APPLICATION OF EEPVT FRAMEWORK**

Based on the EEPVT Framework, a spreadsheet-based tool is created to specify the characteristics of e-government processes to guide the selection of processes to virtualize. The EEPVT framework is operationalized by asking a series of questions with associated pre-determined weights and ordinal scale to evaluate the process to be virtualized. A spreadsheet format is used to operationalize the EEPVT framework. Microsoft Excel® is selected for the spreadsheet because it is available on almost every computer in the MACs and GOL staff are familiar with spreadsheets and the application.

Setting up questions according to the constructs shown in Figure 5-3 enables EEPVT to articulate the “virtualization status” question. The EEPVT spreadsheet consists of three sections: Information, Technology dimension and Authorizing dimension section. Figure 5-4 lists the details required at the Information section.

<b>e-Government Extended PVT Model</b>	
<b>Welcome to the EEPVT Tool</b>	
<b>Name of Service:</b>	
<b>Ministry Agency Commission (MAC):</b>	
<b>Contact Person:</b>	
<b>Phone number of contact person:</b>	
<b>Email address of contact person:</b>	
<b>Briefly describe the proposed e-service (no more than 100 words):</b>	
<b>Why is it needed:</b>	
<b>Date:</b>	

Figure 5-4 EEPVT Information section

In the Technology dimension, there are nine (9) categories represented by nine (9) questions (shown in Table 5-2) adapted from EPVT model by Barth and Veit (2011).

<b>Category</b>	<b>Question</b>
<b>Sensory Requirements</b>	Does the process require the applicant to see and touch registration forms?
<b>Relationship Requirements</b>	Does the process require the applicant to be physically present to interact with responsible personnel?
<b>Synchronism Requirements</b>	Does the applicant require the service to be carried out as soon as possible?
<b>Performance Risk</b>	Does the applicant trust that process will be handled without problems on the Internet?
<b>Privacy and Security Issues</b>	Is the applicant concerned about the risk that their data and documents of the public process, conducted via Internet, are only used and forwarded in accordance with legal necessities?
<b>Process Involvement</b>	Is the process so important to the applicant that they are able to retain the knowledge of the process steps?
<b>Need for Consultation</b>	Will the applicant require support from a staff member of the ministry to complete forms online?
<b>Process Complexity</b>	Does the process involve individual formalities such as scanning of ID documents, purchase of payment voucher from the bank etc.?
<b>Process Ambiguity</b>	Does the applicant require basic Internet literacy to understand the procedures of the process?

Table 5-2 Process Dimension questions

In the Authorizing Dimension section. There are three (3) categories represented by five (5) questions (shown in Table 5-3). The five questions are adapted from the PDIA Triple A framework by Andrews, Pritchett and Woolcock (2013).

<b>Category</b>	<b>Question</b>

<b>Authority</b>	What is the level of authority of the one authorizing the change?
<b>Capability</b>	Are financial resources and skills available for implementation? What is the cross cutting or impact of process across MACs? What is the level of common interest in the process?
<b>Change Readiness</b>	To what extent will those affected by the change accept the change?

Table 5-3 Authorizing Dimension questions

For each potential government process to be virtualized, the IT practitioner must select the Requirement Level (RL) for each question. The requirement level of each question is represented by:

Positive Polarity question: Low < Medium < High

Negative Polarity question: High < Medium < Low

The Requirement Level (RL) is then converted to integers and assigned the variable Requirement Value (RV), the RV becomes an interval scale. The integer range is 1-3. Table 5-4 and Table 5-5 show RL and corresponding RV depending on the polarity of the question.

Question Polarity	Requirement Level (RL)	Requirement Value (RV)
<b>Positive</b>	High	3
	Medium	2
	Low	1

Table 5-4 Conversion of Requirement Level (RL) to Requirement Value (RV)-Positive

Question Polarity	Requirement Level (RL)	Requirement Value (RV)
<b>Negative</b>	Low	3
	Medium	2
	High	1

Table 5-5 Conversion of Requirement Level (RL) to Requirement Value (RV)-Negative

The Requirement Level is measured on an ordinal scale and converted to integers 1 to 3, depending on the polarity where “positive” is associated with positive potential to be virtualized. The result obtained from the conversion is referred to as Requirement Value (RV). The responses to the negative questions are reverse coded, therefore assigned a “negative” polarity. Table 5-6 below demonstrates the polarity of each construct.

Category	Question	Polarity
Sensory Requirements	Does the process require the applicant to see and touch registration forms?	Negative

Relationship Requirements	Does the process require the applicant to be physically present to interact with responsible personnel?	Negative
Synchronism Requirements	Does the applicant require the service to be carried out as soon as possible?	Positive
Performance Risk	Does the applicant trust that process will be handled without problems on the Internet?	Positive
Privacy and Security Issues	Is the applicant concerned about the risk that their data and documents of the public process, conducted via Internet, are only used and forwarded in accordance with legal necessities?	Negative
Process Involvement	Is the process so important to the applicant that they are able to retain the knowledge of the process steps?	Positive
Need for Consultation	Will the applicant require support from a staff member of the ministry to complete forms online?	Negative
Process Complexity	Does the process involve individual formalities such as scanning of ID documents, purchase of payment voucher from the bank etc.?	Negative
Process Ambiguity	Does the applicant require basic Internet literacy to understand the procedures of the process?	Negative
Authority	What is the level of authority of the one authorizing the change?	Positive
Capability	Are financial resources and skills available for implementation? What is the cross cutting or impact of process across MACs? What is the level of common interest in the process?	Positive
Change Readiness	To what extent will those affected by the change accept the change?	Positive

Table 5-6 Polarity of each construct

The next step is to assign the weights to each construct. Since this is the first prototype, each construct is assigned the maximum weight. The scale for the weight is 1 (minimum) to 10 (maximum). Table 5-7 below shows each construct, the polarity, weight assigned and Requirement Value.

Construct	Maximum Weight	Polarity	Requirement Value (RV)
Sensory Requirements	10	Negative	Low (3) or Medium (2) or High (1)
Relationship Requirements	10	Negative	Low (3) or Medium (2) or High (1)
Synchronism Requirements	10	Positive	High (3) or Medium (2) or Low (1)
Performance Risk	10	Positive	High (3) or Medium (2) or Low (1)
Privacy and Security Issues	10	Negative	Low (3) or Medium (2) or High (1)
Process Involvement	10	Positive	High (3) or Medium (2) or Low (1)
Need for Consultation	10	Negative	Low (3) or Medium (2) or High (1)
Process Complexity	10	Positive	Low (3) or Medium (2) or High (1)
Process Ambiguity	10	Negative	Low (3) or Medium (2) or High (1)
Authority	10	Positive	High (3) or Medium (2) or Low (1)
Capability	10	Positive	High (3) or Medium (2) or Low (1)
Change Readiness	10	Positive	High (3) or Medium (2) or Low (1)

Table 5-7 Constructs with Weights, Polarity and Requirement Value

To achieve the score for each construct, the weight is multiplied by requirement value (RV) of the construct which in this case it can be either 1, 2, or 3, based on the ordinal value conversion shown in Table 5-4 and Table 5-5. Each construct is represented by one question, except the “Capability” construct, which consists of three

questions. The average of the score of the three questions is calculated to obtain one score for Capability.

Now that a score for each construct has been obtained, the next step is to sum all the scores for the twelve (12) constructs in order to obtain the total score.

In the first version of the tool, the weight assigned to each construct is the maximum weight (i.e.10) and maximum Requirement Level (RL). The Requirement Level can either be “high” or “low” represented by the integer 3 depending on the polarity (i.e. negative or positive) of the question. A question with negative polarity means ordinal value “low” will be represented by “3”, while a question with positive polarity means the ordinal value “high” will be represented by integer “3”.

Therefore, the maximum total score for the process being evaluated is: Sum of (Maximum weight for each construct \* Maximum RV) i.e.  $12*(10*3) = \underline{360}$ .

A similar calculation is performed to obtain the minimum score possible for the process being evaluated.

The minimum total score is: Sum of (Minimum weight for each construct \* Minimum RV) i.e.  $12*(1*1)$  giving a value of 12.

The total score has range of 12 (minimum possible score) to 360 (maximum possible score).

In this section, the researcher began by defining the Requirement Level (RL) for each construct (or question). The range of the Requirement Level is high, medium or low going up or down depending on the polarity of the question whether it is positive or negative. The Requirement Level was then changed to an integer (1, 2 or 3) Requirement Value to enable the researcher to perform numerical functions. The range of the Requirement Value is 1-3. To obtain the maximum and minimum total score for the weights, each Requirement Value is multiplied by the weight assigned to the question. The sum of the weighted values resulted in Total Score with a range of 12 to 360.

In order to shift the range of Total Score from [12,360] to range [0,348] the researcher performed the following computations:

Let:

- ‘a’ denote the minimum of the range of total score i.e. 12



- 'b' denote the maximum of the range of total score i.e. 360
- 'c' denote the minimum of the range of the desired target scaling i.e. 0
- 'd' denote the maximum of the range of the desired target scaling i.e. 348
- $m \in [a, b]$  denote the measurement to be scaled

To scale  $m$  linearly into  $[c, d]$

$$m \mapsto \frac{m - a}{b - a} x (d - c) + c$$

$m \mapsto m - a$  maps  $m$  to  $[0, b - a]$

$$m \mapsto \frac{m - a}{b - a}$$

maps  $m$  to the interval  $[0, 1]$  with  $m = a$  mapped to 0 and  $m = b$  mapped to 1

Multiplying this by  $(d - c)$  maps  $m$  to  $[0, d - c]$

Finally, adding  $c$  shifts everything and maps  $m$  to  $[c, d]$ .

Therefore, new total score range is  $[0, 348]$ .

The adjusted score is referred to as "VTS" meaning virtualization score. It has a range of 0-348 whereby a high VTS indicates that the process being evaluated is a good candidate for virtualization, while a low VTS indicates that the process is not a suitable candidate for virtualization.

The Virtualization Status (VS) of the government process is determined by converting the VTS value obtained to a percentage scale known as "VTS Index". The range for the VTS Index is "0%-100%". The VTS Index is calculated by the formula below:

$$\text{VTS Index} = \frac{\text{Actual VTS (i.e. score obtained from process being evaluated)}}{\text{Maximum VTS}} * 100$$

While the VTS provides a value relative to the proportion of the weights and answers (requirement value) selected for each question (s) corresponding to each construct, the VTS Index allows the researcher to compare the scores of processes which have been successfully virtualized to the scores of processes that are yet to be

virtualized. This establishes trends where the VTS Index for processes can be tracked making it easier for interpretation.

Virtualization status is demonstrated in the framework by use of traffic lights (shown in Table 5-8). The VTS Index between 0%-33% (represented by red colour) means the process cannot be virtualized, 34%-66% (represented by yellow colour) meaning it may be virtualized but requires further investigation. Between 67%-100% means the process can be virtualized (represented by green colour).




Virtualization Status (VS)	VTS Index	Outcome
	0%-33%	Process cannot be virtualized
	34%-66%	Process may be virtualized but requires further investigation
	67%-100%	Process can be virtualized

Table 5-8 Traffic Light Colors representing virtualization status of process

Before proceeding to the next section, it is important to provide a summary of all variables, the abbreviation, definition and range. This is represented in Table 5-9.

Variable Name	Abbreviation	Definition	Range
Requirement Level	RL	This refers to the ordinal value assigned to each question in the construct being measured.	Low < Medium < High
Requirement Value	RV	The Requirement Value is defined as the integer representation of the Requirement Level.	1-3
Total Score	TS	This refers to the sum of the weights of each construct multiplied by the requirement value. A maximum total score is: Sum of (Maximum weight for each construct * RV) i.e. $12*(10*3) = 360$ . A minimum total score is: Sum of (Minimum weight for each construct * RV) i.e. $12*(1*1) = 12$ .	12-360
Virtualization Score	VTS	It is defined as the adjusted range of total score to obtain a natural zero point. High VTS indicates that the process being evaluated is a good candidate for virtualization. Low VTS indicates that the process is not a suitable candidate for virtualization.	0-348
Virtualization Score Index	VTS Index	It is the conversion of the VTS value to a percentage scale. It is calculated by: Actual VTS (i.e. score obtained from process being evaluated) / Maximum VTS * 100	0%-100%
Status	VS	Red: Process cannot be virtualized	0%-33%
		Yellow: Process may be virtualized but requires	34%-66%

		further investigation	
		Green: Process can be virtualized	67%-100%

Table 5-9 EEPVT list of variables, abbreviation, definition and range

### 5.3.1 EEPVT Framework- First Iteration


Based on the results from survey questionnaire and focus group discussions in Chapter 4, the researcher designed the first version of the framework (v1). This is presented in Figure 5-5.

The framework consists of three (3) sections, the information section provides background information on the process being tested. The Technology Dimension and Authorizing Dimension, each comprise of a set of questions assigned the maximum possible weight (i.e. 10), and maximum ordinal value (i.e. 3).

**e-Government Extended PVT Model**  
Welcome to the EEPVT Tool

© 2018 by Ransford Mensah

Name of Service:			
Ministry Agency Commission (MAC):			
Contact Person:			
Phone number of contact person:			
Email address of contact person:			
Briefly describe the proposed e-service (no more than 100 words):			
Why is it needed:			
Date:			
Virtualization Score (VTS)			



Technology Dimension	Question	Requirement	Weight	Score
Sensory Requirements	Does the process require the applicant to see and touch registration forms?	-	10	0
Relationship Requirements	Does the process require the applicant to be physically present to interact with responsible personnel?	-	10	0
Synchronism Requirements	Does the applicant require the service to be carried out as soon as possible?	-	10	0
Performance Risk	Does the applicant trust that process will be handled without problems on the Internet?	-	10	0
Privacy and Security Issues	Is the applicant concerned about the risk that their data and documents of the public process, conducted via Internet, are only used and forwarded in accordance with legal necessities?	-	10	0
Process Involvement	Is the process so important to the applicant that they are able to retain the knowledge of the process steps?	-	10	0
Need for Consultation	Will the applicant require support from a staff member of the ministry to complete forms online?	-	10	0
Process Complexity	Does the process involve individual formalities such as scanning of ID documents, purchase of payment voucher from the bank etc.?	-	10	0
Process Ambiguity	Does the applicant require basic internet literacy to understand the procedures of the process?	-	10	0
Authorizing Dimension	Question	Requirement	Weight	Score
Authority	What is the level of authority of the one authorizing the change?	-	10	0
Capability	Are financial resources and skills available for implementation? What is the cross cutting or impact of process across MACs? What is the level of common interest in the process?	-	10	0
Change Readiness	To what extent will those affected by the change accept the change?	-	10	0

Figure 5-5 EEPVT Framework (v1)

**Stage 3 Evaluation:** Evaluation is an important step in framework (artefact) development as it provides essential feedback on the utility of the design. Some of the evaluation methods that can be used include observational, descriptive, analytical, testing and experimental methods (Hevner & Chatterjee 2010; Zelkowitz & Wallace 1998). This stage consists of three activities as shown in the design research process model in. The activities are:

- Demonstration: Proof of concept to GOL
- Evaluation: Testing by Panel of Experts
- Communication: Scholarly and professional publications, Thesis and presentation to GOL CIO Council.

Observational and descriptive evaluation methods appear to be more suitable for a theoretical evaluation approach. Similarly, analytical, testing and experimental methods appear to be more suitable for a practical evaluation approach. The research used the practical evaluation approach involving interviews with a panel of five senior IT experts of GOL.

The interviews set out to achieve a strategic purpose of providing feedback about the design of the framework, the questions and weight determination for the constructs.

The interview questions were open ended, and the interview was carried out at the participants' offices. The purpose of this interview was to firstly assess the senior IT professionals' perceptions of the framework over the traditional way of deciding on which government processes to virtualize. Five key stakeholders were interviewed: The Head of Project Office at eLiberia, CIO at the Ministry of Education, Chief CIO of Liberia, Senior ICT advisor USAID Digital Liberia and MIS specialist USAID Digital Liberia.

The interviews took place in the month July and August 2018. Each interview lasted between 20 to 30 minutes. Notes were taken. All interviews were conducted face to face.

The researcher gave a summary of recent updates in the research project since participants had participated in the survey and focus group sessions (conducted in February and March 2018) and therefore have a fair understanding of the research and what it seeks to achieve.

The interview focus was first to determine if the proposed EEPVT spreadsheet questions are satisfactory and then determine weights for constructs as per the dimensions defined in the framework. All the participants agreed the questions were satisfactory and did not suggest any changes. The next step was to ask the key question "which of the dimensions and constructs are of more importance and therefore should carry more weight". Table 5-10 presents the weights assigned by respondents to each

construct; the average weight for each construct was calculated, and used as the final weights for the framework.

	Construct	Weight of construct					Average Weight
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	
SN	Process Dimension						
1	Sensory Requirements	8	8	6	7	6	7
2	Relationship Requirements	6	7	7	5	6	6
3	Synchronism Requirements	7	5	6	7	7	6
4	Performance Risk	5	4	4	6	6	5
5	Privacy and Security Issues	6	10	7	7	7	7
6	Process Involvement	9	7	6	6	6	7
7	Need for Consultation	7	7	7	7	7	7
8	Process Complexity	5	8	6	7	6	6
9	Process Ambiguity	6	7	7	6	5	6
	Authorizing Dimension						
12	Authority	10	10	10	10	10	10
13	Capability	8	9	9	7	9	8
14	Change Readiness	10	10	10	10	10	10

Table 5-10 Weights of constructs assigned by panel of experts

The framework designed is based on feedback from the five-expert e-government practitioners. The second version of the framework (v2) is shown in

Figure 5-6. It supports the selection of government processes to virtualize based on the scores from the characteristics.

Per the first prototype the VTS range is 0 (minimum) to 348 (maximum). The VTS is then transformed to the VTS Index (0%-100%) by dividing the Actual VTS by the maximum VTS. The VTS Index is compared with the table shown in

Table 5-8 is to determine the virtualization status. This framework needs to be validated. Validation of the framework is conducted at the Ministry of Post and Telecommunications and is discussed in the next section.

Welcome to the EEPVT Tool

Name of Service:				
Ministry Agency Commission (MAC):				
Contact Person:				
Phone number of contact person:				
Email address of contact person:				
Briefly describe the proposed e-service (no more than 100 words):				
Why is it needed:				
Date:				
Virtualization Score (VTS)				

Technology Dimension	Question	Requirement	Weight	Score
Sensory Requirements	Does the process require the applicant to see and touch registration forms?	-	7	0
Relationship Requirements	Does the process require the applicant to be physically present to interact with responsible personnel?	-	6	0
Synchronism Requirements	Does the applicant require the service to be carried out as soon as possible?	-	6	0
Performance Risk	Does the applicant trust that process will be handled without problems on the Internet	-	5	0
Privacy and Security Issues	Is the applicant concerned about the risk that their data and documents of the public process, conducted via Internet, are only used and forwarded in accordance with legal necessities?	-	7	0
Process Involvement	Is the process so important to the applicant that they are able to retain the knowledge of the process steps?	-	7	0
Need for Consultation	Will the applicant require support from a staff member of the ministry to complete forms online?	-	7	0
Process Complexity	Does the process involve individual formalities such as scanning of ID documents, purchase of payment voucher from the bank etc.?	-	6	0
Process Ambiguity	Does the applicant require basic internet literacy to understand the procedures of the process?	-	6	0

Authorising Dimension	Question	Requirement	Weight	Score
Authority	What is the level of authority of the one authorizing the change?	-	10	0
Capability	Are financial resources and skills available for implementation? What is the cross cutting or impact of process across MACs? What is the level of common interest in the process?	-	8	0
Change Readiness	To what extent will those affected by the change accept the change?	-	10	0

Figure 5-6 EEPVT framework (v2)

### 5.4 EEPVT VALIDATION

An important step in designing a framework which will assist e-government practitioners is validation of the framework. Validation aims at finding whether or not the framework does what it is intended to do. However, it is recognized that absolute validation is a myth (O’Keefe & O’Leary 1993). To be as sure as possible that the framework is valid, years of testing and experimenting is required. This is not feasible within the scope of this research project. Therefore, in this section, only one validation technique is applied which is the “Experimental Validation”. The result of the test will not indicate whether or not the framework is valid but it will show whether or not it is a useable tool.

To determine if the framework is doing what is intended, it is necessary to refer to the design principles stated in Chapter 3 (Section 3.8.1). The principles are:

- The framework / artefact should be operational and simple to use (developed in Excel®) to assist IT practitioners in Liberia to select appropriate physical processes or service to virtualize.

- The framework / artefact should be anchored on a recognized theoretical framework.

Finally, the validation process should indicate whether or not the framework is usable. Does it have the added value that is expected? Summarized, the three validation questions are:

1. Is the design of the decision framework appropriate for the MACs IT practitioners in Liberia?
2. Are the conclusions in accordance with the expectations?
3. Is the decision framework an appropriate tool to assist e-government practitioners in selecting physical government processes to virtualize?

Multiple validation techniques exist to validate a design. In this research the experimental validation technique is used. In this method the users can, based on their practical experience, apply the framework as it would in “real-life” and evaluate the results.

The most thorough approach would be to apply the framework on an e-government process, assess the entire process of virtualization and compare end results with previous similar executed projects. However, because of time restrictions, use of this approach within this research is not feasible. Five senior IT practitioners within the MACs were selected to test the framework. These practitioners are all very familiar with e-government implementation in Liberia, furthermore, they are all involved in executing e-initiatives (projects) within the MACs. They can therefore evaluate the results of the framework with previous experiences. Ideally, a higher number of users should be involved in the evaluation. Unfortunately, because of time restrictions of the e-government project and this research it was not practical to engage more than five practitioners. The questionnaire presented to the senior practitioners while testing the framework is presented in Appendix E.2. The results are discussed in the next section.

## **5.5 EXPERIMENTAL VALIDATION OF EEPVT FRAMEWORK**

As explained in Chapter 3 (Section 3.4) and the research plan, a panel of five senior IT practitioners was constituted to first seek their views and opinions on the questions and weighting and secondly their experience using the framework. The experimental validation of the framework was done by the practitioners filling the

questionnaire presented in Appendix E.2. The IT practitioners are familiar with the framework and very knowledgeable experts who have been part of all the research stages from conceptualization to design. They have already seen the framework during the discussion on weights to assign to constructs. The researcher met the five senior IT practitioners individually at their MACs in the month of October 2018. Prior to the one-on-one meetings with the practitioners, an XLS file of the framework was emailed to them to go through before the interviews. At the meeting, the senior IT practitioner at the selected MAC completed the questionnaire in the presence of the researcher after which the responses to the questions were copied by the researcher and discussed.

Each of the five practitioners experimented with the framework by applying it to one e-initiative they are currently working on. The results are shown in

Table 5-11 presents the participant profile, the process or e-initiative tested and results.

<b>Participant</b>	<b>Profile</b>	<b>Process</b>	<b>VTS</b>	<b>VTS Index</b>	<b>Virtualization Status</b>
Senior IT Practitioner A	Experienced project manager at the project management office (PMO) at eLiberia, and is familiar with e-government projects and initiatives in Liberia	Request birth certificate	156	45%	“Yellow” which clearly corresponds to the expectations of Practitioner A. The GOL has had some challenges implementing this as a full online service. As a workaround, the eLiberia office has uploaded a pdf version of the application form for people to download, complete and present at the ministry for validation before processing.
Senior IT Practitioner B	Head of MIS at General Services Agency (GSA), he has over 10 years’ experience at the MAC and has been at the forefront of implementing a centralized online asset management information system for GOL to manage all of its assets, therefore reducing theft.	Asset Management information system for GOL	85	24%	“Red” corresponds exactly to the expectation of Practitioner B. The system has had its challenges, not on the technology (Process Dimension) but on the Authorizing Dimension, where there is no clearly identified champion to push this.



Senior IT Practitioner C	MIS specialist on the USAID Digital Liberia project. He is involved in providing capacity building and MIS support to the IT officers in the MACs. Therefore, he has wide knowledge of on-going e-initiatives.	Helpdesk for the MACs	234	67%	“Green” The respondent was not surprised since this has been one of the most easy and successful e-initiatives implemented.
Senior IT Practitioner D	Senior IT practitioner at Civil Services Agency (CSA), where they are rolling out a system to pay civil servants of Liberia via mobile money. The respondent is intensely involved.	Mobile Money payment system for GOL civil servants	159	46%	“Yellow” corresponds to the practitioner expectation. This e-initiative is large and very different from the others implemented by the MACs. This is collaborative effort between CSA and Ministry of Finance.
Senior IT Practitioner E	Deputy Head of IT at the Ministry of Health. He is leading his ministry to roll out a corporate mail system for 200 staff at the ministry. Moving to cloud has tremendous benefits, but it’s a big change.	Cloud corporate mail for the Ministry of Health.	238	68%	“Green” matched the practitioner's expectation. The roll out is progressing smoothly at the Ministry and transition should be completed by April 2019.

Table 5-11 Panel of Experts experimental validation results

Table 5-12 presents a summary of the results, two of the e-initiatives were yellow which means can be virtualized but requires the practitioner to look investigate further, two green means the process can be virtualized and one red means the process cannot be virtualized.

Process	Virtualization Status	Comment
Request birth certificate	Yellow	May be virtualized but requires further investigation
Asset Management information system for GOL	Red	Process cannot be virtualized
Helpdesk for the MACs	Green	Process can be virtualized
Mobile Money payment system for GOL civil servants	Yellow	May be virtualized but requires further investigation
Cloud corporate mail	Green	Process can be virtualized

Table 5-12 Summary of results

In Figure 5-7, the researcher presents an example of a populated framework for Helpdesk e-initiative which is an open source system being implemented at the MACs.

Welcome to the EEPVT Tool

Name of Service:	Helpdesk for MACs		
Ministry Agency Commission (MAC):	All MACs (MOH, CSA and MOE)		
Contact Person:	Curtis Jackson		
Phone number of contact person:	777818111		
Email address of contact person:	cjackson@digitaliberia.org		
Briefly describe the proposed e-service (no more than 100 words):			
Why is it needed:	This system will provided a single point of contact for all IT related incidents at the MACs		
Date:	18th October 2018		
Virtualization Score (VTS)	231		

Technology Dimension	Question	Requirement	Weight	Score
Sensory Requirements	Does the process require the applicant to see and touch registration forms?	low	6	18
Relationship Requirements	Does the process require the applicant to be physically present to interact with responsible personnel?	low	6	18
Synchronism Requirements	Does the applicant require the service to be carried out as soon as possible?	high	7	21
Performance Risk	Does the applicant trust that process will be handled without problems on the Internet	high	5	15
Privacy and Security Issues	Is the applicant concerned about the risk that their data and documents of the public process, conducted via Internet, are only used and forwarded in accordance with legal necessities?	low	7	21
Process Involvement	Is the process so important to the applicant that they are able to retain the knowledge of the process steps?	high	7	21
Need for Consultation	Will the applicant require support from a staff member of the ministry to complete forms online?	low	7	21
Process Complexity	Does the process involve individual formalities such as scanning of ID documents, purchase of payment voucher from the bank etc.?	low	6	18
Process Ambiguity	Does the applicant require basic internet literacy to understand the procedures of the process?	normal	6	12

Authorising Dimension	Question	Requirement	Weight	Score
Authority	What is the level of authority of the one authorizing the change?	high	10	30
Capability	Are financial resources and skills available for implementation?	high	3	
Capability	What is the cross cutting or impact of process across MACs?	low	1	16
Capability	What is the level of common interest in the process?	normal	2	
Change Readiness	To what extent will those affected by the change accept the change?	normal	10	20
				231

Figure 5-7 Populated EEPVT framework (Helpdesk e-initiative)

Table 5-13 presents the remarks made by each IT practitioner and suggested improvements to the framework.

Participant	Positive Remarks	Suggested Improvements
A	The framework is very easy to use and well-organized. A very useful tool for starting e-government projects. “Now, projects are often started without even having analysed the difficulty in identifying a change space to make impact”.	Needs a comprehensive manual to guide users on how to use the framework. The framework should be a tool on its own, and useful without any human guidance. The guide will prevent users from interpreting the framework differently.
B	The approach used for this framework is, according to the respondent, appropriate. GSA has attempted three times to implement government wide automated asset management information system but failed. His experience is donors were quick to deploy the software but failed to analyse the context of the environment. This framework triggers both the implementing MAC and donor to think further and come to a conviction if an e-initiative will work or not before spending hundreds of thousands of dollars.	The framework needs to further indicate which particular construct or characteristic is causing the results to be yellow, for example is it a lack of authority?
C	The framework was built in Excel so therefore easy to distribute, since the only requirement is to have MS Excel.	More explanation was needed regarding the framework, the characteristics and the usage of the framework.

D	The insight you get of the e-initiative before implementation is of great importance. Using this framework, one is able to thoroughly assess characteristics of the e-initiative.	There has to be way for the framework to differentiate smaller e-initiatives from larger ones. This feature might become significantly more important perhaps in the next version of EEPVT after it has undergone rigorous testing.
E	This conclusion was very clear. It has become clear that this particular e-initiative was going to be successful from the on-set. They had approval from the Deputy Minister of administration which was key. Also, they have a strong IT unit ready to implement.	The framework should be more colourful and also store previous results, so he could produce a report of all e-initiative tested on one display.

Table 5-13 Panel of Experts' experimental validation results

The overall validation result is positive concerning the EEPVT framework. In the introduction of this section, three main validation questions were stated. These were:

1. *Is the design of the decision framework appropriate for the MACs IT practitioners in Liberia?*
2. *Are the conclusions in accordance with the expectations?*
3. *Is the decision framework an appropriate tool to assist e-government implementors in selecting physical government processes to virtualize?*

The experimental validation method was conducted to test the framework. This resulted in very useful comments from the senior IT practitioners. It is possible to state that the framework may indeed be a useful method for selecting e-government processes to virtualize. This was concluded by all interviewed practitioners. The major point of interest was, according to the practitioners, the fact that the framework triggers the practitioner to actually think and analyse the e-initiative before communicating with their directors at the MACs. Besides the positive general view on the framework, some helpful recommendations were stated as well.

First of all, it became clear that the framework needs additional user manual or guide. Another suggestion was to include some sort of warning system: If a process is suitable on all characteristics except one, this should be notified to the user. The final recommended improvement was to include interdependencies between the found characteristics. For example, depending on the mark or score recorded for some

constructs, the framework should be able to tell the user if it is “red” or “green”, even without completing all the questions. This may be achieved through rigorous testing of the framework and developing patterns of results, which will inform the interdependencies of questions asked.

It can be concluded that the framework has the potential to be a useful and helpful tool for Sub-Saharan country seeking to implement e-government initiatives. The changes requested were not onerous and can be incorporated in the production version of the tool. As was mentioned in the introduction of this section (5.5), this research project is limited in time. It is therefore recommended for the GOL CIOs to start with an ongoing validation process of testing and fine-tuning the framework. One of the most significant validation methods would entail comparing the execution and delivery of e-initiatives that are selected with the help of the framework with e-initiatives that were not recommended by the framework.

## **5.6 COMMUNICATION OF THE FRAMEWORK**

After completing the validation of the framework, the results were presented to the GOL CIO council in a meeting organised at the MoPT in December 2018. The framework was well understood and received by the CIOs of the MACs. All the CIOs agreed that the EEPVT framework addresses the complex problem they face when selecting government processes to virtualize. With regard to comprehensibility, the CIOs mentioned that the EEPVT is clear and simple to understand and use. By and large the opinions of the CIOs were in favour of the EEPVT Framework, suggesting it as a valuable framework for the selection of physical government processes to virtualize.

Also, the research findings will be disseminated through academic and practitioner outlets by publishing in recognized academic journals, and presenting at IT forums in Liberia.

## **5.7 SUMMARY OF CHAPTER FIVE**

This chapter presents the development and description of the EEPVT framework as a practical tool for GOL IT practitioners selecting e-government services to implement. The approach used to develop the framework (weights, index and traffic lights) is commonly used in business for decision making for example acquisition and

risk management. The following researchers: Grimaldi and Rippa (2011); Sarkis and Talluri (2002); Weber and Borcharding (1993). The EEPVT is designed to facilitate the process of selection of suitable government processes to virtualize. The framework is designed in Excel making it very flexible and easy to use.

The evaluation of the EEPVT by the senior GOL IT practitioners confirmed its potential to address the current e-government challenges faced by GOL. One key observation was how the framework correctly predicted the virtualization status of the five e-initiatives tested. This provides strong evidence of relevance of the research artefact in e-government implementation in Liberia.

Further validation could compare results from the framework with previous similar executed projects in other countries in the Sub-Saharan region. However, because of time restrictions, use of this approach within this research is not feasible. The findings of the study are discussed in Chapter 6.

# Chapter 6: Discussion

---

## 6.1 CHAPTER INTRODUCTION

The objective of this chapter is to provide a discussion and interpretation of the main findings from the research i.e. Chapter 4 and EEPVT framework development provided in Chapter 5. Where applicable the discussion will link the literature to the research outcomes. As described in Chapter 1, there is no framework for e-government practitioners in low income Sub-Saharan Africa to use in identifying government physical processes that are suitable candidates for virtualization. In response to this problem, Chapter 3 presented the design of a framework for examining the feasibility of virtualization of physical processes. The framework is called the e-Government Extended Process Virtualization Theory (EEPVT) framework. The framework consists of two dimensions which are the Technology Dimension and Authorizing Dimension. The framework is a further extension of the PVT model that was created by Overby (2008) and extended as the EPVT by Barth and Veit (2011).

Chapter 5 detailed the development of a prototype artefact (based on Design Science Research approach) and the application of the conceptual framework and presented the findings. This chapter provides a critical examination of the research results in the context of the research method and reviewed literature. The discussion is structured to answer the research question, RQ. *How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business processes supporting e-government services?*

The chapter contains six main sections. Section 6.1 introduces the chapter. Section 6.2 provides the research aim. Section 6.3 provides the discussions on findings related to the research question. Section 6.4 discusses the EEPVT framework. Section 6.5 presents findings from the field work on e-government implementation in Liberia. Finally, Section 6.6 summarises this chapter. Figure 6-1 shows an overview of Chapter 6.

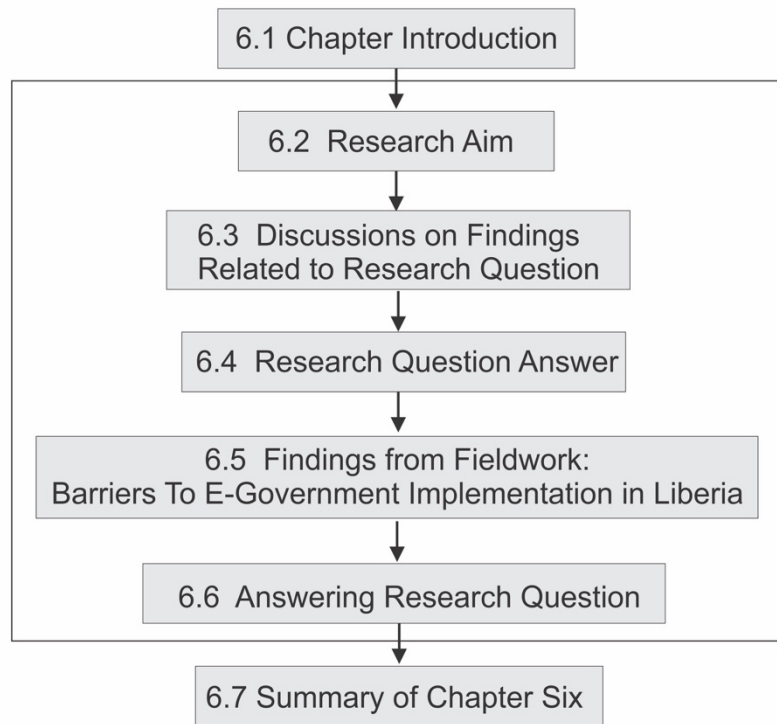


Figure 6-1 Overview of Chapter 6

## 6.2 RESEARCH AIM

The aim of this study is to investigate the underlying factors that affect e-government implementation in Liberia and develop a framework for the selection of virtualization of services. To meet this aim, this research asked the question:

*How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business processes supporting e-government services?*

The literature review found limited research studies on the application of PVT and EPVT in the context of e-government. This study extends the existing PVT and EPVT theories by analysing the constructs and including additional constructs to make it applicable for IT practitioners in the low-income country Liberia.

The discussion of the findings from the research in answering the research question is presented in the next section.

### 6.3 DISCUSSIONS ON FINDINGS RELATED TO RESEARCH QUESTION

The research question assesses the existing situation of government services in Liberia, as well as the potential for conversion of these services from physical to virtual to facilitate the development of e-government in Liberia. According to PVT, some service processes are more amenable to virtualization than others. The main dependent variable in PVT is thus process virtualizability, which describes how suitable a process is to being conducted after the traditional physical interaction between people or between people and objects has been removed (Overby 2008, 2012b).

The data from surveys and focus groups were used to design the framework based on foundation work done by Overby (2008), Barth and Veit (2011) on PVT and EPVT respectively.

Table 6-1 summarises the survey data, focusing on the perception of IT experts in Liberia of the overall situation of government resources and infrastructure, as well as the feasibility of different government-level processes towards virtualization.

Scale Metrics	Perception	Intensity (weighted avg. score)	References
<b>Sensory Requirements</b>	Agreement	0.62	Based on (Overby 2008)
<b>Relationship Requirements</b>	Agreement	0.78	Based on (Overby 2008)
<b>Synchronism Requirements</b>	Agreement	1.14	Based on (Overby 2008)
<b>Performance Risk</b>	Neutral	0.28	Based on (Overby 2008)
<b>Privacy and Security Issues</b>	Agreement	0.83	Based on (Overby 2008)
<b>Process Involvement</b>	Agreement	0.76	Based on (Barth & Veit 2011)
<b>Consultation</b>	Agreement	1.10	Based on (Barth & Veit 2011)
<b>Process Complexity</b>	Agreement	0.55	Based on (Barth & Veit 2011)
<b>Process Ambiguity</b>	Agreement	1.14	Based on (Barth & Veit 2011)

Table 6-1 Summary of findings from survey results

As Table 6-1 shows, nine different constructs were used to evaluate GoL IT experts' perception of e-Government services. These constructs were adopted from Overby (2008) and Barth and Veit (2011). The research findings are in agreement with eight out of the nine propositions by Barth and Veit (2011) in their conceptual model. The propositions are:



Proposition 1: The greater the perceived Sensory Requirements (SR) of a public process, the higher is the citizens' resistance towards conducting this process virtually.

Proposition 2: The greater the perceived Relationship Requirement (RR) of a public process, the higher is the citizens' resistance towards conducting this process virtually.

Proposition 3: The greater the perceived Immediate Results Requirements (IRR) of a public process, the higher is the citizens' resistance towards conducting this process virtually.

Proposition 5: The greater the perceived Privacy and Security Risk (PSR) of a public process, the higher is the citizens' resistance towards conducting this process virtually.

Proposition 6: The greater the perceived Process Involvement (PI) of a public process, the higher is the citizens' resistance towards conducting this process virtually.

Proposition 7: The greater the perceived Need for Consultation (NC) of a public process, the higher is the citizens' resistance towards conducting this process virtually.

Proposition 8: The greater the perceived Process Complexity (PC) of a public process, the higher is the perceived need for consultation.

Proposition 9: The greater the perceived Process Ambiguity (PA) of a public process, the higher is the perceived need for consultation.

Interestingly no support was found for Proposition 4: The greater the perceived Performance Risk (PR) of a public process, the higher is the citizens' resistance towards conducting this process virtually, the results was neutral. It was also discovered that for some of the constructs there was a very strong agreement to the statements, while for others the agreement was weak. The researcher therefore engaged the IT practitioners further in a focus group discussion to understand the reasons behind the answers they provided in the survey.

Analysis of the focus group discussion showed that e-government goes beyond government buying computers and providing services online. Nurdin, Stockdale and Scheepers (2012a) argue that the most important stage of technology implementation within government organizations is adaptation. In fact, the adoption and implementation of e-government within local government organizations are influenced by many external factors (Nurdin, Stockdale & Scheepers 2012b).

Chapter 4 developed themes from the focus group discussion. Out of these themes the issue of resistance to change was the most prevailing theme. Participants mentioned that change management issues must be addressed for any service that has to be virtualized. This theme confirms research by Li (2003) and Scholl (2003) who mentioned that e-government is more an organizational change issue than a technological issue and that the need for managing constant change is important.

There are factors outside technology process characteristics that affect the implementation of e-services. In a post war Sub-Saharan African country Liberia, e-government is not only technology but it also encompasses identification of a change space to make an impact. In Chapter 2 (Table 2-6), out of the 52 e-government papers researcher selected, it was discovered that the challenges faced by African countries in implementing e-government programs could be categorised as follows: human factors, infrastructural factors, social cultural factors and political factors.

The researcher adapted the Problem Driven Iterative Adaptation (PDIA) framework developed by Harvard professor Matt Andrews and his colleagues (Andrews, Pritchett & Woolcock 2013). The PDIA approach addresses the factors identified when undertaking reforms.

Therefore, a new dimension, named “Authorizing Environment”, was identified and added to the existing EPVT framework leading to the new e-Government Extended PVT (EEPVT) framework. The new dimension helps to ensure the e-government initiative is locally led (or authorized) and politically smart (meaning, inter alia, that it has broad support and authorization). The three new constructs introduced to the PVT model are: Authority, Capability, Change Readiness.

#### **6.4 RESEARCH QUESTION ANSWER**

*How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business processes supporting e-government services?*

**Answer:** A framework based on PVT by Overby (2008) and EPVT by Barth and Veit (2011) was developed in this research. The framework is called e-Government Extended PVT Theory (EEPVT) and it supports the conversion of physical government process to virtual.

- **Brief Narrative:**

To answer this question the researcher first reviewed literature existing process virtualization theories by Overby (2008) and Barth and Veit (2011) and how they can be applied in an e-Government context. The researcher empirically tested the constructs of EPVT through survey and focus group discussion with forty IT practitioners of GOL. The researcher identified that there are no constructs to determine the context of the environment in which the process is being virtualized. This was evident in focus group discussions where the participants mentioned the identification of a “change space” as essential to successful implementation of any e-initiative. A novel framework is proposed, based on constructs from Extended Process Virtualization Theory (EPVT) by Barth and Veit (2011) and constructs derived from Problem Driven Iterative Adaptation (PDIA) by Andrews, Pritchett and Woolcock (2013). The EEPVT is a support aid that will facilitate the decision process of selecting physical government process to virtualise.

- **Presenting the EEPVT Framework**


In this section, based on the empirical results and findings from research study, the researcher presents a conceptual and practical model to act as a framework to assist practitioners in Liberia in selecting suitable government processes to virtualize. A conceptual model was developed in Chapter 3 and subsequently presented to senior IT heads of the Government of Liberia ministries, agencies and commissions through a survey and focus group discussion. The discussions focused on the constructs of the model, including ease of use, its practicality in assisting them in virtualization of government services.

The aim of this section is to present how IT practitioners implementing e-initiatives can use the proposed framework in selecting services to virtualize.

Figure 6-2 presents the final framework developed.

Welcome to the EEPVT Tool

Name of Service:				
Ministry Agency Commission (MAC):				
Contact Person:				
Phone number of contact person:				
Email address of contact person:				
Briefly describe the proposed e-service (no more than 100 words):				
Why is it needed:				
Date:				



Technology Dimension	Question	Requirement	Weight	Score
Sensory Requirements	Does the process require the applicant to see and touch registration forms?	-	7	0
Relationship Requirements	Does the process require the applicant to be physically present to interact with responsible personnel?	-	6	0
Synchronism Requirements	Does the applicant require the service to be carried out as soon as possible?	-	6	0
Performance Risk	Does the applicant trust that process will be handled without problems on the Internet	-	5	0
Privacy and Security Issues	Is the applicant concerned about the risk that their data and documents of the public process, conducted via Internet, are only used and forwarded in accordance with legal necessities?	-	7	0
Process Involvement	Is the process so important to the applicant that they are able to retain the knowledge of the process steps?	-	7	0
Need for Consultation	Will the applicant require support from a staff member of the ministry to complete forms online?	-	7	0
Process Complexity	Does the process involve individual formalities such as scanning of ID documents, purchase of payment voucher from the bank etc.?	-	6	0
Process Ambiguity	Does the applicant require basic internet literacy to understand the procedures of the process?	-	6	0
Authorising Dimension	Question	Requirement	Weight	Score
Authority	What is the level of authority of the one authorizing the change?	-	10	0
Capability	Are financial resources and skills available for implementation?	-	8	0
	What is the cross cutting or impact of process across MACs?	-		
Change Readiness	To what extent will those affected by the change accept the change?	-	10	0

Figure 6-2 Final EEPVT framework

The framework consists of two primary dimensions, namely the technology dimension and authorizing environment dimension. The technology dimension consists of sensory requirements (the need for sensory interaction between the users and the different processes), relationship requirements (the need for users to be physically present for human-human interaction), synchronism requirements (the time constraints from the users’ perspectives that determine the successful completion of the procedures), performance risk (the level of trust of users in the performance of processes), process involvement (the level of involvement of users required by the processes), consultation (the need for assistance from staff members to complete the processes), process complexity (the specific process-level requirements that might potentially hamper the overall user experience and successful completion of the processes), and process ambiguity (level of computer or technical proficiency required for users to complete different procedures).

It was evident from the focus group discussions that the technology dimension alone is not enough to determine the virtualizability of a process. There was the need to also consider the factors inherent to the environment in which the physical and virtual processes are to be implemented. The context of the environment must be kept in mind from the outset, hence the introduction of the authorising dimension to the

framework. The authorising environment consists of three constructs, namely authority (the level of authority possessed by the agent of change), capability (the availability of technical, financial and labour resources), and change readiness (the level of commitment to change and change management).

The researcher held a special group discussion with five most senior IT practitioners from the GOL MACS. The aim of the discussion was to assign the appropriate weights to the constructs in the EEPVT framework. After the weights have been identified, the researcher held a one-on-one discussion with each senior IT practitioners to test and evaluate the framework using an existing e-initiative they are working on. This helped to demonstrate the usefulness of the framework since the framework gave a clear picture of the status of virtualization of the e-initiatives. The e-initiatives tested were: Request for birth certificate, Asset management information system, Helpdesk for MACs, Mobile money payments for civil servants and Cloud corporate mail for the Ministry of Health.

After testing the framework with actual e-initiatives, the senior IT experts gave positive remarks. The experts all stated that the framework is a useful tool for selecting processes to virtualize since it will save them a lot of time and effort in rolling out eservices. The project manager of the PMO mentioned:

*“This tool is truly revolutionary, it will save us a lot of time and effort. Wish we had this sooner, otherwise we will not have failed e-initiatives”*

By using the framework, e-services will be implemented only when all the characteristics specified in the framework have been thoroughly considered.

However, an interesting result followed from one particular test conducted on one process or e-initiative, asset management information system. In this test, the e-initiative scored very high marks on the technology dimension but very low on the environment dimension. This suggest that the e-initiative requires further work on identifying a champion to lead it. Therefore, the framework does not only indicate which processes are suitable for virtualization, but also it shows the unsuitable processes or e-government initiatives. The IT experts made some useful and interesting remarks during the validation process. The most interesting suggested improvements are the following:

- An introduction section in the framework to provide information and explanation on how it works.
- Interdependencies relationships between the constructs should be established, such that depending on the mark or score recorded for some constructs, the framework should be able to tell the user if it is “red” or “green”, even without completing all the questions.

Due to time constraints, the second recommendation could not be implemented since it requires comprehensive validation. The framework therefore proposes a practical approach for e-government practitioners to select suitable government processes for virtualization. The framework if properly implemented will reduce the high failure rate of e-initiatives in Liberia, thus enhancing confidence of governments to roll out e-services to their citizens.

The next section presents a e-government adoption in the context of Liberia, and illustrates key findings from focus group discussions.

## **6.5 FINDINGS FROM FIELDWORK: BARRIERS TO E-GOVERNMENT IMPLEMENTATION IN LIBERIA**

The research was conducted over a four-year period using a reflective practitioner approach to investigate and understand the factors that influence e-government implementation in Liberia. This section discusses the barriers of e-government implementation in Liberia from the analysis of data collected through focus group discussion and interviews. In the literature review the challenges faced by African countries implementing e-government programs were grouped in the following categories: Human Factors, Infrastructural Factors, Socio-Cultural Factors and Political Factors.

***Human Factors:*** From the primary research (quantitative and qualitative research) it was identified that there are several e-government services available in Liberia some of which are applying for job online, applying for a e-birth certificate, applying for a e-passport, paying taxes online, Integrated Financial Management Systems (IFMIS), applying for a e-work extension permit and applying for an e-visa. Even though there are several e-government services offered by the government of Liberia, the use of the services offered is reasonably low, and the usage is not increasing as expected.

From the perspective of the IT professionals, the major reason for Liberians not using the e-government services is the perception towards them. The major barriers are mistrust and resistance to change. The IT professionals further indicated that mistrust is because many people in Liberia do not trust the security and reliability of Information Technology (IT) usage. On the other hand, the cause for the resistance to change is believed to be because of the culture and values of the people in Liberia. In the literature reviewed, these issues were categorized as human-level limitations, which include lack of awareness, low citizen participation, inadequate training and skill development, unavailability of learning material, gender inequality, and lack of user trust in technology (Adeyemo 2011; Alshehri & Drew 2010; Bwalya 2009; Bwalya & Healy 2010; Dada 2006; Olumoye & Govender 2018; Schuppan 2009; Schwester 2009). The research confirmed all these including the issue of fear of and resistance to change. This was the most recurring issue in the focus group discussion and interviews. Resistance to change has been extensively discussed in e-government studies by the following researchers: Lam (2005), Ndou (2004) and Carbo and Williams (2004). Nograšek (2011) considers resistance to change as the biggest barrier to implementing e-government. Carter and Bélanger (2005) stated that online services should resemble traditional government services to encourage citizen acceptance.

***Socio-Cultural factors:*** The civil war and recent Ebola outbreak have created severe human capacity gaps in Liberia, bedevilling the government efforts to improve ICT. Government has made some attempts to operate within these constraints, as well as to attempt to improve capacity. Key to this is the development of centralized capabilities as the new approach adopted to provide services across all of government. This means the scarce human and institutional resources are to be identified and pooled, providing opportunities for generating efficiencies and for reducing the vulnerabilities of peripheral institutions.

Currently skilled technical personnel are spread across GOL and tasked to a single MAC, often with little authority to bring about reforms even within their own institutions. The MoPT has traditionally focused more on the postal aspect of its mandate than ICT. The ministry has not exerted its authority as the ministry in charge of government ICT, which may explain why MoPT has not been able to win the necessary resources and marshal the energy required to change government thinking.

Comments from the participants also suggest there is a digital divide problem, with the citizens' lack of knowledge and computer skills as the main obstruction, and lack of computers and high-speed Internet in government ministries, agencies and commissions. This issue has been asserted by previous researchers (Cubitt 2014; Krishnan, Teo & Lim 2013; Olumoye & Govender 2018; Rothstein 2011) in their research.

***Political Factors:*** Politically, GOL has not been successful at persuading itself that ICT is worth prioritizing. The GOL is going through a time of extreme austerity thus affecting spending priorities, leaving very little funds for ICT related expenditure. The GOL looks to the donor community to resource ICT investments. The donor community is also challenged with its funding of ICT. Donor investments can encourage a silo-based approach to ICT investment, which is at odds with GOL policy to have a “whole-of-government” approach, which is the objective of e-government.

The senior leadership in the MACS often does not understand or see value in ICT investments. Whereas larger MACs have an institutional capability that extends beyond its leaders, and so may still be able to pursue ICT-based improvements, much of the initiative for ICT investment in smaller MACs is stifled by this leadership disposition.

The leadership plays a crucial role in championing new technology. It was confirmed in the focus group discussions that without a champion, change was impossible. The need for strong leadership is asserted by Cecchini and Raina (2004) who mentioned that in the e-government projects, the local administrative and political machinery needs to be involved in the implementation of the project, or otherwise the chance of failure is almost certain.

***Infrastructural Factors:*** Liberia's civil war, which ended in 2003, destroyed much of the country's power sector and ICT infrastructure. With an access rates at approximately 12 percent, Liberia's population has one of the lowest electricity saturation in the world. In the capital city of Monrovia, less than 20 percent of the population have access to electricity.

The government in July 2017 as part of Liberia's 170<sup>th</sup> Independence celebrations signed an agreement with CSquared and USAID to bring best-in-class,



reliable, affordable broadband infrastructure to Monrovia. Liberia is one of the least connected countries in the world, with only 5 percent of citizens able to access the Internet. The partnership builds on CSquared’s proven experience in designing and building shared metropolitan fiber infrastructure in the African cities of Kampala and Entebbe in Uganda, and the cities of Accra, Tema, and Kumasi in Ghana. The Government of Liberia has identified increasing fiber infrastructure as a vital part of its economic stabilization and recovery plan.

- **Suggestions to enhance e-government services**

The primary research was conducted not only to derive the current challenges faced in maximizing the use of e-government services but also provide recommendations on several actions that can be taken by the Liberian government to enhance the use and performance of e-government services which are a better e-government portal, foreign examples, policies, training the stakeholders, raising awareness and planning the future. The advantages and benefits of each suggestion are provided in Table 6-2.

<b>Suggestions from the primary research</b>	<b>Advantages and benefits to enhance the usage and performance of e-government services in Liberia</b>
<b>A better e-Government Portal</b>	The portal is a first access point for the user to access all the e-government services. Therefore, having a user-friendly, easy to use portal will encourage the people to use the services. Additionally, the portal should be simple, and the system should provide clear instructions and guidelines on what the user should do in order to access a service. Moreover, the portal should be responsive because it should cater to all the users with different types of devices.
<b>Foreign Examples</b>	The foreign case studies of how the e-government services are implemented and used can be considered to derive the functionalities and approach that need to be taken into consideration in Liberia. The most suitable case study countries are other African countries and developing countries to match with the economic and cultural factors. For example, it is not practical to follow the UK approach directly into Liberia because of the financial aid from the Liberian government is far less than the UK government, as well as the computer literacy rate is high in the UK compared to Liberia.
<b>Policies</b>	The required policies should be created in order to support the e-government services. For example, when the manual submissions could be replaced with the electronic submission. Additionally, the policies should define the clear and concrete approval or processing procedures to implement the workflow in the e-portal. Also, the access control matrix should be defined in the policies to ensure security and privacy.
<b>Training the stakeholders</b>	The Liberian government should identify the stakeholders of the e-government service portals and provide adequate training to use the system. Moreover, the system should be in the local language as well as English to allow the people to use the system without any language barrier.

	<p>The training should be given in the following areas:</p> <ul style="list-style-type: none"> <li>• Use the computer to type, open, close, save, attach and so on.</li> <li>• How to use the Liberian government portal to access a required service.</li> <li>• How to have unique emails and secured passwords.</li> <li>• How to ensure security and safety by not sharing and disclosing the personal passwords information.</li> </ul>
<b>Raising awareness</b>	<p>The government should create campaigns, and promotions to ensure that the people are aware of the list of e-government services provided by the Liberian government. Moreover, in the departments, the officials should guide the people to use the online portal to access the service rather than processing the information manually. For example, is a person come to the passport office to apply for a passport, the officials in the office should educate and guide the person to apply through the portal rather than processing the application manually.</p> <p>Moreover, the school students should have workshops provided to enlighten about the e-government services available in Liberia.</p>
<b>Education</b>	<p>The future of all the countries including Liberia is moving from manual processes in government to computer dependent processes. Some services can be done online without physically being present in the department. Therefore, the computer literacy should be enhanced with the young people in Liberia by adding a computer study in their curriculum.</p>

Table 6-2 The advantages and benefits of each suggestion

## 6.6 ANSWERING RESEARCH QUESTION

*RQ. How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business processes supporting e-government services?*

A framework based on PVT by Overby (2008) and EPVT by Barth and Veit (2011) was developed in this research. The framework (Excel spreadsheet) is called e-Government Extended PVT Theory (EEPVT) and it supports the conversation of physical government process to virtual.

## 6.7 SUMMARY OF CHAPTER SIX

This chapter discussed the research findings regarding the factors that affect e-government implementation in Liberia. The research aim was briefly highlighted, followed by the introduction of the EEPVT framework, which has been proposed as an appropriate model for assessing the feasibility of virtualization of e-Government services. For this particular research, the research question posed at the beginning of this research was discussed in detail in the thesis.

The chapter also discussed the barriers to e-government implementation in Liberia. The barriers fell into four major categories: human, socio cultural, political and infrastructure factors.

In addition, based on the viewpoints of the participants, suggestions were made on how to improve or enhance e-government services in Liberia.

The next chapter will summarise and conclude this research. The chapter will show how the research has achieved its principal aim, and establishes the significant contribution it has made to research. Finally, the limitations of this research are described and recommendations for future research made.

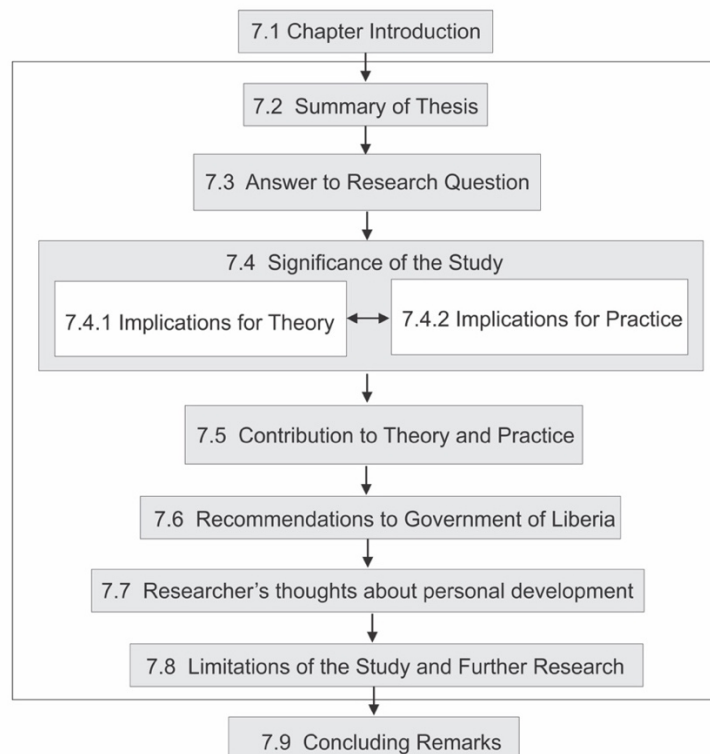
# Chapter 7: Conclusion

---

## 7.1 CHAPTER INTRODUCTION

This final chapter provides a summary of the research key findings to demonstrate how the research has met its objectives. The chapter offers a future perspective on research in this area by highlighting the contributions to knowledge, recommendations for GOL, limitations of the study and suggestions for further research.

This chapter is organised into nine sections. Section 7.1 presents an introduction; a summary of the thesis is provided in Section 7.2; the answer to thesis research question is in Section 7.3; the significance of the research is presented in Section 7.4; the contribution to theory and practice is provided in Section 7.5; Section 7.6 presents recommendations to government of Liberia and Section 7.7 presents researchers thoughts about personal development; limitations of the research and suggestions on further research are provided in Section 7.8; The final chapter summary is provided in Section 7.9. An overview of the chapter is shown in Figure 7-1.



## 7.2 SUMMARY OF THESIS

The research developed a framework for e-government practitioners to select suitable government physical processes to virtualize using reflective practitioner method and design science approach.

Many studies have been conducted on e-government programs in different continents. Some have covered countries in Africa, but there is no study providing a practitioner framework for the selection of physical government processes to virtualize. Moreover, existing studies do not take into account the social context or environment in which the e-government initiative is being implemented. This creates a gap that needs to be filled.

Using the DSR methodology a design process was followed to develop a decision support framework (EEPVT) artefact which addresses this problem and gap.

The evaluation of the EEPVT was conducted with senior IT practitioners of GOL to determine weights of constructs and apply revised framework to on-going e-government initiatives in Liberia which confirmed the utility of the of framework.

This research is structured in seven chapters including this concluding chapter.

**Chapter 1** highlighted the need and rationale for a framework to aid the virtualization of government services in Liberia. The chapter provided the background of the research, motivation and the role of the research in e-government program in Liberia. The research problem, research question and justification of the research along with expected research contributions were highlighted in Chapter 1. Process virtualization is receiving increasing attention as an emerging paradigm in information systems (Overby, Slaughter & Konsynski 2010). The research is motivated by high failure of e-government initiatives in Africa as mentioned by Heeks (2002) in his research. Liberia is struggling to achieve a government-wide holistic approach of using technology for the delivery of IT services to the public. Chapter 1 also covered the methodology adopted for the research, definition of key terms, scope delimitations and key assumptions of this research.

In **Chapter 2**, the literature review was introduced. The research used the Webster and Watson (2002) framework for conducting a literature review. The literature relating to the progression of e-government services in different countries in

Africa was covered, including concepts such as defining e-government, some of the drivers that improve the adoption and implementation of e-government, and challenges that have hampered the progress of e-government adoption in Africa. A country-level overview of Liberia was also provided to give an understanding of the dynamics and limitations of Liberia. The relevant theory covered in this chapter is the Process Virtualization Theory (PVT) and Extended Process Virtualization Theory (EPVT), which explains the various factors that facilitate the virtualization of physical processes within organisations;

**Chapter 3** defined the methodological approaches used for data collection and outlined the pragmatism philosophical assumption underpinning this research study. Since the main aim of this research was to develop a framework to increase success of e-government initiatives in Liberia, a reflective practitioner approach and design science were adopted to provide academic rigor and industry relevance. The research design and activities to answer the research question was also presented in Chapter 3. The ethical considerations of the study were presented in the final section of the chapter.

**Chapter 4** discussed the findings from the study based on results from surveys and focus group interviews. The findings from the focus group discussion revealed that PVT and EVPT theory can provide some elements for virtualization but still lacks constructs which addresses the environment and context. The challenges faced by the government IT practitioners in Liberia implementing e-initiatives were identified, and grouped into categories and themes.

**Chapter 5** presented the design and development of the EEPVT framework. Due to time constraints, the EEPVT framework was evaluated by five senior IT practitioners of GOL on selected e-initiatives. The results from the output of the EEPVT framework corresponded to the practitioners' expectations. The chapter presented the feedback and analysis from the evaluation and the suggested improvements.

**Chapter 6** a discussion on the interpretation of result of the research was presented within the context of the reviewed literature. Chapter 6 discussed the research findings regarding the factors that affect e-government implementation in Liberia. The research aim was briefly highlighted, followed by the introduction of the

EEPVT framework, which has been proposed as an appropriate model for assessing the feasibility of virtualization of e-government services.

### 7.3 ANSWER TO RESEARCH QUESTION

Through literature review, the research confirmed lack of a framework to select government physical service or process to virtualize. The PVT by Overby (2008) and EPVT by Barth and Veit (2011) were used as the starting point for the development of EEPVT.

To answer the research question, the study developed an EEPVT framework which can assist practitioners implementing e-government initiatives. The framework consists of two primary dimensions, namely the technology dimension and authorizing environment dimension. The technology dimension consists of nine constructs and authorizing dimension consist of three constructs.

Table 7-1 below shows the twelve constructs in the EEPVT framework.

<b>Technology Dimension</b>	<b>Authorizing Dimension</b>
Sensory Requirements	Authority
Relationship Requirements	Capability
Synchronism Requirements	Change Readiness
Performance Risk	
Privacy and Security Issues	
Process involvement	
Need for Consultation	
Process Complexity	
Process Ambiguity	

Table 7-1 Constructs of EEPVT framework

The framework was applied to five e-initiatives being implemented by the MACs of GOL. The results showed that it is a useful tool to select government physical processes to virtualize.

### 7.4 SIGNIFICANCE OF THE STUDY

This study makes the following contributions to theory and practice from the results and findings:

This research was conducted in the context of a post-war developing country in Sub-Saharan Africa. The study contributes to academic scholars, e-government practitioners, the donor community (USAID, UNDP, World Bank, AFDB etc.) by enhancing their understanding of implementing e-government programs in a post-war

country in West Africa. The study provided a framework to select suitable e-government initiatives to implement. The PVT by Overby (2008) and EPVT model by Barth and Veit (2011) were selected, and nine (9) independent constructs derived. These constructs were grouped under the “Technology Dimension” of the tool, three (3) new constructs were identified through focus group discussion grouped under a new dimension created called the “Authorizing Dimension”. The tool was empirically tested on five on-going e-government initiatives in Liberia. The results of the test corresponded to the expectations of the senior ICT practitioners who were selected to perform the test. This tool can guide e-government practitioners implementing e-initiative to make a decision on most suitable service to select.

The study applied the PVT and EPVT as core theories, reflective practitioner and design science methodology to develop a tool to select suitable government processes or services to virtualize. PVT was used to explain the phenomena of virtualization to address a real-life problem in Liberia. The research developed a relationship between practice and theory. The reflective practitioner methodology helped the researcher to integrate previous learned information from literature to the present experience of government IT practitioners in Liberia in order to achieve research results. This quest was enhanced through thorough engagements with the IT practitioners through focus group discussion, survey, interviews and observations. The DSR methodology was used to develop the framework for selection of suitable government processes / services to virtualize.

Previous studies identified factors that inhibit implementation of e-government in developing countries which include citizenry illiteracy, lack of trust, lack of awareness, lack of political readiness and leadership support. All these factors were captured by Olumoye and Govender (2018); Osei-Kojo (2017); Ruhode (2016); Verkijika and De Wet (2018) their research. The challenges were further grouped under four factors: Human, Infrastructural, Socio-Cultural and Political. These factors could also apply to other post-war developing Sub-Saharan country.

Many previous scholars and practitioners have discussed e-government implementation in both developed and developing countries. None of the academic study specifically discussed the need for identification of a “change space” in implementation of e-initiatives. The significant contribution of this research work is that it borrows from PDIA approach developed by Andrews, Pritchett and Woolcock



(2013) which follows a step by step process (not rigid plan) that allows flexible learning and adaptation to support action by local people, facilitate the emergence of local solutions and creates new capabilities to solve problems. The research introduces three new constructs to existing EPVT by Barth and Veit (2011).

#### **7.4.1 Implications for theory**

The study contributes to theory and IS community by first presenting a systematic literature review on PVT. The study then empirically tests the EPVT conceptual model proposed by Barth and Veit (2011) to assess the virtualizability of a government process or service in Liberia.

The study further extends EPVT by introducing additional constructs making it applicable in an e-government context. The constructs address the need to identify a “change space” before virtualizing a physical process or service. Existing literature focuses on addressing the characteristics of the process being virtualized. The study introduces another dimension which helps in considering the context of the environment in which the process is being virtualized. The e-government extended PVT (EEPVT) model makes theoretical contribution to IS by extending PVT by Overby (2008) and EPVT Barth and Veit (2011) by operationalizing into a tool that practitioners can use, adding new knowledge to this emergent area of IS.

#### **7.4.2 Implications for practice**

Although this research has shown that there has been some progress in the development of e-government services in Liberia, the government is struggling to implement e-initiatives. The practitioners are not able to determine which e-initiative to implement because of the very challenging conditions in Liberia. Some of the challenges are lack of infrastructure, financial resources, human resource and a “champion” to lead e-government programs. The EEPVT framework developed will assist government IT practitioners implementing e-government programs to select most suitable government physical processes or services to virtualize.

IT practitioners in developing countries may also use the findings of the study to understand the challenges faced by a developing post war country such as Liberia, when implementing e-government programs.

This study alerts e-government practitioners on the importance of fully understanding the context of the environment in which the eservice is being

implemented. It is very common for practitioners to concentrate on only the technology aspect of the service and forget about the most important part which is determining the authorizing environment, which includes knowing the level of authority of champion leading the implementation, the capability covering areas such as financial and human resources, then assessing the change readiness of the government ministry or agency.

## **7.5 CONTRIBUTION TO THEORY AND PRACTICE**

This section outlines the contribution to theory and practice made by this study. The main contributions of this study are as follows:

The expansion of the PVT and EPVT model to include a new dimension namely “Authorizing Dimension”. The new model addresses the environmental factors to consider when selecting a physical process to virtualize. These include change readiness, capability of the implementing ministry or agency, and the needed authority or political support to implement the e-initiative.

Therefore, a novel framework was proposed to evaluate the feasibility of virtualization of physical processes, namely the e-Government extended PVT (EEPVT) model. Thus, on the one hand, this research has validated the implementation of PVT model and EPVT model by validating the constructs and how they affect virtualization in the context of e-government initiatives in Liberia. On the other hand, EEPVT has improved the existing model for process virtualization by first breaking EPVT into two dimensions, Technology and Authorizing dimension and then introducing three new constructs (change readiness, capability and authority) under the authorizing environment.

This new and expanded model was used in this research for the specific case of Liberian e-government services, it has the potential to be generalised in any other country.

The research has contributed to the knowledge of PVT by extending it and using it in an e-government setting. The study therefore confirms and extends the extended PVT (EPVT) model introduced by Barth and Veit (2011).

It has been highlighted in Chapter 2 that the current literature lacks the generic and applicable models and frameworks necessary for e-government adoption in the

developing countries' context. The primary contribution of this research is the development of the novel framework to address this deficiency. The proposed framework links issues related to the technical, organisational, and environmental factors. Tackling the two factors together and extending to is a unique contribution from this research.

Another contribution of this study is the introduction of the Virtualization score index (VTS Index) which provides a percentage value to determine the *virtualizability* of a process or service. The index is key to establishing trends in the future to compare scores of processes which have been successfully virtualized to the scores of processes that are yet to be virtualized.

This research has shown that there has been progress in the implementation of e-government initiatives in Liberia. Considerable efforts have been made in the virtualization and digitisation of many physical government processes by governments and non-government organisations in Liberia. However, to date, there has been no adequate discussion regarding the development of e-government services in Liberia. Therefore, the primary purpose of this research was to examine the current situation of e-government initiatives in Liberia.

This study is the first, to the researcher's best knowledge, to apply PVT and EPVT through a mixed-method approach to assess e-government implementation in Liberia. The knowledge obtained from this study should help IS researchers and practitioners gain a better understanding of the importance of "authorizing dimension" in e-government implementation in Liberia. This understanding should provide insights which will lead to the success of e-initiatives in GOL e-government program.

## **7.6 RECOMMENDATIONS TO GOVERNMENT OF LIBERIA**

The findings from study have various practical implications for IT experts, managers and government-level IT policy makers responsible for the planning and deciding on government services to migrate to e-government portals. For example, it has been revealed from the focus group discussion (Chapter 4 Section 4.5) conducted in the study that despite the availability of information online, many citizens prefer to communicate with human representatives, especially if they are in need of assistance or are unable to navigate the web portal to perform the desired tasks online. Respondents also revealed a lack of adequate training and a lack of trust as some of

the factors that limit the usage and adoption of the online services. Below are recommendations from the researcher to GOL based on the study findings from Chapter 4 Sections 4.5 and 4.6:

1. The GOL should dedicate resources towards facilitating the adoption of e-government services to the public by organising awareness campaigns and workshops to ensure that the citizens are accustomed to the various aspects of the e-services. This will make migration of government services to an e-government portal easier.
2. The GOL should invest considerable resources towards devising a national-level plan for the development and promotion of a centralised and digitised e-Government portal, which is able to facilitate communication and coordination between the different departments of the government, as it not only helps Liberian citizens, but it also streamlines the various internal processes within the Liberian government.
3. It is recommended that the e-Government portal of Liberia ([www.eLiberia.com](http://www.eLiberia.com)) be developed as single point of contact for all online government services. Also, the Liberia County Service Centres which serves as a one-stop shop set up under the Liberia Decentralization Support Program (LDSP) to ensure that major documentation services are accessible to rural residents, should be well equipped. The operation of the Centre will reduce difficulties faced by many rural residents in gaining access to computers and Internet in order to use online government services.
4. The participants in the focus group discussion mentioned lack of effective funding which is hindering the development of ICT in Liberia. The government must form a positive approach to financing ICT by creating an “ICT Donor working group” to centrally manage investment made by the donor community in ICT. This will prevent the duplication of systems and also avoid proliferation of silo ICT systems which defeats the purpose of e-Government.
5. The Government of Liberia has identified ICT as core to its strategy for enhancing public service delivery, employment creation, and national growth. This is clearly enshrined in the new National Telecommunication and ICT Policy (2019-2024) which is yet to be passed by the legislature. In keeping with

the National ICT Policy, a Program Management Office (PMO) is mandated to monitor, evaluate and supervise the implementation of services designated under the National ICT policy and e-Government strategy. It is important the PMO to be staffed with professionals with proven capacity in areas such as MIS, project management, service management, change management etc. The PMO is necessary to ensure that scarce GOL ICT resources are efficiently utilized and distributed. Currently, quite a number of MACs in Liberia do not have effective ICT support. Therefore, in developing e-government, this section plays a critical role in balancing the needs of the agencies and the central government-wide needs when comes to skills and fund allocation.

In conclusion, it is imperative that the Government of Liberia take heed to some of the concerns and challenges highlighted in this research and actively works towards implementing the recommendations prescribed in this research.

## **7.7 RESEARCHER'S THOUGHTS ABOUT PERSONAL DEVELOPMENT**

In the course of this study, I have attempted to remain as objective as possible. I believe this research will bring enormous value to e-government implementation in developing countries. I realized during the research that a significant number of the IT practitioners come from very strong technology background and therefore only consider technology aspect of processes when virtualizing government services. They have not thought of other factors outside technology that can affect virtualization. This study was conducted using a reflective practitioner approach and design science approach as it was determined it is the most suitable research method to build an artefact and evaluate it using real case e-government initiatives. These two approaches worked well for me, in my role as a consultant on the e-government program in Liberia, I needed to gain an understanding of why some e-government initiatives have failed. The design science approach was essential to create a functional artefact for selection of e-government processes. I will now discuss briefly the benefits gained during this 4-years doing this research.

The first major progress I noticed is improvement in my skill to consciously reflect on what is current developments in Liberia e-government program, what changes are required, and how to implement the change in the context of this very difficult environment. The IT practitioners of the MACs feel they are not understood

by the non-technical staff, especially management. By engaging the IT practitioners through interviews, focus group discussion and observation, I was able to gain an insight into why they face the challenge of being misunderstood. The IT practitioners have a clear understanding of the desired outcomes of e-initiatives but are not able to articulate well for management to understand. The introduction of authorizing dimension in the EEPVT framework enables the IT practitioners to build acceptance from the key decision makers on the importance of the e-initiative being implemented.

Another outcome from this study is my personal growth. I have learnt e-government implementation in Liberia is not a straight line. Rather it involves experimentation, failure and setbacks, as well shifts in direction. The approach of learning-while-doing has built my confidence and enabled me to adapt to new challenges. I have learnt to break large ambitions into smaller and realizable steps, with frequent stops for evaluation and reorientation of the path ahead. This allows to continuously learn and to adapt. At the very early stage of my study, I encountered one major challenge, the outbreak of Ebola virus in Liberia in 2014. This was a major setback, as I had to wait for almost 2 years when WHO declared Ebola free before I could return to Liberia to continue the research. By that time, returned to the country the whole IT landscape had changed, I had to again learn and adapt to the new environment.

I have learnt to persevere, remain calm and always optimistic in very difficult situations. I have experienced many rejections in the course of the study. But in all, I have never lost sight of the goal. These characteristics have become an integral part of my personality, I simply keep going irrespective of the challenges. In my role as the Change Management Advisor on the USAID Digital Liberia e-Government Project, I am able to guide the IT practitioners through a structured approach to move from their current states to the desired state. I have embraced the style of planning, doing, continuously reflecting, learning and doing again in my work.

## **7.8 LIMITATIONS OF THE STUDY AND FURTHER RESEARCH**

There are a number of different limitations within the methodological development of this research, which will be sufficiently discussed in this sub-section. Apart from the limitations, this sub-section will also provide valuable guidelines for future researchers, which will benefit them towards making valuable research

contributions in the field of e-government in the context of Liberia and Sub-Saharan Africa.

This research employed the mixed-mode of research methodology for exploring the existing development of e-government services in Liberia. Since there has been very little research conducted in the context of Liberia, there is a need for comprehensive quantitative as well as qualitative explorations of the existing e-government initiatives in Liberia and other countries in Africa.

The study on GOL e-Government was conducted from the perspective of the government IT experts. In order to gain valuable insights regarding the overall workings and quality of e-government services in Liberia, there is a need for inclusion of viewpoints from a diverse group of individuals. Therefore, future studies should incorporate findings from the citizens of Liberia including policy-makers, and government officials.

The primary concern with the utilization of findings from IT experts alone is that their views might be biased, due to a number of reasons, which include:

familiarity with the technical aspects of e-services, due to which, they might not be able to accurately assess the different challenges faced by common people who are not well-versed in the various technical aspects necessary for navigating and using the online service, and the IT experts affiliated with a ministry or agency might not be inclined to discuss the negative elements of the eservices implemented at their MACs.

The researcher is professionally involved in GOL e-Government program as an advisor to the USAID Digital Liberia project. Due to this role, he may not be seen as an objective and neutral observer. However, this study should not be seen as being compromised by the researcher involvement, as the methods of rigor discussed in Chapter 3 are executed and upheld to counter this risk.

The research carried out in this thesis involved the development of a framework with the constructs drawn from literature and empirical data collected through survey and focus groups. Because the validation of its use was limited to GOL, it cannot be universally applied to all scenarios in its current format. The results can be said to be limited as the weightings of constructs were based on perspectives of senior IT practitioners of GOL.

Future study is expected to substantiate the empirical validity of the proposed EEPVT framework by evaluating the feasibility of virtualization of different physical processes within the contexts of different developing and developed countries around the world. The present study has explored the various aspects of the Liberian e-government context. Future studies could provide a comprehensive analysis of the regional situation in terms of e-government adoption, as this will allow an appreciation of the various similarities and differences between the internal situations of the different African countries.

The framework (EEPVT) attempts to address some important constructs that are currently missing in PVT and EPVT model for more successful e-government implementation. The researcher is aware that the model could be improved and further verified through practice. The research has demonstrated the feasibility of the framework to assist IT practitioners in GOL in implementing e-initiatives. A fully commercial system could be developed hosted online for e-Government practitioners in the world.

A final future research activity is to promote the DSR and Reflective practitioner approaches so that they become more widely known to the research communities. The researcher intends to write and publish academic papers and present at conferences. This will help bring more discussion and attention to use of DSR and reflective practitioner in e-government research not only within academia but also to practitioners.

## **7.9 CONCLUDING REMARKS**

This chapter concluded the main findings by summarizing the overall research process through three main stages of research process which were: defining problem through literature review, developing EEPVT framework through qualitative and quantitative analysis and finally evaluation of the framework by panel of experts.

The inclusion of environmental constructs in the EEPVT model is an important improvement to the earlier models of PVT and EPVT. As has been emphasized in the literature, e-government implementation is about managing aspects of changes affected by the new technology implementation (Nograšek 2011).

This chapter has shown that all the research objectives have been met and also described the contributions to knowledge. The findings from the study support an



important paradigm shift in e-government and PVT research which mainly focused on technology aspects for virtualization so far, the inclusion of constructs related to the determining the context of the environment is an important determinant in virtualization of government physical services.

This chapter concludes the dissertation by summarizing the key findings, addressing the research contributions, making some recommendations, directing research limitations, and highlighting areas for future research. Hopefully IS researchers and practitioners will start considering process virtualization from a more inclusive and holistic point.

# References

---

- Abrahams, L & Newton-Reid, L, *e-Governance for social and local economic development: Gauteng city region perspective*, 2008, LINK Public Policy Research Paper No. 9.
- Accenture 2014, *Digital Government: Pathways to Delivering Public Services for the Future*, [https://www.accenture.com/be-en/~/\\_media/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Industries\\_7/Accenture-Digital-Government-Pathways-to-Delivering-Public-Services-for-the-Future.pdf](https://www.accenture.com/be-en/~/_media/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Industries_7/Accenture-Digital-Government-Pathways-to-Delivering-Public-Services-for-the-Future.pdf).
- Adeboye, TO 1995, 'Governance and economic development', in Good Governance for Africa Conference: *proceedings of the Good Governance for Africa Conference* Maastricht, pp. 23-4.
- Adelman, C 1993, 'Kurt Lewin and the origins of action research', *Educational action research*, vol. 1, no. 1, pp. 7-24.
- Adeyemo, A 2011, 'E-government implementation in Nigeria: An assessment of Nigerias global e-gov ranking', *Journal of Internet and Information Systems*, vol. 2, no. 1, pp. 11-9.
- AfDB 2013, *Liberia Country Strategy Paper 2013-2017*, African Development Bank Group, <<https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Liberia%20-%202013-2017%20-%20Country%20Strategy%20Paper.pdf>>.
- AfDB 2014, *African Development Bank - Annual Report 2013*, African Development Bank Group, <[https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Annual\\_Report\\_2013.pdf](https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Annual_Report_2013.pdf)>.
- Ajzen, I 1991, 'The theory of planned behavior', *Organizational behavior and human decision processes*, vol. 50, no. 2, pp. 179-211.
- Alshehri, M & Drew, S 2010, 'Challenges of e-government services adoption in Saudi Arabia from an e-ready citizen perspective', *World Academy of Science, Engineering Technology*, vol. 66, pp. 1053-9.
- Andrews, M, Pritchett, L & Woolcock, M 2013, 'Escaping capability traps through problem driven iterative adaptation (PDIA)', *World development*, vol. 51, pp. 234-44.
- Anttiroiko, A-V & Mälkiä, M 2006, *Encyclopedia of digital government*, Idea Group Reference, vol. 2, pp. 580-587.
- Balci, B, Grgecic, D & Rosenkranz, C 2013, 'Why people reject or use virtual processes: a test of process virtualization theory', in Nineteenth Americas Conference

on Information Systems (AMCIS): *proceedings of the Nineteenth Americas Conference on Information Systems (AMCIS)* Chicago, Illinois, vol. 5, pp. 4009-4016.

Balci, B & Rosenkranz, C 2014, "'Virtual or material, what do you prefer?' A study of process virtualization theory', in Twenty Second European Conference on Information Systems (ECIS): *proceedings of the Twenty Second European Conference on Information Systems (ECIS)* Tel Aviv, Israel, pp. 1-14.

Barth, M & Veit, D 2011, 'Which Processes Do Users Not Want Online? Extending Process Virtualization Theory', in Thirty Second International Conference on Information Systems: *proceedings of the Thirty Second International Conference on Information Systems* Shanghai, China, pp. 1-21.

Bednall, J 2006, 'Epoche and bracketing within the phenomenological paradigm', *Issues in Educational Research*, vol. 16, no. 2, pp. 123-38.

Bekkers, V & Homburg, V 2007, 'The myths of e-government: Looking beyond the assumptions of a new and better government', *The Information Society*, vol. 23, no. 5, pp. 373-82.

Bélanger, F & Carter, L 2012, 'Digitizing government interactions with constituents: an historical review of e-government research in information systems', *Journal of the Association for information Systems*, vol. 13, no. 5, p. 363.

Benner, T & Blume, T 2008, 'A Second Chance for Liberia: President Johnson-Sirleaf's quest to build a new Liberia', *Internationale Politik-Global Edition*, Spring, vol. 9, pp. 40-45.

Berman, BJ & Tettey, W 2001, 'African states, bureaucratic culture and computer fixes', *Public Administration Development: The International Journal of Management Research Practice*, vol. 21, no. 1, pp. 1-13.

Bhatnagar, S 2003, 'E-government and access to information', in *Global corruption report 2003*, Transparency International, Washington DC, pp. 24-32.

Bhatnagar, SC & Rama Rao, TP, *Impact Assessment study of e-government projects in India*, 2007, Ministry of Communications and Information Technology, New Delhi, India.

Bogdan, R & Biklen, SK 1997, *Qualitative research for education*, Allyn & Bacon, Boston, MA.

Boughzala, I, Assar, S & Romano Jr, NC 2010, 'An E-government field study of process virtualization modeling', *Group Decision and Negotiation*, vol. 154, pp. 32-47.

Brown, D 2005, 'Electronic government and public administration', *International Review of Administrative Sciences*, vol. 71, no. 2, pp. 241-54.

- Bryman, A 2001, 'The nature of qualitative research', in A Bryman (ed.), *Social research methods*, Oxford University Press, Oxford, pp. 264-88.
- Bryman, A 2006, 'Integrating quantitative and qualitative research: how is it done?', *Qualitative research*, vol. 6, no. 1, pp. 97-113.
- Bryman, A & Bell, E 2011, 'Ethics in business research', in *Business Research Methods*, 3rd, Oxford University Press, Oxford.
- Bwalya, KJ 2009, 'Factors affecting adoption of e-government in Zambia', *The Electronic Journal of Information Systems in Developing Countries*, vol. 38, no. 1, pp. 1-13.
- Bwalya, KJ & Healy, M 2010, 'Harnessing e-government adoption in the SADC region: a conceptual underpinning', *Electronic journal of e-government*, vol. 8, no. 1, p. 23.
- Carbo, T & Williams, JG 2004, 'Models and metrics for evaluating local electronic government systems and services', *Electronic journal of e-government*, vol. 2, no. 2, pp. 95-104.
- Carlson, JA 2010, 'Avoiding traps in member checking', *The qualitative report*, vol. 15, no. 5, pp. 1102-13.
- Carter, L & Bélanger, F 2005, 'The utilization of e-government services: citizen trust, innovation and acceptance factors', *Information systems journal*, vol. 15, no. 1, pp. 5-25.
- Castells, M 2010, *End of millennium*, 2nd edn, John Wiley & Sons.
- Cavana, RY, Delahaye, BL & Sekaran, U 2001, *Applied business research: Qualitative and quantitative methods*, John Wiley & Sons Australia.
- Cecchini, S & Raina, M 2004, 'Electronic government and the rural poor: The case of Gyandoot', *Information Technologies and International Development*, vol. 2, no. 2, pp. 65-75.
- Cheema, GS & Rondinelli, DA 2008, 'Decentralizing governance: Emerging concepts and practices', *The Journal of Federalism*, vol. 38, no. 4, pp. 741-3.
- Chen, YC & Thurmaier, K 2008, 'Advancing E-Government: Financing Challenges and Opportunities', *Public Administration Review*, vol. 68, no. 3, pp. 537-48.
- Chen, YN, Chen, HM, Huang, W & Ching, RKH 2006, 'E-government strategies in developed and developing countries: An implementation framework and case study', *Journal of Global Information Management (JGIM)*, vol. 14, no. 1, pp. 23-46.
- Clarke, A 1999, *Evaluation research: An introduction to principles, methods and practice*, Sage, London.

- Coleman, S 2006, *African e-governance: opportunities and challenges*, Oxford University Press, University of Oxford.
- Cosh, J 1999, 'Peer observation: a reflective model', *ELT Journal*, vol. 53, no. 1, pp. 22-7.
- Coursey, D & Norris, DF 2008, 'Models of e-government: Are they correct? An empirical assessment', *Public Administration Review*, vol. 68, no. 3, pp. 523-36.
- Creswell, JW 2009, 'Mapping the field of mixed methods research', *Journal of Mixed Methods Research*, vol. 3, no. 2, pp. 95-108.
- Creswell, JW, Plano Clark, VL, Gutmann, ML & Hanson, WE 2003, 'Advanced mixed methods research designs', in HL de Jong (ed.), *Handbook of mixed methods in social and behavioral research*, Thousand Oaks, Sage, CA, pp. 209-40.
- Cubitt, C 2014, 'An Introduction to Governance in Africa', *Governance in Africa*, vol. 1, no. 1, pp. 1-9.
- Curtin, GG, Sommer, MH & Vis-Sommer, V 2003, 'The world of e-government', *Journal of Political Marketing*, vol. 2, no. 3-4, pp. 1-16.
- Dada, D 2006, 'The failure of e-government in developing countries: a literature review', *The Electronic Journal of Information Systems in Developing Countries*, vol. 26, no. 1, pp. 1-10.
- Davis, FD, Bagozzi, RP & Warshaw, PR 1989, 'User acceptance of computer technology: a comparison of two theoretical models', *Management science*, vol. 35, no. 8, pp. 982-1003.
- Davis, FD, Bagozzi, RP & Warshaw, PR 1992, 'Extrinsic and intrinsic motivation to use computers in the workplace', *Journal of applied social psychology*, vol. 22, no. 14, pp. 1111-32.
- Deloitte 2012, *2012 Global Report*, [https://public.deloitte.com/media/0564/pdfs/dttl\\_2012globalreport.pdf](https://public.deloitte.com/media/0564/pdfs/dttl_2012globalreport.pdf).
- Dessus, S, Hoffman, J & Lofgren, H 2012, 'Liberia: Strategic policy options for medium term growth and development', *World Bank Policy Research Working Paper 6081*,
- Dolan, TE 2014, 'A six-dimensional strategic development tool for e-government effectiveness', in *Government e-Strategic Planning and Management*, Springer, New York, NY, pp. 105-24.
- Dunleavy, P, Margetts, H, Bastow, S & Tinkler, J 2006, 'New public management is dead—long live digital-era governance', *Journal of public administration research theory*, vol. 16, no. 3, pp. 467-94.

Dunleavy, P, Margetts, H, Bastow, S & Tinkler, J 2008, 'Australian e-government in comparative perspective', *Australian Political Studies Association*, vol. 43, no. 1, pp. 13-26.

Dwan, R & Bailey, L, *Liberia's Governance and Economic Management Assistance Programme (GEMAP)*, 2006, United Nations, Department of Peacekeeping Operations, Peacekeeping Best Practices Section, and World Bank, Fragile States Group, New York and Washington, DC.

Dwivedi, SK & Bharti, AK 2010, 'E-governance in India-Problems and Acceptability', *Journal of Theoretical Applied Information Technology*, vol. 17.

Ebbers, WE, Pieterse, WJ & Noordman, HN 2008, 'Electronic government: Rethinking channel management strategies', *Government Information Quarterly*, vol. 25, no. 2, pp. 181-201.

Effah, J & Nuhu, H 2017, 'Institutional barriers to digitalization of government budgeting in developing countries: A case study of Ghana', *The Electronic Journal of Information Systems in Developing Countries*, vol. 82, no. 1, pp. 1-17.

Fan, S, Sia, C-L & Zhao, JL 2012, 'Towards Collaboration Virtualization Theory', in Pacific Asia Conference on Information Systems (PACIS): *proceedings of the Pacific Asia Conference on Information Systems (PACIS)* Hochiminh City, Vietnam, p. 5.

Featherman, MS & Pavlou, PA 2003, 'Predicting e-services adoption: a perceived risk facets perspective', *International journal of human-computer studies*, vol. 59, no. 4, pp. 451-74.

Felden, C, Chamoni, P & Linden, M 2010, 'From process execution towards a business process intelligence', in International Conference on Business Information Systems: *proceedings of the International Conference on Business Information Systems* Springer, Berlin, Heidelberg, pp. 195-206.

Field, A 2013, *Discovering statistics using IBM SPSS statistics*, 3rd edn, Sage, London, UK.

Floridi, L, (Ed.) 2008, *The Blackwell guide to the philosophy of computing and information*, John Wiley & Sons.

Fonou Dombeu, JV & Rannyai, N 2014, 'African e-government research landscape', *The African Journal of Information Systems*, vol. 6, no. 3, p. 2.

Forcella, M 2006, 'E-democracy: Strategies and new horizons for the European Union policies', *Journal of E-government*, vol. 3, no. 2, pp. 99-107.

Fountain, JE 2008, 'Bureaucratic reform and e-government in the United States: An institutional perspective', in A Chadwick & PN Howard (eds), *Routledge handbook of Internet politics*, Routledge, ch 8, pp. 115-29.

Furuholt, B & Sæbø, Ø 2018, 'The role telecentres play in providing e-government services in rural areas: A longitudinal study of Internet access and e-government services in Tanzania', *The Electronic Journal of Information Systems in Developing Countries*, vol. 84, no. 1, p. e12006.

Gallagher, M, Hares, T, Spencer, J, Bradshaw, C & Webb, IAN 1993, 'The nominal group technique: a research tool for general practice?', *Family practice*, vol. 10, no. 1, pp. 76-81.

Gant, JP, *Electronic government for developing countries*, 2008, International Telecommunication Union (ITU) Geneva.

Garson, GD 2006, *Public information technology and e-governance: Managing the virtual state*, Jones & Bartlett Learning, Sudbury, MA.

Gebba, TR & Zakaria, MR 2012, 'E-Government in Egypt: An analysis of practices and challenges', *International Journal of Business Research Development*, vol. 4, no. 2.

Gibbins, R 2004, 'Federalism and the challenge of electronic portals', in EL Oliver & L Sanders (eds), *E-government Reconsidered: Renewal of Governance for the Knowledge Age*, Canadian Plains Research Center, Regina, ch 2, pp. 33-42.

Gil-Garcia, JR & Martinez-Moyano, I 2007, 'Understanding the evolution of e-government: The influence of systems of rules on public sector dynamics', *Government Information Quarterly*, vol. 24, no. 2, pp. 266-90.

Gilbert, N, (Ed.) 2008, *Researching social life*, 3rd edn, Sage.

Grant, G & Chau, D 2005, 'Developing a generic framework for e-government', *Journal of Global Information Management*, vol. 13, no. 1, pp. 1-30.

Graupner, E & Maedche, A 2015, 'Process digitisation in retail banking: an empirical examination of process virtualization theory', *International Journal of Electronic Business*, vol. 12, no. 4, pp. 364-79

Grewal, D, Gotlieb, J & Marmorstein, H 1994, 'The moderating effects of message framing and source credibility on the price-perceived risk relationship', *Journal of consumer research*, vol. 21, no. 1, pp. 145-53.

Grimaldi, M & Rippa, P 2011, 'An AHP-based framework for selecting knowledge management tools to sustain innovation process', *Knowledge Process Management*, vol. 18, no. 1, pp. 45-55.

Groundwater-Smith, S & Mockler, N 2005, 'Practitioner research in education: beyond celebration', in Australian Association for Research in Education focus Conference: *proceedings of the Australian Association for Research in Education focus Conference* James Cook University, Cairns, Australia.

- Gunter, B 2006, 'Advances in e-democracy: overview', *Aslib Proceedings: New Information Perspectives*, vol. 58, no. 5, pp. 361-70.
- Hafkin, NJ, *E-government in Africa: An overview of progress made and challenges ahead*, 2009, Prepared for the UNDESA/UNPAN workshop on electronic/mobile government in Africa: Building Capacity in Knowledge Management through Partnership. United Nations Economic Commission for Africa.
- Hague, BN & Loader, BD 1999, *Digital democracy: Discourse and decision making in the information age*, Psychology Press.
- Hair, JF, Black, WC, Babin, BJ, Anderson, RE & Tatham, RL 1998, *Multivariate data analysis (Vol. 5)*, Prentice hall, Upper Saddle River, NJ.
- Hart, C 2018, *Doing a literature review: Releasing the research imagination*, Sage, London, UK.
- Hayes, N, Introna, L & Petrakaki, D 2014, 'Imbrications of institutional logics: the case of an e-government initiative in Greece', *New Technology, Work and Employment*, vol. 29, no. 2, pp. 124-38.
- Heeks, R 2002, 'e-Government in Africa: Promise and practice', *Information polity*, vol. 7, no. 2,3, pp. 97-114.
- Heeks, R & Kenny, CJ 2002, *The Economics of ICTs and Global Inequality: Convergence or Divergence for Developing Countries?*, Institute for Development Policy and Management.
- Heeks, R & Bailur, S 2007, 'Analyzing e-government research: Perspectives, philosophies, theories, methods, and practice', *Government Information Quarterly*, vol. 24, no. 2, pp. 243-65.
- Hevner, A & Chatterjee, S 2010, 'Design science research in information systems', in *Design research in information systems*, Springer, Boston, MA, vol. 22, pp. 9-22.
- Hevner, AR 2007, 'A three cycle view of design science research', *Scandinavian journal of information systems*, vol. 19, no. 2, p. 4.
- Huggins, C & Frosina, N 2017, 'ICT-driven projects for land governance in Kenya: Disruption and e-government frameworks', *GeoJournal*, vol. 82, no. 4, pp. 643-63.
- Hyden, G, Court, J & Mease, K 2004, *Making sense of governance: empirical evidence from sixteen developing countries*, Lynne Rienner Publishers, Boulder, CO.
- Ivankova, NV, Creswell, JW & Plano Clark, VL 2007, 'Foundations and approaches to mixed methods research', in K Maree (ed.), *First steps in research*, Van Schaik Publishers, Pretoria, South Africa, pp. 253-82.
- Johnson, B & Hencke, D 2008, 'Not fit for purpose: £ 2bn cost of government's IT blunders', *Guardian, Saturday January*, vol. 5, p. p11.



- Johnson, RB & Onwuegbuzie, A 2004, 'Mixed methods research: A research paradigm whose time has come', *Educational researcher*, vol. 33, no. 7, pp. 14-26.
- Kamara, L 2011, 'Challenges and Prospects of Establishing e-government in Liberia with focus on the Ministry of Finance, Ministry of Commerce and the Ministry of Planning and Economic Affairs of the Republic of Liberia', Master thesis, Blekinge Institute of Technology, Karlskrona, Sweden.
- Kampen, JK, Snijkers, K & Bouckaert, G 2005, 'Public priorities concerning the development of e-government in Flanders', *Social Science Computer Review*, vol. 23, no. 1, pp. 136-9.
- Kanaan, RK 2009, 'Making sense of e-government implementation in Jordan: A qualitative investigation', Doctoral thesis, De Monfort University, Leicester, UK.
- Kelsall, T 2011, 'Going with the grain in African development?', *Development Policy Review*, vol. 29, pp. s223-s51.
- Kemmis, S 2006, 'Participatory action research and the public sphere', *Educational action research*, vol. 14, no. 4, pp. 459-76.
- Khan, GF, Moon, J, Swar, B, Zo, H & Rho, JJ 2012, 'E-government service use intentions in Afghanistan: technology adoption and the digital divide in a war-torn country', *Information Development*, vol. 28, no. 4, pp. 281-99.
- Kim, S 2003, 'Research paradigms in organizational learning and performance: Competing modes of inquiry', *Information Technology, Learning and Performance Journal*, vol. 21, no. 1, pp. 9-18.
- Koontz, LD, *Electronic Government: Proposal Addresses Critical Challenges*, 2002, US General Accounting Office.
- Krishnan, S, Teo, TSH & Lim, VKG 2013, 'Examining the relationships among e-government maturity, corruption, economic prosperity and environmental degradation: A cross-country analysis', *Information Management*, vol. 50, no. 8, pp. 638-49.
- Kuhn, TS 2012, *The structure of scientific revolutions*, University of Chicago press.
- Kumar, R & Best, ML 2006, 'Impact and sustainability of e-government services in developing countries: Lessons learned from Tamil Nadu, India', *The Information Society*, vol. 22, no. 1, pp. 1-12.
- Kuzma, J, Yen, D & Oestreicher, K 2009, 'Global e-government web accessibility: an empirical examination of EU, Asian and African sites', in *Second International Conference on Information and Communication Technologies and Accessibility (ICTA): proceedings of the Second International Conference on Information and Communication Technologies and Accessibility (ICTA)* Hammamet, Tunisia, pp. 83-9.

Kyem, PAK 2016, 'Mobile phone Expansion and Opportunities for E-Governance in Sub-Saharan Africa', *The Electronic Journal of Information Systems in Developing Countries*, vol. 75, no. 1, pp. 1-15.

Lam, W 2005, 'Barriers to e-government integration', *Journal of Enterprise Information Management*, vol. 18, no. 5, pp. 511-30.

Lee, SM, Tan, X & Trimi, S 2005, 'Current practices of leading e-government countries', *Communications of the ACM*, vol. 48, no. 10, pp. 99-104.

Lewin, K 1946, 'Action research and minority problems', *Journal of social issues*, vol. 2, no. 4, pp. 34-46.

Li, F 2003, 'Implementing E-Government strategy in Scotland: current situation and emerging issues', *Journal of Electronic Commerce in Organizations*, vol. 1, no. 2, pp. 44-65.

Li, M, Oh, L-B & Wang, K 2009, 'A process virtualization theory approach to understanding the usage continuance of cross-channel instant messaging', in *The 9th International Conference on Electronic Business: proceedings of the 9th International Conference on Electronic Business*.

Margetts, H & Dunleavy, P 2013, 'The second wave of digital-era governance: a quasi-paradigm for government on the Web', *Philosophical Transactions of the Royal Society A: Mathematical, Physical Engineering Sciences*, vol. 371, no. 1987, p. 20120382.

Mburu, S, Franz, E & Springer, T 2013, 'A conceptual framework for designing mHealth solutions for developing countries', in *3rd ACM MobiHoc workshop on Pervasive wireless healthcare: proceedings of the 3rd ACM MobiHoc workshop on Pervasive wireless healthcare* ACM, Bangalore, India, pp. 31-6.

McGrath, K & Maiye, A 2010, 'The role of institutions in ICT innovation: learning from interventions in a Nigerian e-government initiative', *Information Technology for Development*, vol. 16, no. 4, pp. 260-78.

McLoughlin, I & Cornford, J 2006, 'Transformational change in the local state? Enacting e-government in English local authorities', *Journal of Management Organization*, vol. 12, no. 3, pp. 195-208.

McMahon, T 1999, 'Is reflective practice synonymous with action research?', *Educational action research*, vol. 7, no. 1, pp. 163-9.

Middleton, MR 2007, 'Approaches to evaluation of websites for public sector services', in *IADIS Conference one e-Society proceedings of the IADIS Conference one e-Society* P Kommers (ed.), Lisbon, Portugal, pp. 279-84.

Minogue, M 2001, 'The internationalization of new public management', in W McCourt & M Minogue (eds), *The Internationalization of Public Management: Reinventing the Third World State*, Edward Elgar Publishing, ch 1.

- Mitrovic, Z & Bytheway, AJ 2009, 'Awareness of E-government Related Small Business Development Services in Cape Town', *The Electronic Journal of Information Systems in Developing Countries*, vol. 39, no. 1, pp. 1-14.
- Mugenda, OM & Mugenda, AG 2003, *Qualitative and quantitative approaches*, Research Methods Africa Center for Technology Studies Press, Nairobi, Kenya.
- Mutula, SM 2005, 'Bridging the digital divide through e-governance: A proposal for Africa's libraries and information centres', *The Electronic Library*, vol. 23, no. 5, pp. 591-602.
- Mutula, SM 2012, 'E-Government's role in poverty alleviation: case study of South Africa', in *Cases on developing countries and ICT integration: Rural community development*, IGI Global, pp. 104-22.
- Nasi, G & Frosini, F 2010, 'Vision and practice of e-government: an empirical study', *Financial Accountability & Management*, vol. 26, no. 1, pp. 85-101.
- Ndou, V 2004, 'E-Government for developing countries: opportunities and challenges', *The Electronic Journal of Information Systems in Developing Countries*, vol. 18, no. 1, pp. 1-24.
- Nedbal, D & Wetzlinger, W 2012, 'Technical Complexity as Important Factor for Green IS Solutions: Theoretical Background and Exploratory Study', in Conference on Information Resources Management (CONF-IRM 2012): *proceedings of the Conference on Information Resources Management (CONF-IRM 2012)* Vienna, Austria, p. 80.
- Ngulube, P 2007, 'The nature and accessibility of e-government in sub-Saharan Africa', *International Review of Information Ethics*, vol. 7, no. 9, pp. 1-13.
- Nkohkwo, QN-a & Islam, MS 2013, 'Challenges to the Successful Implementation of e-Government Initiatives in Sub-Saharan Africa: A Literature Review', *Electronic journal of e-government*, vol. 11, no. 1.
- Nograšek, J 2011, 'Change management as a critical success factor in e-government implementation', *Business Systems Research*, vol. 2, no. 2, pp. 13-24.
- Norris, DF & Reddick, CG 2013, 'Local e-government in the United States: Transformation or incremental change?', *Public Administration Review*, vol. 73, no. 1, pp. 165-75.
- Nurdin, N, Stockdale, R & Scheepers, H 2012, 'The influence of external institutional pressures on local e-government adoption and implementation: A coercive perspective within an Indonesian local e-government context', in International Conference on Electronic Government (EGOV 2012): *proceedings of the International Conference on Electronic Government (EGOV 2012)*, HJ Scholl, et al. (eds.), Springer, Kristiansand, Norway, pp. 13-26.

Nuridin, N, Stockdale, R & Scheepers, H 2012, 'Organizational adaptation to sustain information technology: The case of e-government in developing countries', *Electronic journal of e-government*, vol. 10, no. 1, p. 70.

O'Keefe, RM & O'Leary, DE 1993, 'Expert system verification and validation: a survey and tutorial', *Artificial Intelligence Review*, vol. 7, no. 1, pp. 3-42.

O'Sheedy, DG 2012, 'A study of agile project management methods used for IT implementation projects in small and medium-sized enterprises', DBA thesis, Southern Cross University, Lismore, NSW.

Ochara, NM 2010, 'Assessing irreversibility of an E-Government project in Kenya: Implication for governance', *Government Information Quarterly*, vol. 27, no. 1, pp. 89-97.

Ofoeda, J, Boateng, R & Asmah, A 2018, 'Virtualization of government-to-citizen engagement process: Enablers and constraints', *The Electronic Journal of Information Systems in Developing Countries*, vol. 84, no. 5, p. e12037.

Ofoeda, JK 2015, 'Virtualization of Government-To-Citizen Engagement Processes: Evidence From Ghana Driver and Vehicle Licensing Authority', Doctoral dissertation thesis, University of Ghana.

Okunola, OM, Rowley, J & Johnson, F 2017, 'The multi-dimensional digital divide: Perspectives from an e-government portal in Nigeria', *Government Information Quarterly*, vol. 34, no. 2, pp. 329-39.

Olowu, B 1999, 'Redesigning African civil service reforms', *The Journal of Modern African Studies*, vol. 37, no. 1, pp. 1-23.

Olumoye, MY & Govender, I 2018, 'An empirical investigation of factors influencing integrated e-Government implementation in Nigeria: A case of housing and urban development agency', *The Electronic Journal of Information Systems in Developing Countries*, vol. 84, no. 1, p. e12012.

Onwuegbuzie, AJ & Leech, NL 2006, 'Linking research questions to mixed methods data analysis procedures 1', *The qualitative report*, vol. 11, no. 3, pp. 474-98.

Osei-Kojo, A 2017, 'E-government and public service quality in Ghana', *Journal of Public Affairs*, vol. 17, no. 3, p. e1620.

Overby, E 2008, 'Process virtualization theory and the impact of information technology', *Organization science*, vol. 19, no. 2, pp. 277-91.

Overby, E 2012, 'Migrating processes from physical to virtual environments: Process virtualization theory', in YK Dwivedi, et al. (eds), *Information systems theory: Explaining and Predicting Our Digital Society, Vol. 1*, Springer, pp. 107-24.

Overby, E, Slaughter, SA & Konsynski, B 2010, 'Research commentary—the design, use, and consequences of virtual processes', *Information Systems Research*, vol. 21, no. 4, pp. 700-10.

Overby, EM & Konsynski, B 2010, 'Task-technology fit and process virtualization theory: an integrated model and empirical test', *Public Law & Legal Theory Research Paper Series Research Paper No. 10-96*, pp. 1-62,

Oyebade, A 2013, *Liberia*, Oxford University Press.

Pallant, J 2007, *SPSS survival manual*, 3rd edn, McGraw Hill Open University Press, Berkshire, England.

Peppers, K, Tuunanen, T, Rothenberger, MA & Chatterjee, S 2007, 'A design science research methodology for information systems research', *Journal of management information systems*, vol. 24, no. 3, pp. 45-77.

Perry, C 1998, 'Processes of a case study methodology for postgraduate research in marketing', *European journal of marketing*, vol. 32, no. 9/10, pp. 785-802.

Potter, M, Gordon, S & Hamer, P 2004, 'The nominal group technique: a useful consensus methodology in physiotherapy research', *New Zealand Journal of Physiotherapy*, vol. 32, no. 3, pp. 126-30.

Rodriguez Bolivar, MP, Caba Perez, C & Lopez Hernandez, AM 2007, 'E-Government and public financial reporting: the case of Spanish regional governments', *The American Review of Public Administration*, vol. 37, no. 2, pp. 142-77.

Rogers, EM 1995, 'Diffusion of Innovations', in 4th, ACM The Free Press, New York, NY, ch 1, pp. 15-23.

Rorissa, A & Demissie, D 2010, 'An analysis of African e-Government service websites', *Government Information Quarterly*, vol. 27, no. 2, pp. 161-9.

Rothstein, B 2011, *The quality of government: Corruption, social trust, and inequality in international perspective*, University of Chicago Press.

Roy, J 2007, 'E-government in Canada: Transition or Transformation?', in DF Norris (ed.), *Current Issues and Trends in E-Government Research*, IGI Global, Hershey, PA, pp. 44-67.

Ruhode, E 2016, 'E-Government for Development: A Thematic Analysis of Zimbabwe's Information and Communication Technology Policy Documents', *The Electronic Journal of Information Systems in Developing Countries*, vol. 73, no. 1, pp. 1-15.

Sabani, A, Deng, H & Thai, V 2018, 'A Conceptual Framework for the Adoption of E-Government in Indonesia', in 29th Australasian Conference on Information

Systems (ACIS2018): *proceedings of the 29th Australasian Conference on Information Systems (ACIS2018)* Sydney, Australia.

Sapsford, R & Jupp, V, (Eds.) 2006, *Data Collection and Analysis*, 2nd edn, Sage Publications.

Sarkis, J & Talluri, S 2002, 'A synergistic framework for evaluating business process improvements', *International Journal of Flexible Manufacturing Systems*, vol. 14, no. 1, pp. 53-71.

Saunders, M, Lewis, P & Thornhill, A 2012, *Research methods for business students*, 5th edn, Pearson Education Limited, Edinburgh Gate, Harlow.

Scholl, HJ 2003, 'E-government: a special case of ICT-enabled business process change', in 36th Annual Hawaii International Conference on System Sciences (HICSS'03): *proceedings of the 36th Annual Hawaii International Conference on System Sciences (HICSS'03)* IEEE Computer Society Washington, Hawaii, USA, p. 12 pp.

Schuppan, T 2009, 'E-Government in developing countries: Experiences from sub-Saharan Africa', *Government Information Quarterly*, vol. 26, no. 1, pp. 118-27.

Schwester, R 2009, 'Examining the barriers to e-government adoption', *Electronic journal of e-government*, vol. 7, no. 1.

Seifert, JW & McLoughlin, GJ, *State e-government strategies: Identifying best practices and applications*, 2007, Congressional Research Service, Washington, DC.

Sekaran, U & Bougie, R 2016, *Research methods for business: A skill building approach*, 7th edn, John Wiley & Sons, Chichester, West Sussex, UK.

Serrano, CI 2011, 'Perceived e-consultation diagnosticity and provider acceptance of telemedicine', Doctoral Dissertation thesis, The University of Georgia, Athens, Georgia.

Singh, S & Travica, B 2018, 'E-Government systems in South Africa: An infoculture perspective', *The Electronic Journal of Information Systems in Developing Countries*, vol. 84, no. 4, p. e12030.

Sipior, JC, Ward, BT & Connolly, R 2011, 'The digital divide and t-government in the United States: using the technology acceptance model to understand usage', *European Journal of Information Systems*, vol. 20, no. 3, pp. 308-28.

Spacey, R, Goulding, A & Murray, I 2004, 'Exploring the attitudes of public library staff to the Internet using the TAM', *Journal of Documentation*, vol. 60, no. 5, pp. 550-64.

Stiftung, B, *BTI 2016 - Liberia Country Report*, 2016, Bertelsmann Stiftung, Gütersloh.

Tabachnick, BG & Fidell, LS 2007, *Using multivariate statistics*, 5th edn, Allyn & Bacon/Pearson Education, Boston, MA.

Tashakkori, A, Teddlie, C & Teddlie, CB 1998, *Mixed methodology: Combining qualitative and quantitative approaches*, vol. 46, Sage.

Tat-Kei Ho, A 2002, 'Reinventing local governments and the e-government initiative', *Public Administration Review*, vol. 62, no. 4, pp. 434-44.

Thanh, NC & Thanh, TT 2015, 'The interconnection between interpretivist paradigm and qualitative methods in education', *American Journal of Educational Science*, vol. 1, no. 2, pp. 24-7.

Thomas, M, Costa, D & Oliveira, T 2016, 'Assessing the role of IT-enabled process virtualization on green IT adoption', *Information Systems Frontiers*, vol. 18, no. 4, pp. 693-710.

Tomás, S, Thomas, M & Oliveira, T 2018, 'Evaluating the impact of virtualization characteristics on SaaS adoption', *Enterprise Information Systems*, vol. 12, no. 3, pp. 259-78.

Tongco, MDC 2007, 'Purposive sampling as a tool for informant selection', *Ethnobotany Research applications*, vol. 5, pp. 147-58.

Tufford, L & Newman, P 2012, 'Bracketing in qualitative research', *Qualitative social work*, vol. 11, no. 1, pp. 80-96.

UN, *Gearing E-Government to Support Transformation Towards Sustainable and Resilient Societies*, 2018, United Nations, Department of Economic and Social Affairs, New York, NY.

USAID 2014, *e-Government Strategy 2014-2018 for Liberia*, [https://pdf.usaid.gov/pdf\\_docs/pa00k7fr.pdf](https://pdf.usaid.gov/pdf_docs/pa00k7fr.pdf).

Van Bon, J, de Jong, A, Pieper, M, Tjassing, R, Verheijen, T & van der Veen, A, (Eds.) 2008, *IT Service Management-Global Best Practices*, vol. 1, Van Haren Publishing, Zaltbommel, Netherlands.

Venkatesh, V, Brown, SA & Bala, H 2013, 'Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems', in *MIS quarterly*, vol. 37, no.1, pp. 21-54.

Venkatesh, V, Morris, MG, Davis, GB & Davis, FD 2003, 'User acceptance of information technology: Toward a unified view', *MIS quarterly*, vol. 27, no.3, pp. 425-78.

Verkijika, SF & De Wet, L 2017, 'Determining the accessibility of e-government websites in Sub-Saharan Africa against WCAG 2.0 standard', *International Journal of Electronic Government Research*, vol. 13, no. 1, pp. 52-68.

- Verkijika, SF & De Wet, L 2018, 'E-government adoption in sub-Saharan Africa', *Electronic Commerce Research Applications*, vol. 30, pp. 83-93.
- Walsham, G 2006, 'Doing interpretive research', *European Journal of Information Systems*, vol. 15, no. 3, pp. 320-30.
- Weber, M & Borchering, K 1993, 'Behavioral influences on weight judgments in multiattribute decision making', *European Journal of Operational Research*, vol. 67, no. 1, pp. 1-12.
- Webster, J & Watson, RT 2002, 'Analyzing the past to prepare for the future: Writing a literature review', *MIS quarterly*, vol. 26, no. 2, pp. xiii-xxiii.
- West, DM 2004, 'E-government and the transformation of service delivery and citizen attitudes', *Public Administration Review*, vol. 64, no. 1, pp. 15-27.
- WorldBank, *The World Bank annual report - 1989*, 1989, World Bank, Washington, DC, <<http://documents.worldbank.org/curated/en/117701468765911951/The-World-Bank-annual-report-1989>>.
- WorldBank, *World Development Indicators 2017*, 2017, World Bank, Washington, DC, <<https://openknowledge.worldbank.org/bitstream/handle/10986/26447/WDI-2017-web.pdf>>.
- Yin, RK 2013, *Case study research: Design and methods*, 5th edn, Sage publications, Los Angeles, CA.
- Yin, RK 2017, *Case study research and applications: Design and methods*, 6th edn, Sage publications, Los Angeles, CA.
- Zaichkowsky, JL 1985, 'Measuring the involvement construct', *Journal of consumer research*, vol. 12, no. 3, pp. 341-52.
- Zamani, ED, Choudrie, J, Umeoji, E & Adebola, E 2017, 'Implementing E-government in Lagos State: Understanding the impact of Cultural Perceptions and Working Practices',
- Zelkowitz, MV & Wallace, DR 1998, 'Experimental models for validating technology', *Computer*, vol. 31, no. 5, pp. 23-31.
- Zheng, G 2009, 'A multidimensional and visual exploration approach to project portfolio management', Doctoral dissertation thesis, Georgia State University.
- Zhu, Y-Q & Kindarto, A 2016, 'A garbage can model of government IT project failures in developing countries: The effects of leadership, decision structure and team competence', *Government Information Quarterly*, vol. 33, no. 4, pp. 629-37.
- Ziemba, E, Papaj, T, Żelazny, R & Jadamus-Hacura, M 2016, 'Factors influencing the success of e-government', *Journal of Computer Information Systems*, vol. 56, no. 2, pp. 156-67.



# List of Appendices

---

## **Appendix A E-government papers reviewed**

## **Appendix B Documentation related to research ethics approval**

Appendix B.1. Ethics approval letter

Appendix B.2. Focus group participant information sheet

## **Appendix C Documentation related to survey**

Appendix C.1. Online Survey

Appendix C.2. Survey invitation email

Appendix C.3. Survey reminder email

Appendix C.4 Email to thank participants

## **Appendix D Documentation related to focus group**

Appendix D.1. Focus group invitation mail

Appendix D.2. Focus group consent form and guide

Appendix D.3. Pictures from focus group discussion

## **Appendix E EEPVT framework**

Appendix E.1. Screenshot of framework

Appendix E.2. Framework validation questionnaire

Appendix E.3. Populated EEPVT framework (Helpdesk e-initiative)

## **Appendix F E-government progress in Liberia**

Appendix F.1. Article on Liberia e-Government services online

Appendix F.2. Launch of national e-portal

## Appendix A. E-government papers reviewed

Paper	Number
Olumoye and Govender (2018)	1
Ofoeda et al. (2018)	2
Singh and Travica (2018)	3
Mitrovich and Bytheway (2009)	4
Effah and Nuhu (2017)	5
Bwalya (2009)	6
Kyem (2016)	7
Huggins and Frosina (2017)	8
Verkijika and De Wet (2018)	9
Ochara (2010)	10
Choudrie et al. (2017)	11
Lin et al. (2011)	12
Okunola et al. (2017)	13
Cubitt (2014)	14
Deloitte Report (2012)	15
Schuppan (2009)	16
Rorissa and Demissie (2010)	17
UN Report (2014)	18
Asogwa (2011)	19
Ngulube (2007)	20
E-Government Handbook (2002)	21
Chen et al. (2006)	22
Nkwe (2012)	23
Abraham and Newton-Reid (2008)	24
UNDP Report (2009)	25
Norris and Reddick (2012)	26
Steifert and McLoughlin (2007)	27
Hafkin (2009)	28
Heeks (2002)	29
UN Report (2018)	30
Gant (2008)	31
Reinwald and Kraemmergard (2010)	32
Ciborra (2005)	33
Margetts and Dunleavy (2013)	34
Nkohkwo and Islam (2013)	35
Brown (2005)	36
Yang (2017)	37
Accenture Report (2014)	38
Joshi and Islam (2018)	39
Meijers and Bekkers (2015)	40
Krishnan et al. (2013)	41
Rey-Moreno et al. (2018)	42
Kumar et al. (2017)	43
Das et al. (2017)	44
Zhao et al. (2014)	45
Sun et al. (2015)	46
Snead and Wright (2014)	47
Savoldelli et al. (2014)	48
Seo and Bernsen (2016)	49
Nam (2018)	50
Rose and Grant (2010)	51
Rey-Moreno and Madina-Molina (2017)	52

## Appendix B. Documentation related to research ethics

### Appendix B.1. Ethics Approval Letter

**OFFICE OF RESEARCH**  
Human Research Ethics Committee  
PHONE +61 7 4687 5703| FAX +61 7 4631 5555  
EMAIL [human.ethics@usq.edu.au](mailto:human.ethics@usq.edu.au)



18 May 2017

Mr Ransford Mensah

Dear Ransford

The USQ Human Research Ethics Committee has recently reviewed your responses to the conditions placed upon the ethical approval for the project outlined below. Your proposal is now deemed to meet the requirements of the *National Statement on Ethical Conduct in Human Research (2007)* and full ethical approval has been granted.

Approval No.	<b>H17REA110</b>
Project Title	Implementation of enterprise service management model for e-government service: A case study of Liberia
Approval date	18 May 2017
Expiry date	18 May 2020
HREC Decision	<b>Approved</b>

The standard conditions of this approval are:

- (a) Conduct the project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments made to the proposal required by the HREC
- (b) Advise (email: [human.ethics@usq.edu.au](mailto:human.ethics@usq.edu.au)) immediately of any complaints or other issues in relation to the project which may warrant review of the ethical approval of the project
- (c) Make submission for approval of amendments to the approved project before implementing such changes
- (d) Provide a 'progress report' for every year of approval
- (e) Provide a 'final report' when the project is complete
- (f) Advise in writing if the project has been discontinued, using a 'final report'

For (c) to (f) forms are available on the USQ ethics website:  
<http://www.usq.edu.au/research/support-development/research-services/research-integrity-ethics/human/forms>

A handwritten signature in blue ink, appearing to read 'S. Davis'.

**Samantha Davis**  
Ethics Officer

**Appendix B.2. Participant Information Sheet**



**University of Southern Queensland**

**Consent Form for USQ Research Project  
Focus Group**

**Project Details**

Title of Project: Implementation of Enterprise Service Management model for e-government services: A case study of Liberia  
 Human Research Ethics Approval Number: H17REA110

**Research Team Contact Details**

Principal Investigator Details	Other Investigator/Supervisor Details
Mr. Ransford Mensah Email: u1063778@umail.usq.edu.au Telephone: +233 302543773 Mobile: +233 246718771 / +231778169446	Professor Aileen Cater-Steel Principal Supervisor Email: aileen.cater-steel@usq.edu.au Telephone: +61746311276  Professor Mark Toleman Associate Supervisor Email: Mark.Toleman@usq.edu.au Telephone: +61746315593

**Statement of Consent**

**By signing below, you are indicating that you:**

- Have read and understood the information document regarding this project.
- Have had any questions answered to your satisfaction.
- Understand that if you have any additional questions you can contact the research team.
- Understand that the focus group will be audio and video recorded.
- Understand that you are free to withdraw at any time, without comment or penalty.
- Understand that data collected may be used in future research activities
- Understand that you can contact the University of Southern Queensland Ethics Coordinator on (07) 4631 2690 or email [ethics@usq.edu.au](mailto:ethics@usq.edu.au) if you do have any concern or complaint about the ethical conduct of this project.
- Are over 18 years of age.
- Agree to participate in the project.

Participant Name

Participant Signature

Date

**Please return this sheet to a Research Team member prior to undertaking the focus group.**

## Appendix C.1.

### Appendix C. Documentation related to survey

#### Appendix C.1. Research online survey

##### **Online Survey**

##### **Introduction:**

Based on your experience as an IT professional in one of the MACs involved in the Liberia e-Government implementation, I am seeking your valuable views and perspectives on the transformation virtualization of services that the Government of Liberia provides on the e-Liberia portal.

Please complete this survey. It forms part of a PhD research project being carried out at the USAID Digital Liberia Program Management Office (PMO). The study seeks to solicit information, opinions and perceptions on the e- government processes by using the Government of Liberia as a case study. I am therefore seeking your views and perspectives on the virtualization of services that the Government of Liberia provides on e-Liberia portal. A **virtualized task or process** here is the automation or computerization of existing paper-based procedures. The survey has ethics approval (# H17REA110) from the University of Southern Queensland (USQ), Australia.

The information you provide will be kept in strict confidence, and your name will not in any way be associated with the comments you make.

By submitting your responses, you indicate that you give your consent for me to include your responses in my data analysis.

##### **Background information**

1. Your Name: \_\_\_\_\_
2. Your Position in MAC: \_\_\_\_\_
3. What is the name of your MAC? \_\_\_\_\_
4. Gender: a. Male                                      b. Female
5. Age: a. 18-24                                      b. 36-40                                      c. Greater than 40
6. Educational Background  
a. High School   b. Bachelor's degree   c. Master's degree   d. PhD  
e. Professional degree   f. Others please specify.....
7. Which of these e-government processes / services is your MAC involved in?
  - Birth Certificate Application                                      • Passport Application

## Appendix C.1.

- Work permit Application
- Application for Water and Sewage Connection
- Land Registration
- Vehicle Registration
- Application for Housing

If other, please specify: \_\_\_\_\_

8. For how long have you been aware of this government process?

- a) 1-6 months
- b) 7-12 months
- c) 1-2 years
- d) More than two years
- e) I can't specify the duration

Based on your experience in transforming one of the e-services from manual to e-Liberia, please give your opinion of the citizen's perceptions regarding their use of the internet-based public processes.

### Sensory requirements

This is the citizen's ability to enjoy full sensory requirements (seeing, hearing, smelling, touching and tasting) of a process.

9. Please indicate the extent to which you agree or disagree with the following statements.

SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

Sensory Requirement	SD	D	N	A	SA	Do not Know
<b>SR1:</b> While a citizen is conducting the public process, he/ she likes to be able to see and touch relevant documents and/or forms.	1	2	3	4	5	
<b>SR2:</b> While a citizen is conducting the public process, he or she will like to personally see and hear the responsible personnel.	1	2	3	4	5	

### Relationship requirements

This is explained as the need for a citizen to interact with one another in a social or professional context.

10. Please indicate the extent to which you agree or disagree with the following statements.

## Appendix C.1.

Relationship Requirement	SD	D	N	A	SA	Do not Know
<b>RR1:</b> The social interaction with the responsible personnel or citizens who are present is important to the citizen during the public process, because he/she will be kept informed of current events and requirements	1	2	3	4	5	
<b>RR2:</b> It is important to the citizen, to establish a personal relationship of trust with the responsible employees of the public process.	1	2	3	4	5	
<b>RR3:</b> The citizen enjoys talking to the responsible employees or other citizens who are present during the different processing steps of the public process.	1	2	3	4	5	

### Synchronism requirements

These requirements are defined as the extent to which various activities that are in a process need to occur quickly with minimal delay.

11. Please indicate the extent to which you agree or disagree with the following statements.

Synchronism requirements	SD	D	N	A	SA	Do not Know
<b>SCR1:</b> It bothers the citizen, if the administrative office does not directly start with processing the public process when the citizen has provided all necessary data.	1	2	3	4	5	
<b>SCR2:</b> It bothers the citizen, if they do not directly receive the outcome of the public process (e.g. certificate/registration).	1	2	3	4	5	

### Performance Risk

This refers to the possibility that the process will not function as expected and/or will not provide the desired benefit when accessed by the citizen.

12. Please indicate the extent to which you agree or disagree with the following statements.

## Appendix C.1.

<b>Performance Risk</b>	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>	<b>Do not Know</b>
<b>PR1:</b> It is risky for the citizen to trust that the public process is handled without problems on the Internet.	1	2	3	4	5	

### **Privacy and Security issues**

This is defined as the "potential loss of control over personal information, such as when information about the citizen is used without their knowledge or permission".

13. Please indicate the extent to which you agree or disagree with the following

<b>Privacy and Security Risk</b>	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>	<b>Do not Know</b>
<b>PSR1:</b> It is risky for the citizen to assume that the citizen data and the documents of the public process, conducted via Internet, are only used and forwarded in accordance with legal necessities.	1	2	3	4	5	

### **Process Involvement**

This is defined as the citizen's perceived relevance of the process based on inherent needs and interest.

14. Please indicate the extent to which you agree or disagree with the following

<b>Process Involvement</b>	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>	<b>Do not Know</b>
<b>PL1:</b> For the public process the citizen likes to use a lot of time to do the application because it is very important to them.	1	2	3	4	5	
<b>PL2:</b> The public process is so important to citizenry that he/ she can remember the process for acquiring the service for a long time.	1	2	3	4	5	

### **Need for consultation**



## Appendix C.1.

This is defined as the citizens need for assistance when performing the process.

15. Please indicate the extent to which you agree or disagree with the following

<b>Need for consultation</b>	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>	<b>Do not Know</b>
<b>NC1:</b> For the public process, the citizen will likely need to consult a staff of the MAC to perform the process through e-Liberia.	1	2	3	4	5	

### **Process Complexity**

This is defined as the number of interrelated actions a citizen has to take in order to solve one's problem. The more interrelated actions the more complex the process.

16. Please indicate the extent to which you agree or disagree with the following

<b>Process Complexity</b>	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>	<b>Do not Know</b>
<b>PC1:</b> I assume that many individual formalities are necessary to conduct the public process, e.g. Scanning of ID documents, purchase of payment voucher from the bank, etc.	1	2	3	4	5	
<b>PC2:</b> The citizen presumes the public process to be a complicated procedure	1	2	3	4	5	

### **Process Ambiguity**

This is about the citizen not feeling sure of how to interpret information explaining what to do.

17. Please indicate the extent to which you agree or disagree with the following

<b>Process Ambiguity</b>	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>	<b>Do not Know</b>

Appendix C.1.

<p><b>PA1:</b> During the public process, the citizen will probably need the confirmation of the employees of the MAC that they have understood the forms, the necessary procedure or the technical terms correctly.</p>	1	2	3	4	5	
<p><b>PA2:</b> The necessary procedures, forms or technical terms of the public process, are difficult for the citizen to understand.</p>	1	2	3	4	5	
<p><b>PA3:</b> Ambiguous forms, technical terms or descriptions are likely to lead to citizens' confusion or misunderstandings of the public process.</p>	1	2	3	4	5	

## Appendix C.2.

### Appendix C.2. Survey invitation mail

Ransford Mensah <ransford@certifiedghana.com>

Wed, Sep 13, 2017, 6:50 AM ☆ ↩ ⋮

to James, bcc: plcjohnson18, bcc: thjohnson, bcc: ppeacelr, bcc: etpayne, bcc: mpawa, bcc: jgraff2000, bcc: lawrences.yohn, bcc: sophiemcauley, bcc: rexahenry, bcc: Bobby, bcc: jchelleh, bcc: ewilliams, bcc: g

Dear Friend,

I am writing to you to request your participation in a brief survey. As you may recall from the last training we had at MOPT, I mentioned to you that I am conducting a research on e-government in Liberia and will require your assistance to evaluate the effectiveness of the project so far.

The survey is very brief and will only take about 10 minutes to complete. Please click the link below to go to the survey Web site (or copy and paste the link into your Internet browser).

Survey link: <http://eresearch-surveys.usq.edu.au/index.php/975538?lang=en>

Please note that your participation in the survey is completely voluntary and all of your responses will be kept confidential. **No personally identifiable information will be associated with your responses to any reports of these data.**

Should you have any comments or questions, please feel free to contact me at [ransford@certifiedghana.com](mailto:ransford@certifiedghana.com)

Thank you very much for your time and cooperation.

Regards

\*\*\*


--

*Ransford Mensah*

## Appendix C.3.

### Appendix C.3. Reminder email

---

 **Ransford Mensah** <[ransford@certifiedghana.com](mailto:ransford@certifiedghana.com)> Fri, Sep 22, 2017, 2:37 PM ☆ ↶ ⋮  
to James, bcc: thjohnson, bcc: George, bcc: etpayne, bcc: mpawa, bcc: jgraff2000, bcc: lawrences.yohn, bcc: sophiemccauley, bcc: rexahenry, bcc: Bobby, bcc: johelleh, bcc: ewilliams, bcc: gsaygbe, bcc: pwuo, bc

Dear All,

Trust you are doing well.

A gentle reminder on below if you have not completed the survey.

Thank you!

Regards

Ransford

On Wed, Sep 13, 2017 at 6:50 AM, Ransford Mensah <[ransford@certifiedghana.com](mailto:ransford@certifiedghana.com)> wrote:

Dear Friend,

I am writing to you to request your participation in a brief survey. As you may recall from the last training we had at MOPT, I mentioned to you that I am conducting a research on e-government in Liberia and will require your assistance to evaluate the effectiveness of the project so far.

The survey is very brief and will only take about 10 minutes to complete. Please click the link below to go to the survey Web site (or copy and paste the link into your Internet browser.

Survey link: <http://eresearch-surveys.usq.edu.au/index.php/975538?lang=en>

Please note that your participation in the survey is completely voluntary and all of your responses will be kept confidential. **No personally identifiable information will be associated with your responses to any reports of these data.**

Should you have any comments or questions, please feel free to contact me at [ransford@certifiedghana.com](mailto:ransford@certifiedghana.com)

Thank you very much for your time and cooperation.

Regards

--

*Ransford Mensah*

## Appendix C.4.

### Appendix C.4. Email to thank participants

Thank you for Survey participation 



**Ransford Mensah** <ransford@certifiedghana.com>  
to James 

Thu, Sep 28, 2017, 11:36 AM 

Dear James,

Thank you for taking the time to complete the survey.

I truly value the information you have provided.

Please let me know if there is any IT professional you know or have worked with who will be interested in participating in this research. Kindly send his/her name, email and telephone number.

The next step is I will be inviting you for a focus group discussion to be held at MOPT PMO, the date and time will be communicated.

Once again, a big thank you!



--

*Ransford Mensah*

## Appendix D.1.

### Appendix D. Documents related to focus group

#### Appendix D.1. Focus group invitation email

Invitation to participate in focus group research > Inbox x



**Ransford Mensah** <ransford@certifiedghana.com>

Wed, Feb 14, 2018, 4:41 AM

to James

Dear James,

Hope you are doing well.

I will like to invite you to take part in a focus group (small discussion group) on:

Date: **17th February 2018**

Time: **10:30am to 12:30pm**

Venue: **Bella Casa, (Sinkor)**

The discussion is about **e-Government in Liberia** and will not last no longer than two hours.

Your views will be used to fine tune current on-going e-Government project in Liberia.

Please confirm your participation by calling me on: **0778169446** or send whats app message on: **+233246718771**

Thank you! and see you on Saturday.

\*\*\*

--

*Ransford Mensah*

**Appendix D.2. Focus group consent form and guide**



University of Southern Queensland

**Consent Form for USQ Research Project  
Focus Group**

**Project Details**

Title of Project: Implementation of Enterprise Service Management model for e-government services: A case study of Liberia  
Human Research Ethics Approval Number: H17REA110

**Research Team Contact Details**

<b>Principal Investigator Details</b>	<b>Other Investigator/Supervisor Details</b>
Mr. Ransford Mensah Email: u1063778@uemail.usq.edu.au Telephone: +233 302543773 Mobile: +233 246718771	Professor Aileen Cater-Steel Principal Supervisor Email: aileen.cater-steel@usq.edu.au Telephone: +61746311276  Professor Mark Toleman Associate Supervisor Email: Mark.Toleman@usq.edu.au Telephone: +61746315593

**Statement of Consent**

**By signing below, you are indicating that you:**

- Have read and understood the information document regarding this project.

- Have had any questions answered to your satisfaction.
- Understand that if you have any additional questions you can contact the research team.
- Understand that the focus group will be audio recorded.
- Understand that you are free to withdraw at any time, without comment or penalty.
- Understand that data collected may be used in future research activities
- Understand that you can contact the University of Southern Queensland Ethics Coordinator on (07) 4631 2690 or email [ethics@usq.edu.au](mailto:ethics@usq.edu.au) if you do have any concern or complaint about the ethical conduct of this project.
- Are over 18 years of age.
- Agree to participate in the project.

Participant Name	<input type="text"/>
Participant Signature	<input type="text"/>
Date	<input type="text"/>

**Please return this sheet to a Research Team member prior to undertaking the focus group.**

## **FOCUS GROUP DISCUSSION GUIDE**

### **1. Background/Assessment**

- a. Digital Liberia and E-government background
- b. Why did the Government of Liberia choose to virtualize its processes to support e-government services?
- c. Which processes have been currently virtualized, and how effective has it been
- d. Why are some government processes still not virtualized?

### **2. Effect of virtualization**

- a. Have people been laid off from the MACs after you virtualized processes?
- b. What are the challenges faced during virtualization?
- c. Why are you blending both the physical and online processes?
- d. How would you compare the outcomes of those who use the online process to those who used the manual processes in acquiring services?

### **3. Legal Issues**

- a. Does your MAC have any legal backing to send its services online?



- b. What are the legal instruments that back the operation of the MAC?
- c. Do these legal instruments have any effect on how processes are virtualized?

**4. Customer relations**

- a. Do prospective customers of the service complain after going through the online processes?
- b. If yes, why?
- c. What are some of the regular complaints you have received?
- d. What measures have been taken to solve them?

**5. Support**

- a. Do you get resolution to an issue on time when logged onto the service desk?
- b. Is the Service Desk available all the time?

**6. Perceptions**

- a. What is MAC’s perception of the Service Desk?
- b. What do your customers (citizens) say about the online Service Desk?

**7. Outcome**

- a. What are the outcomes of the online process?
- b. How would you compare it with the outcomes of the manual process?

**8. What are the future plans for your MAC?**

**Focus group interview question mapping to research questions**

<b>Focus group question</b>	<b>Aim</b>	<b>Research Question</b>
<p><b>1a.</b> Digital Liberia and E-government background</p> <p><b>1b.</b> Why did the Government of Liberia choose to virtualize its processes to support e-government services?</p> <p><b>1c.</b> Which processes have been</p>	<p>To identify virtualized processes which support the e-services being used</p>	<p><b>RQ1:</b> How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business</p>

<p>currently virtualized, and how effective has it been</p> <p><b>1d.</b> Why are some government processes still not virtualized?</p>		<p>processes supporting e-government services?</p>
<p><b>2a.</b> Have people been laid off from the MACs after you virtualized processes?</p> <p><b>2b.</b> What are the challenges faced during virtualization?</p> <p><b>2c.</b> Why are you blending both the physical and online processes?</p> <p><b>2d.</b> How would you compare the outcomes of those who use the online process to those who used the manual processes in acquiring services?</p>	<p>To understand the challenges of transitioning from physical to online processes</p>	<p><b>RQ1:</b> How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business processes supporting e-government services?</p>
<p><b>3a.</b> Does your MAC have any legal backing to send its services online?</p> <p><b>3b.</b> What are the legal instruments that back the operation of the MAC?</p> <p><b>3c.</b> Do these legal instruments have any effect on how processes are virtualized?</p>	<p>To have evidence that there is political commitment and will to support e-government / digital Liberia project</p>	<p><b>RQ1:</b> How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business processes supporting e-government services?</p>
<p><b>4a.</b> Do prospective customers of the service complain after going</p>	<p>To understand the useful of the</p>	<p><b>RQ2:</b> What factors influence the</p>

<p>through the online processes?</p> <p><b>4b.</b> If yes, why?</p> <p><b>4c.</b> What are some of the regular complaints you have received?</p> <p><b>4d.</b> What measures have been taken to solve them?</p>	<p>Service Desk tool?</p>	<p>success of Service Desk software in supporting e-government services?</p>
<p><b>5a.</b> Do you get resolution to an issue on time when logged onto the service desk?</p> <p><b>5b.</b> Is the Service Desk available all the time?</p>	<p>To have evidence of service quality</p>	<p><b>RQ2:</b> What factors influence the success of Service Desk software in supporting e-government services?</p>
<p><b>6a.</b> What is MAC's perception of the Service Desk?</p> <p><b>6b.</b> What do your customers (citizens) say about the online Service Desk?</p>	<p>To have evidence of the perceived net benefits of the Service Desk</p>	<p><b>RQ2:</b> What factors influence the success of Service Desk software in supporting e-government services?</p>
<p><b>7a.</b> What are the outcomes of the online process?</p> <p><b>7b.</b> How would you compare it with the outcomes of the manual process?</p>	<p>To understand the benefits gained and probably the motivation.</p>	<p><b>RQ1:</b> How can a framework be developed to facilitate the identification of physical government processes suitable for conversion to virtual business processes supporting e-government</p>

		services?
What are the future plans for your MAC?	To get information that I may not have thought about and may prove useful.	

**SCRIPT FOR FOCUS GROUP DISCUSSION**

This script is intended to be used as a protocol for focus group discussion with all of the 63 participants from the MACs to collect data in order to understand the physical processes suitable for conversion to virtual business processes support e-government services. There will be 3 focus group meetings, each meeting consisting of about 20-25 participants.

In relation to this focus group discussion:

- Narrative is in normal font
- Instructions for the researcher are highlighted in (bold italics and in brackets);
- Discussion main topics are in bold

**Introduction:**

Thank you for agreeing to assist with my research. Please read the participant information sheet and review the topics I will be asking questions about.

***(Hand out the Interview Participant Information Sheet hard copy to the participants and give some time to read this if they had not received this before)***

In summary, my research involves the evaluation of the Enterprise Service Management model to support e-Government service initiatives in Liberia. You are an active IT professional in the Government of Liberia Ministries, Agencies and Commissions (MACs), and therefore I am interested in your opinion and reasoning in improving government service delivery in Liberia.

***(Hand out the consent form for participants and allow them time to read this and date and sign this, collect the consent forms back)***

The focus group will take approximately 1 hour. Please be assured your responses and comments will be treated as strictly confidential, and any comments you make will not be traceable back to yourself or to your ministry.

Do you mind if I record this session, so I can focus on what you are saying, and not taking notes?

***(If background noise looks like causing a problem, ask for the door to be closed, phones to be diverted, computers to be turned down, mobile phones on mute, etc.)***

First of all, thank you for making it for this meeting as it is after work hours. I promise you this will not take more than an hour.

### **1. Background/Assessment**

- a. Digital Liberia and E-government background
- b. Why did the Government of Liberia choose to virtualize its processes to support e-government services?
- c. Which processes have been currently virtualized, and how effective has it been
- d. Why are some government processes still not virtualized?

### **2. Effect of virtualization**

- e. Have people been laid off from the MACs after you virtualized processes?
- f. What are the challenges faced during virtualization?
- g. Why are you blending both the physical and online processes?
- h. How would you compare the outcomes of those who use the online process to those who used the manual processes in acquiring services?

### **3. Legal Issues**

- d. Does your MAC have any legal backing to send its services online?
- e. What are the legal instruments that back the operation of the MAC?
- f. Do these legal instruments have any effect on how processes are virtualized?

### **4. Customer relations**

- e. Do prospective customers of the service complain after going through the online processes?
- f. If yes, why?

- g. What are some of the regular complaints you have received?
- h. What measures have been taken to solve them?

**5. Support**

- c. Do you get resolution to an issue on time when logged onto the service desk?
- d. Is the Service Desk available all the time?

**6. Perceptions**

- c. What is MAC's perception of the Service Desk?
- d. What do your customers (citizens) say about the online Service Desk?

**7. Outcome**

- c. What are the outcomes of the online process?
- d. How would you compare it with the outcomes of the manual process?

**8. What are the future plans for your MAC?**

**Closing Comments:**

Do you have any further comments you would like to make before I turn off the audio recorder?

***(Pack up recorder, notes, etc. and note any significant observations)***

**Finish**

Thank you very much for your time, and your contribution to my research. I will be in touch with you in emails sending the interview scripts for your confirmation and updates (if any) regarding what you said about e-services in Liberia and supporting processes. Here are my details should you wish to contact me.

***(Give your business card)***

Thanks again for your help and making this time to us from your busy schedule.

Appendix D.3.

**Appendix D.3. Focus group pictures**



## Appendix E.1.

### Appendix E. EEPVT Framework

#### Appendix E.1. Screenshot of framework interface

##### e-Government Extended PVT Model

© 2018 by Ransford Mensah

Welcome to the EEPVT Tool

<b>Name of Service:</b>	
<b>Ministry Agency Commission (MAC):</b>	
<b>Contact Person:</b>	
<b>Phone number of contact person:</b>	
<b>Email address of contact person:</b>	
<b>Briefly describe the proposed e-service (no more than 100 words):</b>	
<b>Why is it needed:</b>	
<b>Date:</b>	
<b>Virtualization Score (VTS)</b>	



Technology Dimension	Question	Requirement	Weight	Score
<b>Sensory Requirements</b>	Does the process require the applicant to see and touch registration forms?	-	7	0
<b>Relationship Requirements</b>	Does the process require the applicant to be physically present to interact with responsible personnel?	-	6	0
<b>Synchronism Requirements</b>	Does the applicant require the service to be carried out as soon as possible?	-	6	0
<b>Performance Risk</b>	Does the applicant trust that process will be handled without problems on the Internet	-	5	0
<b>Privacy and Security Issues</b>	Is the applicant concerned about the risk that their data and documents of the public process, conducted via Internet, are only used and forwarded in accordance with legal necessities?	-	7	0
<b>Process Involvement</b>	Is the process so important to the applicant that they are able to retain the knowledge of the process steps?	-	7	0
<b>Need for Consultation</b>	Will the applicant require support from a staff member of the ministry to complete forms online?	-	7	0
<b>Process Complexity</b>	Does the process involve individual formalities such as scanning of ID documents, purchase of payment voucher from the bank etc.?	-	6	0
<b>Process Ambiguity</b>	Does the applicant require basic internet literacy to understand the procedures of the process?	-	6	0
Authorising Dimension	Question	Requirement	Weight	Score
<b>Authority</b>	What is the level of authority of the one authorizing the change?	-	10	0
<b>Capability</b>	Are financial resources and skills available for implementation?	-	8	0
	What is the cross cutting or impact of process across MACs?	-		
<b>Change Readiness</b>	To what extent will those affected by the change accept the change?	-	10	0



**Appendix E.2. Framework validation Questionnaire**

**Introduction**

Name	
Position	
MAC	
Email	

**Testing the Framework**

1	Which process are you testing with the framework?
2	Provide a brief description of the process / service? The history or story behind it?
3	What was the score? What was the output color, e.g. red, yellow or green?
4	Please comment on the results
5	Do you think it is useful to apply this framework in your MAC?
6	What positive remarks will you say about the framework?
7	Which improvements would you suggest?
8	Conclusion, any other comment

## Appendix E.3.

### Appendix E.3. Populated EEPVT framework (Helpdesk e-initiative)

#### e-Government Extended PVT Model

© 2018 by Ransford Mensah

Welcome to the EEPVT Tool


Name of Service:	Helpdesk for MACs
Ministry Agency Commission (MAC):	All MACs (MOH, CSA and MOE)
Contact Person:	Curtis Jackson
Phone number of contact person:	777818111
Email address of contact person:	<a href="mailto:cjackson@digitailliberia.org">cjackson@digitailliberia.org</a>
Briefly describe the proposed e-service (no more than 100 words):	
Why is it needed:	This system will provided a single point of contact for all IT related incidents at the MACs
Date:	18th October 2018
Virtualization Score (VTS)	231



Technology Dimension	Question	Requirement	Weight	Score
<b>Sensory Requirements</b>	Does the process require the applicant to see and touch registration forms?	low	6	18
<b>Relationship Requirements</b>	Does the process require the applicant to be physically present to interact with responsible personnel?	low	6	18
<b>Synchronism Requirements</b>	Does the applicant require the service to be carried out as soon as possible?	high	7	21
<b>Performance Risk</b>	Does the applicant trust that process will be handled without problems on the Internet	high	5	15
<b>Privacy and Security Issues</b>	Is the applicant concerned about the risk that their data and documents of the public process, conducted via Internet, are only used and forwarded in accordance with legal necessities?	low	7	21
<b>Process Involvement</b>	Is the process so important to the applicant that they are able to retain the knowledge of the process steps?	high	7	21
<b>Need for Consultation</b>	Will the applicant require support from a staff member of the ministry to complete forms online?	low	7	21
<b>Process Complexity</b>	Does the process involve individual formalities such as scanning of ID documents, purchase of payment voucher from the bank etc.?	low	6	18
<b>Process Ambiguity</b>	Does the applicant require basic internet literacy to understand the procedures of the process?	normal	6	12
Authorising Dimension	Question	Requirement	Weight	Score
<b>Authority</b>	What is the level of authority of the one authorizing the change?	high	10	30
<b>Capability</b>	Are financial resources and skills available for implementation?	high	3	
<b>Capability</b>	What is the cross cutting or impact of process across MACs?	low	1	16
<b>Capability</b>	What is the level of common interest in the process?	normal	2	
<b>Change Readiness</b>	To what extent will those affected by the change accept the change?	normal	10	20
				<b>231</b>

## Appendix F. E-Government news articles in Liberia

### Appendix F.1. [Article on Liberia e-Government services online](#)




[ABOUT US](#)   [OUR WORK](#)   [CAREERS](#)   [NEWSROOM](#)   [CONTACT US](#)

### Liberia launches web portal with online information on government services

September 14, 2018 | Ransford Mensah

On July 23, 2018 during a celebration of the 171st independence anniversary of Liberia, Vice President Madam Jewel Howard-Taylor launched the redesigned eLiberia portal. The portal provides information about online government services for Liberia's citizens and businesses to communicate and transact with government.



*The USAID Digital Liberia team and GoL officials participate in the launch of the eLiberia portal*

#### Background

The Government of Liberia (GoL) formulated the national e-government strategy, 2014-2018, to provide a road map for delivering services to people, irrespective of location, economic status, education, or ICT ability. With its commitment to a customer-centric approach, the government launched its first e-portal in 2014.

Prior to the e-portal, citizens had to go to websites of individual ministries or agencies to access services, and had to know the web address for each ministry or agency offering service. In some cases, citizens were not aware of available online services and would request information in person at government offices in Monrovia, which caused high waiting times to complete simple tasks such as filling out a form.

#### The new e-Liberia Portal

The Program Management Office (PMO) at the Ministry of Post and Telecommunications (MOPT), supported by [USAID's Digital Liberia](#) project implemented by IBI, redesigned the GoL's e-government portal.

The new portal has a clean design, simplified navigation, and improved menu functionality. New functions include a help desk and online chat, which allow a visitor to interact directly with the PMO, which is the office mandated by government to implement all e-government programs as identified by the Chief Information Office.

#### Featured Posts


USAID/Pakistan awarded IBI a three-year contract for the **Pakistan Capacity Development Services (PCDS)** activity to provide services and technical supp...

**IBI Wins Pakistan Capacity Development Services Project**  
October 12, 2018


#### Recent Posts

Promoting Transparency and Better Governance: The Case of Bangladesh Customs Portal  
January 29, 2019


Pensées Insolites: Articles of Faith, Putting the WTO's TFA to Work in Bangladesh  
November 21, 2018




**IBI Supports Liberia in Bringing Mobile Money to Scale**  
November 7, 2018



**The Launch of Bangladesh's National Enquiry Point, e-Auction, and Customs Hotline**  
October 26, 2018



**IBI Wins El Salvador Local Solutions Project**  
October 23, 2018



**Automation, Transparency, and Accountability for Trade Facilitation – a Bangladesh Customs Success Story**  
October 12, 2018

Appendix F.2. [Article on launch national e-Portal](#)

Home > News >

## Liberia: Posts & Telecommunications Calls For Use of Internet to Access Gov't Information



By Admin

On Aug 17, 2018



**Monrovia** – The Minister of Posts and Telecommunications, Cllr. Cooper W. Kruah Sr., is urging all Liberians and others from any part of the world to access the government's information network through the internet.

---

*Report by J. H. Webster Clayeh, [webster.clayeh@frontpageafricaonline.com](mailto:webster.clayeh@frontpageafricaonline.com)*

---

According to Minister Kruah everyone can access the National ePortal via [www.eLiberia.gov.lr](http://www.eLiberia.gov.lr).

<https://frontpageafricaonline.com/news/liberia-posts-telecommunications-calls-for-use-of-internet-to-access-govt-information/>

1