

**FACTORS INFLUENCING ACCESS TO ELECTRONIC GOVERNMENT
INFORMATION AND E-GOVERNMENT ADOPTION IN SELECTED
DISTRICTS OF TANZANIA**

BY

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SUBMITTED in accordance with the requirements for the degree of

DOCTOR OF LITERATURE AND PHILOSOPHY

In the subject

INFORMATION SCIENCE

at the

UNIVERSITY OF SOUTH AFRICA

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DECLARATION

I, the undersigned, do hereby declare that the work contained in this PhD thesis entitled **“Factors that influence access to electronic government information and e-government adoption in selected districts of Tanzania”** is my own. This thesis contains no material that has been submitted previously, in whole or part, for the award of academic degree or diploma. All the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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ABSTRACT

E-government is a means of improving provision of government information and services to citizens. The aim of this study was to investigate the current situation and factors influencing access of e-government information and e-government adoption in Tanzania.

A triangulation approach for data gathering was adopted. Specifically, a semi-structured questionnaire was used to collect data from 448 respondents. In addition, interviews involving five policy makers were conducted to complement the questionnaire survey. Factor analyses were performed and multiple linear regression analyses were carried out to assess the relationships between variables.

The findings revealed that, the current state of e-government in the selected districts of Tanzania is characterized by web presence stage. Various enhancing factors and challenges for e-government were noted in this study. The enhancing factors include necessary knowledge, necessary resources, awareness, confidence to use the website, availability and reliability of internet connections, positive incentives that have resulted from using the internet to search for government information, and getting information on demand. Other enhancing factors are guidance for internet use, possession of ICTs, availability of up-to-date information in the website, education, income and social influence.

There are some e-government adoption barriers that include worrying about security and privacy of information, lack of support from the government, unreliable power supply, inaccessibility of internet services due to geographical locations, and people not getting as much information about the services as possible. Other barriers are system quality, cultural barriers, age, and information content produced in English, which is a language that the majority do not understand.

The study has implications for policy makers and to e-government project teams. Policy makers should consider e-government adoption barriers in order to formulate policies of eliminating them. Likewise, e-government project teams should consider these barriers in order overcome them before the implementation of e-government systems.

Key Words: Enhancing factors, e-government barriers, e-government adoption, access to e-government information.

ACKNOWLEDGEMENTS

I would like to start by greatly thanking the Almighty God for giving me the strength and willingness to undertake this work. Secondly, I thank my supervisor, Prof. Patrick Ngulube, from whose experience and expertise I learnt a lot and relied on. He has also been a source of encouragement for me to always go forward. I am so fortunate to have a supervisor like him, without his support, this study would not have been completed.

I extend my deep thanks and gratitude to all the people who contributed to enrich my knowledge and improve my competencies. I am grateful to my parents Prof. Wilfred Mlay and my mothers Grace I. Mlay and Faith Grace Mlay for their daily prayers and enormous efforts to make me who I am. I also thank my husband Gabriel Komba and my children Getrude, Elisagrace and Gabriel Jnr, who accompanied me along the journey of knowledge, and who wonderfully created the right atmosphere for me to bring this research to fruition.

I express my sincere appreciation to my close friends, Dr. Tandi Edda Lwoga, Dr. Albogast Musabila and Dr. Nsubili Isaga. I thank them for teaching me data analysis using SPSS and sharing with me their PhD experiences, which encouraged me throughout the entire period of my study. I also thank them for taking care of my children during the time I was absent. I also extend my sincere thanks to Prof. Kuzilwa, Prof. Mugasa, Prof. Itika, Prof. Nduguru, Mr. Simon Njovu and Prof. Msanjila for creating a suitable environment for me to pursue and finish my studies on time.

DEDICATION

I dedicate this work to my husband, Gabriel Vitus Komba and my three children Getrude, Elisagrace and Gabriel Junieur.

TABLE OF CONTENTS

| | |
|--|-------|
| DECLARATION | i |
| ABSTRACT | ii |
| ACKNOWLEDGEMENTS | iv |
| DEDICATION..... | v |
| LIST OF TABLES..... | xv |
| LIST OF FIGURES | xvii |
| LIST OF APPENDICES | xviii |
| LIST OF ABBREVIATIONS..... | xix |
| CHAPTER ONE: BACKGROUND TO THE STUDY..... | 1 |
| 1.1 Introduction and study rationale..... | 1 |
| 1.2 Background to the study | 3 |
| 1.2.1 Benefits of e-government to citizens | 3 |
| 1.2.2 E-government adoption: developing and developed countries | 4 |
| 1.2.3 E-government adoption in Tanzania | 5 |
| 1.2.4 Context of the study | 7 |
| 1.2.4.1 Location, population and economy of Tanzania..... | 7 |
| 1.2.4.2 E-government in Tanzania and information and communication technology infrastructure | 9 |
| 1.2.4.3 Electricity..... | 12 |
| 1.2.4.4 Access to government information in Tanzania | 13 |
| 1.2.4.5 Profile of the districts involved in the study | 14 |
| 1.2.4.6 Rationale for selecting the districts involved in the study..... | 15 |
| 1.2.4.6.1 Kinondoni district..... | 15 |
| 1.2.4.6.2 Morogoro urban district..... | 16 |
| 1.2.4.6.3 Njombe district..... | 17 |
| 1.3 Background to the research problem..... | 18 |
| 1.3.1 Research problem | 19 |

| | | |
|--|--|-----------|
| 1.3.2 | Study purpose | 20 |
| 1.3.3 | Research objectives | 21 |
| 1.4 | Justification for the study | 23 |
| 1.4.1 | Originality of the study | 23 |
| 1.5 | Significance of the study | 25 |
| 1.6 | Definition of terms | 27 |
| 1.6.1 | Government | 27 |
| 1.6.2 | E-government | 27 |
| 1.6.3 | E-government adoption | 28 |
| 1.6.4 | Electronic government information | 28 |
| 1.7 | Literature review | 28 |
| 1.8 | Methodology | 29 |
| 1.9 | Ethical considerations | 29 |
| 1.10 | Scope and limitations of the study | 30 |
| 1.11 | Organization of the thesis | 30 |
| 1.12 | Summary of the chapter | 30 |
| CHAPTER THREE: THEORETICAL FRAMEWORK AND LITERATURE | | |
| | REVIEW | 32 |
| 3.1 | Introduction | 32 |
| 3.2 | Significance, characteristics and types of literature review | 32 |
| 3.3 | Theoretical framework | 34 |
| 3.3.1 | Information systems success model | 35 |
| 3.3.2 | Information behaviour model | 36 |
| 3.3.3 | Technology adoption life cycle model | 37 |
| 3.3.4 | E-government evolution life cycle models | 38 |
| 3.3.5 | E-government adoption models | 41 |

| | | |
|----------|---|----|
| 3.4 | Lessons learned from the models | 43 |
| 3.5 | E-government adoption: review of empirical studies..... | 44 |
| 3.6 | Information needs and information seeking behaviour..... | 51 |
| 3.7 | E-government adoption models and human behaviour | 52 |
| 3.8 | The role of access and use of government information in e-government adoption..... | 54 |
| 3.8.1 | Access to government information | 54 |
| 3.8.2 | Use of e-government information..... | 56 |
| 3.9 | Conceptual framework..... | 57 |
| 3.9.1 | Culture | 58 |
| 3.9.2 | User satisfaction | 59 |
| 3.9.3 | Social influence..... | 60 |
| 3.9.4 | Compatibility | 60 |
| 3.9.5 | Perceived ease of use (PEOU) and perceived usefulness (PU)..... | 60 |
| 3.9.6 | Trust..... | 61 |
| 3.9.7 | Website quality | 61 |
| 3.9.8 | Relative advantage..... | 62 |
| 3.9.9 | Image | 62 |
| 3.9.10 | Demographic characteristics | 62 |
| 3.9.10.1 | Gender..... | 63 |
| 3.9.10.2 | Age | 63 |
| 3.9.10.3 | Education level | 64 |
| 3.9.10.4 | Income..... | 64 |
| 3.9.10.4 | Occupation..... | 65 |
| 3.9 | E-government experiences of countries in Africa and lessons that can be learned..... | 65 |
| 3.9.1 | Tunisia experience..... | 65 |

| | | |
|---|---|----|
| 3.9.1.1 | ICT infrastructure in Tunisia..... | 66 |
| 3.9.1.2 | Digital culture | 68 |
| 3.9.1.3 | Main tasks in the implementation of e-government in Tunisia | 69 |
| 3.9.2 | Mauritius' experience..... | 71 |
| 3.9.2.1 | Main tasks in the implementation of e-government in Mauritius..... | 71 |
| 3.9.3 | Egypt's experience | 75 |
| 3.9.3.1 | Main tasks in the implementation of e-government in Egypt..... | 76 |
| 3.9.4 | Lessons that can be learned from Tunisia, Mauritius and Egypt's experiences with e-government | 77 |
| 3.10 | Summary of the chapter..... | 79 |
| CHAPTER FOUR: RESEARCH METHODOLOGY..... | | 82 |
| 4.1 | Introduction..... | 82 |
| 4.2 | Research methodology | 82 |
| 4.3 | Research purpose | 82 |
| 4.4 | Research reasoning process..... | 83 |
| 4.5 | Research paradigm (philosophy)..... | 83 |
| 4.5.1 | Positivism, interpretivism, and pragmatism | 84 |
| 4.6 | Research design..... | 85 |
| 4.6.1 | Mixed-method design..... | 86 |
| 4.6.1.1 | Types of mixed methods design | 86 |
| 4.6.1.1.1 | Triangulation..... | 88 |
| 4.6.2 | Justification for a mixed methods approach..... | 91 |
| 4.7 | Population | 93 |
| 4.8 | Sample frame | 95 |
| 4.9 | Sampling procedures | 95 |
| 4.10 | Sample Size | 97 |

| | | |
|--|--|-----|
| 4.10.1 | Sample size of participants in Kinondoni District, Morogoro town district and Njombe district..... | 97 |
| 4.10.2 | Sample Size of e-government policy makers | 98 |
| 4.11 | Data collection strategies | 99 |
| 4.11.1 | Data collection tools pre-testing..... | 99 |
| 4.11.2 | Data collection instruments..... | 100 |
| 4.11.2.1 | Questionnaires..... | 100 |
| 4.11.2.2 | Interview | 101 |
| 4.12 | Data analysis | 102 |
| 4.12.1 | Quantitative analysis | 102 |
| 4.12.2 | Qualitative analysis..... | 103 |
| 4.13 | Validity and reliability | 105 |
| 4.14 | Ethical considerations | 107 |
| 4.15 | Evaluation of research methodology | 108 |
| 4.16 | Summary of the chapter..... | 109 |
| CHAPTER FIVE: DATA ANALYSIS AND PRESENTATION OF FINDINGS | | 110 |
| 5.2 | Characteristics of the respondents..... | 111 |
| 5.2.1 | Gender and age | 111 |
| 5.2.2 | Education..... | 111 |
| 5.2.3 | Occupation..... | 115 |
| 5.2.4 | Income..... | 115 |
| 5.2.5 | Access to electricity and ownership of ICT equipment | 115 |
| 5.3 | Access to internet and e-government adoption..... | 116 |
| 5.3.1 | Factor analysis (net benefit)..... | 118 |
| 5.4 | Factor analysis: factors which enhance/hinder access to electronic government information..... | 119 |
| 5.5 | Other factors which enhance/hinder e-government adoption..... | 123 |

| | | |
|---------|--|-----|
| 5.5.1 | Quality..... | 123 |
| 5.5.2 | Trust..... | 125 |
| 5.5.3 | Satisfaction | 126 |
| 5.5.4 | Intention to use | 127 |
| 5.5.5 | Relative advantage..... | 128 |
| 5.5.6 | Image | 129 |
| 5.5.7 | Compatibility | 130 |
| 5.5.8 | Perceived ease of use..... | 131 |
| 5.5.9 | Perceived usefulness | 132 |
| 5.5.10 | Social influence..... | 132 |
| 5.5.11 | Cultural barriers..... | 134 |
| 5.5.12 | Information needs..... | 135 |
| 5.6 | Answering the research questions | 136 |
| 5.6.1 | Government information needs | 136 |
| 5.6.1.1 | Factors which activate a person to seek government information and services..... | 137 |
| 5.6.2 | The role of accessing e-government information to e-government adoption..... | 138 |
| 5.6.3 | Enhancing factors | 139 |
| 5.6.3.1 | Enhancing factors: results from the interview..... | 140 |
| 5.6.4 | Inhibiting factors..... | 141 |
| 5.6.4.1 | Inhibiting factors: results from the interviews..... | 143 |
| 5.6.5 | Demographic characteristics and access to e-government information and services..... | 144 |
| 5.6.5.1 | Gender and website access | 144 |
| 5.6.5.2 | Age and access to e-government information | 145 |
| 5.6.5.3 | Education and access to e-government information..... | 146 |

| | | |
|---|--|-----|
| 5.6.5.4 | Occupation and access to e-government information | 147 |
| 5.6.5.5 | Household monthly income and access to e-government information..... | 148 |
| 5.6.7 | Information needs and e-government adoption | 150 |
| 5.6.8 | Status of e-government in Tanzania..... | 151 |
| 5.6.8.1 | E-government strategy in Tanzania..... | 151 |
| 5.6.8.2 | Strategies focusing on widening accessibility of e-government in rural areas..... | 152 |
| 5.6.8.2.1 | Universal communications access fund..... | 152 |
| 5.6.8.2.2 | National ICT backbone infrastructure (NICTBB) | 152 |
| 5.6.8.3 | Opinions on policies to widen accessibility of e-government..... | 153 |
| 5.6.8.4 | Factors hindering ICT infrastructure development in rural areas | 154 |
| 5.6.8.5 | E-government stage in Tanzania | 154 |
| 5.6.9 | Opportunities for adopting e-government in Tanzania | 155 |
| 5.6.10 | Chapter summary | 155 |
| | | |
| CHAPTER SIX: INTERPRETATION AND DISCUSSION OF RESEARCH FINDINGS..... | | |
| FINDINGS..... | | |
| 6.1 | Introduction..... | 158 |
| 6.2 | Government information needs | 159 |
| 6.3 | Role of access of e-government information in e-government adoption | 160 |
| 6.4 | A validated model of factors that influence access to electronic government information (FAAEI) and e-government adoption..... | 160 |
| 6.4.1 | Factors enhancing access of e-government information and services..... | 162 |
| 6.4.1.1 | Income..... | 162 |
| 6.4.1.2 | Education level..... | 163 |
| 6.4.1.3 | Social influence..... | 163 |
| 6.4.1.4 | Knowledge/awareness and ICT resources..... | 164 |
| 6.4.1.5 | Confidence to use government websites..... | 164 |

| | | |
|----------|---|-----|
| 6.4.1.6 | Positive incentives from e-government | 165 |
| 6.4.1.7 | Internet application guidance and information on demand acquisition | 165 |
| 6.4.1.8 | Getting up –to- date information | 165 |
| 6.4.1.9 | Information needs..... | 166 |
| 6.4.2 | Factors hindering access of e-government information and services | 166 |
| 6.4.2.1 | Security and privacy | 166 |
| 6.4.2.2 | Government officials’ support..... | 167 |
| 6.4.2.3 | Availability of electricity..... | 167 |
| 6.4.2.4 | Geographical location..... | 167 |
| 6.4.2.5 | Lack of needed information | 168 |
| 6.4.2.6 | Language..... | 168 |
| 6.4.2.7 | Cultural barriers | 169 |
| 6.4.2.8 | ICT infrastructure | 169 |
| 6.4.2.9 | Age | 170 |
| 6.4.2.10 | Occupation..... | 170 |
| 6.5 | Non-significant results | 171 |
| 6.5.1 | Gender | 171 |
| 6.5.2 | Compatibility | 172 |
| 6.5.3 | Trust..... | 172 |
| 6.5.4 | E-service quality | 172 |
| 6.5.5 | Relative advantage..... | 173 |
| 6.5.6 | Perceived ease of use (PEOU) and perceived usefulness (PU)..... | 173 |
| 6.5.7 | User satisfaction | 174 |
| 6.5.8 | Image | 174 |
| 6.6 | Opportunities for e-government adoption | 175 |
| 6.7 | Chapter summary | 176 |

| | |
|---|-----|
| CHAPTER SEVEN: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS | 178 |
| 7.1 Introduction | 178 |
| 7.2 Overall summary of the study | 178 |
| 7.2.1 Government information needs | 180 |
| 7.2.2 Role of access of e-government information and services to e-government adoption..... | 180 |
| 7.2.3 Factors enhancing access of e-government information and services | 181 |
| 7.2.4 Factors that hinder access to e-government information and services..... | 181 |
| 7.2.5 Status of e-government in Tanzania..... | 182 |
| 7.2.6 Tunisia, Mauritius and Egypt’s experience with e-government | 182 |
| 7.2.7 Opportunities for e-government in Tanzania..... | 183 |
| 7.3 Conclusions..... | 184 |
| 7.4 Recommendations | 186 |
| 7.5 Suggestions for further research | 187 |
| REFERENCES..... | 189 |

LIST OF TABLES

| Table | Name | Page no |
|--------------|--|--------------------|
| 1-1 | Research objectives, research questions and possible sources of data..... | 22 |
| 4-1 | Sample size | 98 |
| 5-1 | Respondents' education level..... | 113 |
| 5-2 | Respondents' income categories..... | 115 |
| 5-3 | Responses on ICT ownership..... | 116 |
| 5-4 | Access to internet..... | 116 |
| 5-5 | Responses on net benefit..... | 117 |
| 5-6 | Correlation among items used to measure net benefit..... | 118 |
| 5-7 | Factor analysis of net benefit..... | 119 |
| 5-8 | Correlations among the factors that enhance/hinder access to e-government information..... | 120 |
| 5-9 | Factors which enhance/hinder access to e-government information | 122 |
| 5-10 | Correlations among items used to measure quality..... | 124 |
| 5-11 | Factor analysis of quality..... | 124 |
| 5-12 | Correlations among the items used to measure trust..... | 125 |
| 5-13 | Factor analysis of trust..... | 126 |
| 5-14 | Correlations among the items used to measure satisfaction..... | 126 |
| 5-15 | Factor analysis of satisfaction..... | 127 |
| 5-16 | Correlations among the items used to measure intention to use..... | 127 |
| 5-17 | Factor analysis of intention to use..... | 128 |
| 5-18 | Correlations among items used to measure relative advantage | 128 |
| 5-19 | Factor analysis of relative advantage..... | 129 |
| 5-20 | Correlations among the items used to measure image..... | 129 |
| 5-21 | Factor analysis of image..... | 130 |
| 5-22 | Correlations among the items used to measure compatibility..... | 130 |
| 5-23 | Factor analysis of compatibility..... | 131 |
| 5-24 | Correlations of items used to measure perceived ease of use..... | 131 |
| 5-25 | Factor analysis of perceived ease of use..... | 131 |
| 5-26 | Correlations among items used to measure perceived usefulness..... | 132 |
| 5-27 | Factor analysis of perceived usefulness..... | 132 |
| 5-28 | Correlations of the items used to measure social influence..... | 133 |

| Table | Name | Page no |
|--------------|---|--------------------|
| 5-29 | Factor analysis of social influence..... | 133 |
| 5-30 | Correlation of items used to measure cultural barriers..... | 134 |
| 5-31 | Factor analysis of cultural barriers..... | 134 |
| 5-32 | Correlation of information needs items | 135 |
| 5-33 | Factor analysis of information needs..... | 135 |
| 5-34 | Government information needs..... | 136 |
| 5-35 | Information needs..... | 137 |
| 5-36 | Factors which activate government information seeking..... | 137 |
| 5-37 | Roles of accessing e-government information..... | 138 |
| 5-38 | Factors affecting e-government information access..... | 140 |
| 5-39 | Linear regression of factors affecting access of e-government information | 143 |
| 5-40 | Gender and access to e-government information..... | 145 |
| 5-41 | Age of the respondents..... | 146 |
| 5-42 | Education..... | 147 |
| 5-43 | Occupation of the respondents..... | 148 |
| 5-44 | Monthly income and website access..... | 149 |
| 5-45 | Pearson Chi-square test..... | 149 |
| 5-46 | Spearman correlation..... | 150 |
| 5-47 | Effect of information needs to access to e-government information..... | 150 |

LIST OF FIGURES

| Figure | Name | Page no |
|---------------|---|--------------------|
| 1-1 | Siau and Long (2005)stage model..... | 41 |
| 3-1 | Factors affecting access of e-government information and e- government adoption..... | 58 |
| 6-1 | A validated model of FAAEL..... | 162 |

LIST OF APPENDICES

| | | | |
|----------|---|--|-----|
| Appendix | 1 | A questionnaire cover letter for Tanzanian citizens (English version)..... | 227 |
| Appendix | 2 | A survey questionnaire for Tanzania citizens (English version)..... | 229 |
| Appendix | 3 | Maswali ya utafiti kwa wananchi wa Tanzania (Toleo la Kiswahili)..... | 236 |
| Appendix | 4 | Cover letter for e-governemnt policy makers..... | 243 |
| Appendix | 5 | Consent form for interview participants..... | 244 |
| Appendix | 6 | Interview protocol for e-government policy makers..... | 245 |
| Appendix | 7 | Introductory letter from the office of the vice-chancellor, Mzumbe University..... | 247 |

LIST OF ABBREVIATIONS

| | |
|---------|---|
| ADSL | Asymmetric Digital Subscriber Line |
| B2B | Business to Business |
| B2C | Business to Citizens |
| COSTECH | Commission for Science and Technology |
| DOI | Diffusion of Innovation |
| eGA | E-government Agency |
| FAAEI | Factors Affecting Access to Electronic government Information |
| FOI | Freedom of Information |
| G2B | Government to Business |
| G2C | Government to Citizens |
| G2G | Government to Government |
| GDP | Gross Domestic Product |
| GINS | Government Intranet System |
| GOC | Government Online Centre |
| HCMIS | Human Capital Management Information System |
| HRDC | Human Resource Development Council |
| ICT | Information and Communication Technology |
| IDT | Innovation Diffusion Theory |
| IICD | International Institute for Communication |
| IMF | International Monetary Fund |
| IS | Information System |
| ISDN | Integrated Services Digital Network |
| ISPs | Internet Service Providers |
| IT | Information Technology |
| KMO | Kaiser-Meyer-Olkin |
| LGA | Local Government Authority |
| MDAs | Ministries, Departments and Agencies |
| MFIS | Ministry of Finance Information System |
| MM | Motivational Model |
| MOLIS | Ministry of Land Information System |
| MTU | Model of Personal Computer Utilization |

| | |
|---------------|--|
| NCB | National Computer Board |
| NICTBB | National ICT Backbone |
| NICTP | National ICT Policy |
| PC | Personal Computer |
| PCI | Perceived Characteristics of Innovation |
| PD | Power Distance |
| PEOU | Perceived Ease Of Use |
| POLIS | Parliament Online Information System |
| PO-PSM | Public Service Management |
| PU | Perceived Usefulness |
| RCAs | Rural Communication Access Centres |
| SADC | Southern African Development Community |
| SCT | Social Cognitive Theory |
| SPSS | Statistical Package for the Social Sciences |
| TAM | Technology Acceptance Model |
| TECOM | Technology, Electronic Commerce and Media |
| TIA | Tunisian Internet Agency |
| TPB | Theory of Planned Behaviour |
| TRA | Theory of Reasoned Action |
| TT | Tunisia Telecom |
| TTCL | Tanzania Telecommunications Company Ltd. |
| TZS | Tanzania Shillings |
| UA | Uncertainty Avoidance |
| UCAF | Universal Communications Access Fund |
| UK | United Kingdom |
| UNPAN | United Nations Public Administration Network |
| US | United States |
| USA | United States of America |
| UTAUT | Unified Theory of Acceptance and Use of Technology |
| VSAT | Very Small Aperture Terminal |
| WAN | Wide Area Network |
| WSIS | World Summit on the Information Society |
| ZANTEL | Zanzibar Telecom Limited |

CHAPTER ONE: BACKGROUND TO THE STUDY

1.1 Introduction and study rationale

People require accurate, reliable and timely information in order to carry out their various activities successfully. While some information can be obtained easily, other information may require extensive searching and access to multiple sources (Sife, Dulle & Msoffe 2010). Citizens are required to access information about their government in order for them to make informed decisions for the good of the country (Quinn 2003). Access to government information is essential in a democratic society because it fosters citizen trust, the fight against corruption, and provides basic information for the public, companies, and journalists (Florini 2007). Citizens have a variety of avenues for accessing government information and these include press release, requester release, leaks from whistleblowers, and open public meetings (Cuillier & Piotrowski 2009:443).

The adoption of ICT and diffusion of internet has led to the citizens' greater expectation that governments provide information and services in the same way as the commercial sector (Al-Shafi & Weerakkody 2007:1-2). The internet driven activity that improves citizens' access to government information and services is known as electronic government (e-government) (Yang & Rho 2007: 1199; Kalu 2007: 359).

According to Bouaziz (2008:12), the roles of e-government are to:

- bring customers to business (B2C);
- allow businesses to transact with each other more efficiently (B2B);
- make interaction between government and citizen easy (G2C);
- connect government to businesses (G2B); and
- allow inter-agency relationships (G2G).

This study examines the factors affecting e-government adoption in Tanzania, with specific focus on the G2C perspective.

According to Carter and Belanger (2005:5), the major role of e-government is to increase the convenience and accessibility of government information and services to citizens in an effort to increase government accountability to citizens and for greater public access to information and a more efficient, and cost-effective government. Citizens who use the internet for information gathering purposes are more likely to view access to government information as important (LaRose & Eastin 2004; Cuillier & Piotrowski 2009:443). Frequent users of online information may be disposed to wanting information about government, including government records, and therefore exhibit greater support for open records (Cuillier & Piotrowski 2009:443).

Lack of access to e-government information is a challenge that can impact on trust between citizens and government and thereby hinder e-government adoption. (Chircu & Lee, 2005; Carter & Belanger 2005; Carter & Weerakkody 2008; Dimitrova & Chen 2006). Despite the importance of accessibility to information in influencing the citizen's perceptions of e-government services, studies show that governments either ignore or pay little attention to the whole concept of information accessibility to their citizens (Alshawi & Alalwany 2009:199). Although accessibility to information is generally ignored worldwide, the situation is not exactly the same across some countries. For example, Terry Ma and Zaphiris (2003) revealed that the United Kingdom (UK) e-government websites are rated relatively high in terms of information accessibility.

The factors that hinder e-government adoption in some other countries include (Gupta, Dasgupta & Gupta 2008:141; Ghapanchi & Sattary 2008:207; Kaaya 2004:42; Zarei):

- disparity in infrastructure development between urban and rural areas (the urban areas being favoured);
- poor electric power and telephone supplies;
- language barrier, (having English dominating the content which is only understood by a minority elite);
- uncoordinated e-government activities;
- low literacy levels among potential users;
- lack of technical expertise to support and maintain ICT infrastructure; and
- lack of computers.

There is thus a need for governments to pay enough attention to making information accessible to their people in order to succeed in e-government adoption.

In order to develop citizen-centred e-government services that provide participants with accessible, relevant information and quality services that are more convenient than traditional 'brick and mortar' transactions¹, government agencies must first understand the factors that influence citizen adoption of this innovation (Carter & Belanger 2005:5). This study, therefore, aims at investigating the manner in which e-government operates in Tanzania. It also attempts to examine and explain how access to and use of government information can contribute to e-government adoption in Tanzania.

1.2 Background to the study

The discussion of the background to the study is divided into three sections, namely the conceptual aspects that relate to benefits of e-government to the citizens; the contextual aspects about e-government adoption in the developed and developing countries; and e-government adoption in Tanzania.

1.2.1 Benefits of e-government to citizens

The potential benefits of e-government as a means of improving provision of government information and services to citizens in developing countries have been widely acknowledged (Colesca & Dobrica 2008b: 205; Mofleh, Wanaous & Strachan 2008:3; Moon 2002:426-427; Wang & Liao 2008:718). Governments have been and still remain the single largest collectors, users, holders and producers of information (Isaac-Henry 1997: 132). Information remains the basic ingredient in developing countries in pursuing the political, economic, social and managerial activities.

Politically, e-government offers public information services in order to increase citizen participation in political processes (Colesca & Dobrica 2008b: 205; Moon 2002:426-427). Economically, e-government lowers the costs of channels of communication with citizens, since citizens can access any information they need on the web. In addition, e-

¹ Describes a traditional business not involved in e-commerce and incurring the cost of physical structures such as retail stores.

government fosters economic development and helps local businesses to expand globally since information about businesses can be put on the web and be accessed globally. In addition, e-government enhances transparency; hence, it reduces loopholes for corrupt tendencies in governments since information will be visible on the government website. Socially, e-government provides improved delivery of government information through a single point of access to public services. In addition, all citizens, including those with special needs and the elderly, depending on their level of literacy, may access public information and services (Colesca & Dobrica 2008b:205; Dasgupta & Gupta 2008:141; Mofleh, Wanaous & Strachan 2008:3; Wang & Liao 2008:718).

The managerial roles of e-government include reorganization of the public sector that leads to more efficient government management, improved accountability and transparency. This is achieved through availability of information that supports internal management. This information, such as that about staff for personnel management, budget and accounts for financial management, can be used for day-to-day operations (Colesca & Dobrica 2008b: 205).

1.2.2 E-government adoption: developing and developed countries

Governments in both developed and developing countries have been making significant efforts to adopt e-government services to improve the efficiency and effectiveness of internal government operations, communication with citizens, and transactions with both individuals and organisations (Kumar *et al*, 2007:64). However, developed and developing countries have adopted e-government services differently. E-government adoption has shown positive trends in developed countries and negative trends in the developing countries (Avgerou 2008:137; Berman & Tettey 2001:2; Sang, Lee & Lee 2009:530; UN 2008:24). Evidence shows that developed countries are progressing faster in relation to e-government adoption than the developing countries.

E-government in developing countries is an important agenda (Heeks 2003; Kaaya 2004; Mofleh, Wanous & Strachan 2008; Mutagahywa, Kinyeki & Ulanga 2006; Ndou 2004). However, not all governments have been able to move quickly enough with e-government adoption (Nasirin & Papazafeiropoulo 2009:149). This is because according to Ngulube (2007:1) and Bhatnagar (2000:1), most of the developing

countries have put more emphasis on building ICT infrastructure and poverty alleviation than on e-government adoption issues. This is a barrier for e-government adoption. Another barrier is the uneven development of the ICT infrastructure. The ICT infrastructure is well established in urban areas than in rural areas, thus making it difficult for the rural population to access government information and services through the internet (Gupta, Dasgupta & Gupta 2008:141; Zarei, Ghapanchi & Sattary 2008:207).

It is further contended (Komba & Ngulube 2012; Ngulube 2007; Saghafi *et al*, 2009:1173) that e-government in developing countries faces; limited financial resources, inappropriate political climates, lack of institutional frameworks, and insufficient knowledge base and knowledge networks. As Basu (2004:117) asserts, there is a digital divide in developing countries due to the big gap between the educated elite, who can afford the technology, and the uneducated poor, who cannot afford the technology, thus leading to a slow e-government adoption in developing countries. Some findings also confirm that younger people are accessing the internet more as compared to the elderly in Qatar (Ali, Weerakkody & El-Haddadeh 2009:6). To bridge the digital divide, Reffat (2003) suggests that governments need to intervene through providing computer education, especially to the elderly and younger people.

1.2.3 E-government adoption in Tanzania

Tanzania is implementing different citizen-focused e-government plans and these are making the government more reachable, transparent, efficient, and effective in delivering public services (Yonazi 2010). Tanzania started implementing broad-based and cross-cutting public service reforms in the mid-1990's and these laid the foundations for the establishment of e-government in the country (Davison, Wagner & Ma 2005:295; Mutahagahywa, Kinyeki & Ulanga 2006:1). Thus, e-government is now one of the ten priority areas of the National ICT Policy of 2003 (URT 2003).

Despite the Tanzanian government's efforts to embark on the ICT usage, e-government adoption has been quite slow. The slow adoption of e-government limits people's access to relevant information in the country. Tanzania and its eastern-Africa neighbours were at the bottom of the United Nations' Global e-government readiness

rankings, Tanzania was ranked number 143 out of the 182 surveyed countries (UN 2008). The poor ranking is as a result of many factors, such as, the absence of electric power, low literacy level among potential users, limited technical expertise to support and maintain ICT infrastructure, poor telecommunication, and lack of computers (UN 2008). In addition, e-government policies and legislation in Tanzania face a number of challenges, including how to improve accessibility and affordability of public services to every citizen nationwide. Furthermore, the current legislation and policies have so far not enabled every Tanzanian to benefit from e-government. (Mayingu 2004; Mutahaghywa, Kinyeki & Ulanga 2006:28).

There are different views regarding the status of e-government in Tanzania. For example, Mutahaghywa, Kinyeki and Ulanga (2006), in their review of e-government related interventions in Tanzania, observe that progress in e-government in Tanzania portrays the characteristics of the presence stage (initial stage of e-government). This means that there is an official website (www.tanzania.org). In addition, while some ministries, departments, and agencies (MDAs) have their own websites with basic information, they have no comprehensive links to regional or local government offices. However, Mutahaghywa, Kinyeki and Ulanga (2006) also noted the lack of online information network among a number of local governments.

An evaluation of websites in Tanzania using the World Bank's e-government maturity model is instructive. Yonazi (2010:55) found out that the website evolution stage is between publish and interactive stages. The publish and interactive are the initial stages of e-government, where information about government ministries, departments and agencies are provided on the websites. Other services, which are provided by websites at the initial stages include downloadable forms, policies, speeches, laws, and few searchable databases (Yonazi 2010:55). The Ministry of Lands and Human Settlements provides a good example of e-government in Tanzania. The Ministry provides various e-government initiatives that simplify and quicken the progress of an application, tracing and the attainment of land related documents. Currently, citizens can trace information on their applications, receive information concerning issues on plots on daily basis, obtain land titles within a week, and obtain land inquiries in hours. This has allowed citizens to save time and money. It has also increased efficiency and transparency in the

Ministry (Yonazi 2010: 13-14). These initiatives may also assist to limit corruption by broadening transparency and citizen participation and enhancing accountability of government officials (Yonazi 2010; Iqbal & Seo 2008:57).

Nevertheless, Ngulube (2007:4) notes that Tanzania is on the second stage of e-government development, where dynamic and online information is accessible to citizens, although communication is still mainly one way. Most of the procedures and activities in the Tanzanian government are integrated through internet portals, which make online interaction between citizens, the business sector and other stakeholders possible. Given the current existing differences of viewpoints regarding e-government adoption status, it is imperative to conduct a study using the stage model by Siau and Long (2005) to assess the current e-government stage in Tanzania.

There is hardly any in-depth discussion on the opportunities and risks for e-government in developing Sub Saharan Africa countries in academic forums. Only a few scholarly articles addressing e-government in developing countries exist (Alshawi & Alalwany 2009:198; Bwalya, Du Plessis & Rensleigh 2012; Gupta, Dasgupta & Gupta 2008:143; Ngulube 2007; Schuppan 2009: 118; Walsham & Sahay 2006:8). The purpose of this study, therefore, is to assess factors affecting access to e-government information and e-government adoption in Tanzania.

1.2.4 Context of the study

This section discusses literature on access to electronic government information and e-government adoption in the Tanzanian context. Firstly, the chapter provides a short description of Tanzania. Secondly, it presents an overview of e-government in Tanzania, and the country's information and communication technology infrastructure. Thirdly, the chapter discusses access to government information in Tanzania. Finally, the chapter provides an overview of the three districts involved in the study.

1.2.4.1 Location, population and economy of Tanzania

The United Republic of Tanzania is situated on the east coast of Africa and is bordered by Kenya and Uganda to the north; Burundi, Rwanda and the Democratic Republic of

Congo to the west; by the Indian Ocean to the east; and by Zambia, Malawi and Mozambique to the south (URT 2009). The Tanzanian mainland is divided into several regions. These are: the coastal plains, which vary in width from 16 to 64km (10 to 39 miles) and have lush, tropical vegetation; the Masai Steppe in the north, 213 to 1,067m (698 to 3500ft) above sea level, which gives rise to two prominent mountains, Kilimanjaro, 5,895m (19,341ft) above sea level and Africa's highest peak, and Mont Meru, 4,565m (14,973ft); and there is a high plateau in the southern area towards Zambia and Lake Nyasa (Travel guide for Tanzania n.d).

Savannah and bush cover over half the country, and semi-desert accounts for the remaining area, with the exception of the coastal plains. Over 53,000 sq km (20,463 sq miles) is inland water, mostly lakes formed in the Rift Valley and Tanzania's share of Lake Victoria and Lake Tanganyika, both on its western border. Lake Victoria covers 69,490 sq km (26,832 sq miles), which is Africa's largest lake and 49% of it lies in Tanzania. With maximum depths of 1,470m (4,821ft), Lake Tanganyika is estimated to be the deepest lake in Africa and is 673km (420 miles) long and averages 50km (31 miles) across 41% of its areas lies in Tanzania. The United Republic of Tanzania includes the islands of Zanzibar and Pemba, about 45km (28 miles) off the coast to the north east of the country (URT 2002).

Tanzania is the largest country in East Africa with a surface area of 94500 square kilometers. The country is divided into 26 regions, twenty-one on the mainland and five in Zanzibar (three on Unguja, two on Pemba). Ninety-eight districts, each with at least one council, were created to further local authority; the councils are also known as local government authorities. Currently there are 114 councils operating in 99 districts; 22 are urban and 92 are rural. The 22 urban units are further classified as city councils (Dar es Salaam and Mwanza), municipal councils (Arusha, Dodoma, Iringa, Kilimanjaro, Mbeya, Morogoro, Shinyanga, Tabora, and Tanga) or town councils (the remaining eleven communities) (The citizen 2010).

According to the 2002 national population census, Tanzania has a population of 34,569,232 people (URT 2006). As of 2006, the estimated population is 38,329,000, with an estimated growth rate of 2 percent. Population distribution is extremely uneven,

with density varying from 1 person per square kilometre in arid regions to 51 per square kilometre in the mainland's well-watered highlands, to 134 per square kilometre on Zanzibar. More than 80 percent of the population is rural (The citizen 2010). There are approximately more than 130 ethnic groups. Each ethnic group has its own language, but Swahili and English are both official languages and Arabic is widely spoken in Zanzibar (Ramonyai and Konstant 2006). In terms of literacy rate, the adult literacy rate is 82 percent for the whole population. Females constitute 87 percent of the total population, while males are 77 percent (EACS 2011).

Although Tanzania was regarded as one of the poorest countries in terms of per capita income, her average GDP growth between 2000 and 2008 was 7% due to strong gold production and tourism (CIA 2011). The World Bank, the IMF, and bilateral donors have provided funds to rehabilitate Tanzania's aging economic infrastructure, including rail and port infrastructure that are important trade links for inland countries. Recent banking reforms have helped to increase private-sector growth and investment, and the government has increased spending on agriculture to 7% of its budget. Continued donor assistance and solid macroeconomic policies supported a positive growth rate, despite the world recession. In 2008, Tanzania received the world's largest millennium challenge compact grant, worth \$698 million. Dar es Salaam used fiscal stimulus and loosened monetary policy to ease the impact of the global recession. GDP growth in 2009-2010 was a respectable 6% per year due to high gold prices and increased production (CIA 2011).

1.2.4.2 E-government in Tanzania and information and communication technology infrastructure

Before 1990, ICT use in Tanzania was mainly limited to radio and landline telephones. New ICT started in the mid 1990s. There are now a number of ICT development initiatives in the country that are funded by the government, donor countries and the private sector. Such initiatives range from telecentres and mobile phones in rural Tanzania to e-government initiatives implemented in the major cities and towns of Tanzania (Mwakaje 2010).

From 1990 to-date, some ground has been laid by way of establishing a legal and policy framework within which practical and effective e-government activities can be pursued. For example, in 1993 the communication and Broadcasting acts were enacted. These made it possible for private individuals to operate broadcasting/communication infrastructure and services such as radio and television stations, mobile cellular services and internet services (URT 1993). In 1999, the Planning Commission published the Tanzania Development vision 2025. The document stipulates the kind of society that the country aspires to be by the year 2025. Promotion of science and technology and specifically promotion of information communication technology are highlighted as key strategies in realizing the vision 2025 (URT n.d).

The following parts focus on ICT developments that have been taking place in Tanzania. Tanzania's national ICT Policy was promulgated by the government in 2003 in order to reduce the possibility of Tanzania being further excluded from the global knowledge based society, as well as the need to harmonize independent ICT-related initiatives (URT 2003). In this policy document, a very broad vision of a future Tanzanian modernity based on ICT is contained. The country is to become a hub of ICT infrastructure and ICT solutions that enhance sustainable socio-economic development and accelerate poverty reduction, both nationally and globally. More specifically, the policy sets out how ICT will enable Tanzania to achieve the five key goals identified in the country's vision 2025 document: high quality livelihoods; peace, stability and unity; good governance; a well-educated and learning society and a strong competitive economy capable of producing sustainable growth and shared benefits (Mercer 2006).

Moreover, in year 2004, the President's Office -Public Service Management (PO-PSM) was given a mandate to formulate e-government policy and its implementations (Shame 2009). Another significant development is on local content and knowledge sharing. There has been an increase in the number of local websites and portals. There now exists several websites of government ministries, departments and agencies and other public and private organizations. These websites include the national website (www.tanzania.go.tz); the Tanzania Online Gateway (www.tzonline.org); the Tanzania Development Gateway (www.tanzaniagateway.org); (www.ippmedia.com); and the

Parliamentary Online Information System (www.parliament.go.tz) (Yonazi 2010). In addition, there is increased use of email and internet in the public service (Shame 2009). These websites and increased internet use provide considerable information on different development issues. The government website has been an instrumental tool in communicating with citizens. This enhances access to information, transparency and feedback from the public. Moreover, various application systems have been deployed, for example; MOLIS – Ministry of Land (Land Management System); MFIS – Ministry of Finance (Financial Management System); HCMIS-PO-PSM (Human Capital Information Systems) and POLIS – Parliament office (Parliament Online Information Systems) (Yonazi 2010; Shame 2009; Economic and Social Research Foundation 2008).

The Tanzanian telecom sector has two fixed-line operators TTCL and ZANTEL and six operational mobile networks, of which Vodacom, Zain, Tigo and Zantel are the four dominating networks. The recent introduction of the 3G wireless broadband service has greatly boosted internet usage. Although indicators show rapid growth in the Tanzanian ICT infrastructure, communication facilities are available, mainly in the urban areas leaving the rural areas where the majority of Tanzanians live being underserved (Wachira 2010; TCRA 2009).

In 2009, there were 179,849 landlines and 14.7 million mobiles in use. The domestic fixed-line telephone network is less than one connection per 100 persons while the mobile-cellular service, aided by multiple providers, is increasing. Like most of the African countries, Tanzania has recorded exponential growth in mobile phones (TCRA 2009).

Access to the internet and email services grew in urban areas through the introduction of internet cafes (TCRA 2009). Telecentres were introduced in rural areas by the Tanzania government with the help of different international and local stakeholders through the Commission for Science and Technology (COSTECH) (COSTECH 2005). Despite the introduction of telecentres, the use of the internet across the country is very low as compared to mobile phones. It is estimated that the total number of internet users grew from 115,000 in 2000 to 400,000 in 2009 (Internet World Stats 2009). The high cost of internet services has contributed to the low use of the internet, especially in

the rural areas. The cost of connectivity is very high in Tanzania, which creates barriers to the spread and use of the internet, which is a major vehicle for the transfer of data, and access to information. It is projected that the introduction of fibre optic technology would lower telecommunication costs by 95% (Wachira 2010).

ICTs and Higher Education in Africa (n.d: 123), reports that there is a low level of internet penetration and patterns of use. However, the rapid development of the telecommunications market means that the cost of owning and using digital equipment continues to decrease making ICT increasingly accessible to the average Tanzanian. It is hoped that the ICT landscape will change dramatically with the recent landing of the submarine cables on the East African Coast.

Since 2000, the International Institute for Communication and Development (IICD) supports partners in Tanzania with incorporating ICT in the development process. Projects to introduce information and communication technology (ICT) in various sectors have been implemented, and currently IICD's Tanzania country programme consists of 25 projects in the agriculture, governance, education and health sectors. Access to information and communication through the internet is enhanced by involving institutional partners such as schools, hospitals and local government offices. Access to the internet for rural communities is provided in what is referred to in IICD's country programme as - Rural Communication Access Centres (RCAs) (Tan 2007). These RCAs have enabled direct and indirect coverage to one million end-users amongst whom are students, teachers, women, youth, farmers, government officials, health workers and small entrepreneurs (Tan 2007). While the necessary conditions for information access exist in all the telecentres in the rural areas, sufficient conditions for access are still lacking, especially with regard to skills, awareness and affordability (Chilimo 2010).

1.2.4.3 Electricity

Statistics in 2006 shows that, only 10% of the total population was connected to the national power grid with 1% of these being in the rural areas. Tanzania's national energy policy recognizes the importance and contribution of indigenous energy sources in providing modern energy sources in rural areas. Although the main goal of the national

energy policy has been to improve the welfare and living standards of Tanzanians, the consistency between energy policy and plans relating to national economic planning in activities related to agriculture, health, education, water and ICT sectors is still weak (EACS 2011; Mutahagahywa, Kinyeki & Ulanga 2006; Wachira 2010).

1.2.4.4 Access to government information in Tanzania

Access to information is essential to democracy and development. Freedom of expression, including the right to access, receive and impart information, is enshrined in international law. Access to information and the right to disseminate information are guaranteed by Article 18 (1) and 18 (2) of the Constitution of United Republic of Tanzania since 1998 (URT 1998).

In practice, however, these constitutional mandates are not realised by Tanzanians. Translating legal and constitutional rights into bureaucratic mandates and operational practice remains a key challenge (HakiElimu, LHRC & REPOA 2005). When information which properly belongs to the public is systematically withheld by those in power, the people soon become ignorant of their own affairs, distrustful of those who manage them, and eventually incapable of determining their own destinies. Although many countries recognize the right of citizens to access and use information, this right is often not implemented (Ferdi 2010).

Citizens in Tanzania have no legal right to access government information, let alone to appeal if information is withheld (Ferdi 2010). A lot is expected from the government. The Tanzanian government must respond to the global call to open up data and information and put transparency and information access laws and mechanism in place for people to participate, inquiry, criticize and applause where appropriate. Such a law should specify how information should be accessible: what type of information, its quality and quantity, the means of publication and time limits within which government institutions should react to information requests (Ferdi 2010).

Without information, there can be no accountability, and equally important, the civil society and the general citizenry can neither participate in their governance nor monitor or verify the quality of governance. Access to information by the populace can help

people to become well informed and to contribute positively to governance through democratic participation (Mutula & Wamukoya 2009:337). Similarly, access to information can enable people to make realistic demands on government and assist in creating jobs, understanding their rights, obligations and responsibilities (Wamukoya 2009:337). By harnessing the power of information, the public can bring force to bear on authorities to provide new and better responses to vital long-standing issues, which Consulting and Audit Canada (2004:1) identified as poverty reduction, wealth creation education, equity and social justice.

The absence of freedom of information (FOI) in Tanzania is viewed as the likely cause of endemic corruption (Wamukoya 2009:338). According to Lambsdorff (2003), if a country such as Tanzania could achieve the corruption score of the UK, its GDP would increase by more than 20 per cent and net annual per capita capital inflows would increase by 3 per cent of GDP.⁹ Highly corrupt countries tend to under-invest in human capital by spending less on education, to over-invest in public infrastructure relative to private investment, and to have lower levels of environmental quality. High levels of corruption can produce unequal distribution of income and can undermine programmes designed to help the poor (Gupta, Davoodi & Alonso-Terme 2002:24).

Poor records management is another obstacle of access to government information in Tanzania (Ndenje-Sichalwe 2010). Despite some measures to link and improve records management practices with the public service reform programme in Tanzania, there are still weaknesses in the management of public records in the government ministries (Ndenje-Sichalwe 2010). It is thus important to improve the ICT infrastructures, right to information access and management of public records in order to facilitate access to government information in Tanzania.

1.2.4.5 Profile of the districts involved in the study

This section introduces the three districts involved in the study. These districts included the following: Kinondoni Districts from Dar es Salaam region, Morogoro town district from Morogoro region and Njombe district in Iringa region.

1.2.4.6 Rationale for selecting the districts involved in the study

Three districts were selected on the basis of accessibility by roads; presence of public access to ICTs such as telecentres, internet cafes; a diverse combination of urban area, per-urban area and rural areas, geographical location and economic activities taking place in these regions. The same characteristics (that is, presence of telecentres, economic activities and geographical location) were used to select four telecentres in analysing the role of ICTs for poverty reduction in Tanzania (Chilimo 2008). Lwoga (2009) also used the same criteria to select six districts in Tanzania to assess the application of ICTs in managing agricultural indigenous knowledge in the rural areas. The following sections present a description of each district where this study was conducted.

1.2.4.6.1 Kinondoni district

Kinondoni district is the northernmost of three districts in Dar es Salaam, Tanzania, the others being Temeke (to the far Southeast) and Ilala (downtown Dar es Salaam). To the east is the Indian Ocean, to the north and west the Coast Region of Tanzania. The area of Kinondoni is 531 Km². The original inhabitants of Kinondoni were the Zaramo and Ndengereko, but due to urbanization, the district has become multi-ethnic (URT 2004).

Kinondoni district is the largest of the three districts in Dar es Salaam and includes both urban and peri-urban areas. According to the 2002 National Census, the Kinondoni Municipality has a population of 1,088,867 people with a growth rate of 4.1. (Kinondoni Municipality 2009).

Administratively, Kinondoni District is broken into 4 divisions, 27 different wards, and 113 sub-wards. Below is a list of the wards in Kinondoni District: Bunju, Goba, Hananasif, Kawe, Kibamba, Kigogo, Kijitonyama, Kimara, Kinondoni, and Kunduchi. The other wards include Mabibo, Magomeni, Makuburi, Makumbusho, Makurumula, Manzese, Mbezi, Mburahati, Mbweni, Mikocheni, Msasani, Mwananyamala, Mzimuni, Ndugumbi, Sinza, Tandale and Ubungo (Podt, Igoko & Senmartin 2008: 2).

In Dar es Salaam, only 50% of households have access to electricity. Kinondoni district is among the districts with the highest grid coverage (45.5%) (Damhaug 2009). In addition, there are many internet cafes in the Kinondoni district (City Facts 2011).

In 1998, ICTs were introduced into Kinondoni district as a pilot project on improved governance through data management and decision-making systems. In this project, a hospital ward, a dispensary and a school were equipped with stand-alone computers. Employees were trained to register day-to-day activities on the systems, using simple Excel sheets (Souter, James & Wild 2007:45). The project has served as a model for successful ICT applications developed in a bottom-up process. In the longer term, such an approach will prove essential to making decentralisation viable in a large country like Tanzania (Podt, Igoko & Senmartin 2008). Kinondoni Municipal Council is much solicited by other authorities (national and international) to share their experiences (IICD 2010).

1.2.4.6.2 Morogoro urban district

Morogoro is the fifth largest town in Tanzania, located 350 metres above sea level in a plain, at the foot of the Uluguru Mountains, 200 km west of Dar es Salaam. In Morogoro Urban district, there are 229,000 inhabitants; the urban district attracts many people looking for work in industry and the surrounding sisal estates as well as in the service industry. However, the majority of people in the district live in rural areas (Kepa 2007). In the urban district of Morogoro, about 64% of people rely on agriculture as their main livelihood activities. People in the rural areas are largely subsistence farmers, growing mainly rice, maize, cassava, finger millet, sweet potatoes, beans and groundnuts (Kepa 2007).

Morogoro Urban is one of the six districts of Morogoro region in Tanzania. It is bordered to the north by the Morogoro rural district, to the East by the Pwani region, to the south by the Kilombero district and to the west by the Kilosa district (URT 1997). Morogoro Urban district is administratively divided into 19 wards as follows: Bigwa, Boma (English Meaning: headquarters), Kichangani, Kihonda, Kilakala, Kingo, Kingolwira, Mafiga, Mazimbu, Mbuyuni, Mji Kuu (English Meaning: center city). Other wards are Mji Mpya (English Meaning: new town), Mlimani (English Meaning: on the

mountain), Mwembesongo, Mzinga, Sabasaba (English Meaning: 7/7 or July 7th), Sultan Area, and Uwanja wa Ndege (English Meaning: airport (URT 1997).

The Morogoro region has considerable mobile telephony developments. These developments could partly be attributed to the region's proximity to Dar es Salaam city, which has the highest ICT development in the country (Sife, Kiondo & Macha 2010: 2). There are a number of internet cafes in Morogoro town. Rates vary between Tanzanian shillings (TZS) 500 and TZS 1,000 per hour (reasonable prices). The monetary figures amounts are reported in TZS because if they are reported in US dollars, the amounts will be very negligible. For example, if you convert TZS 500 the amount in dollars becomes \$0.31 which is very small (the US\$ equivalent was TZS 1595.83 per US\$ exchange rate). Speed of the internet is generally slow (Wikitravel 2011).

One of the three main sources of hydroelectric power stations in Tanzania is based in Morogoro, the Kidatu Hydroelectric Power Station. While 40 percent of urban residents are connected, only a few rural households in Morogoro actually receive electricity; most rural domestic energy comes from kerosene and firewood (UNHSP 2009).

1.2.4.6.3 Njombe district

Njombe is one of the seven districts of the Iringa region of Tanzania. It is bordered to the north by the Mufindi district, to the south by the Ludewa district, to the east by the Morogoro and Ruvuma regions, to the west by the Makete district and to the northwest by the Mbeya region. According to the 2002 Tanzania National Census, the population of the Njombe district was 420,348. Njombe district is classified as rural and poor. However, the rural areas of these districts have gradually become active in the use of ICT related services (ESRF 2008:8).

The mobile phone service is very good in main towns of Njombe, their surrounding areas and also in the villages that lie along some sections of the trunk roads. Some remote areas have a mobile phone service from one service provider. Most of the other rural areas have no such service. Electricity supply in the main towns is steady, and the source is the national electricity power grid (hydroelectric). Generators are used in smaller towns to provide electricity for individual uses (few cases). Records show that

only 6% of the households in Iringa region are connected to the electricity grid (Awadh 2007).

Njombe District is administratively divided into 25 wards as follows: Idamba, Igongolo, Igosi, Ikondo, Ikuna, Ilebula, Imalinyi, Iwungilo, Kidegembye, Kifanya, Luduga, Lupembe, Luponde, Mahongole, Makambako, Matola, Mdandu, Mtwango, Njombe Mjini, Saja, Usuka, Uwemba, Wangama, Wanging'ombe, and Yakobi (Multilingual Archive 2011).

1.3 Background to the research problem

Information and communication technologies (ICTs) are increasingly playing a significant role in the delivery of information and services. As in the business sector, governments, all around the world, are making efforts seeking to make effective and efficient delivery of government information and services. In order to achieve the objective, one of the items that is always on the agenda of many governments is to transform the conventional manual way of delivering information and services by adopting ICTs. Therefore, it is believed that the adoption of e-government is an important measure towards an effective and efficient posting of government information and delivery of public services.

High-income countries are in the top ranking of the 2010 e-government development index as in previous years. Among the top five countries in the 2010 United Nations e-government survey, are the Republic of Korea, ranked the highest with a score of (0.8785), while the others are the United States (US) (0.8510), Canada (0.8448), the United Kingdom (UK) (0.8147) and the Netherlands (0.8097) (UN 2010:61). According to Xia and Huang (2007:291,) the United States' citizens visit government websites and use the information they get on the websites. Approximately, two-thirds of government website users in the United States point out that they have sought information on public policy issues via government sites, while seventy-two percent note that their use of government websites has slightly improved the way they interact with state government (Xia & Huang 2007:291).

In addition, Teo, Strivastava and Jiang (2008:107) suggest that searching for information is the most common reason for citizens to visit e-government websites and, thus, in many cases, citizens are using e-government websites to meet their informational needs. A majority of government services in the United Kingdom and United States are obtainable from the government websites. Therefore, the practice of e-government in the UK and US demonstrates that obtaining necessary documents and information from government websites has gradually played an increasingly important role in e-government adoption (Xia & Huang 2007:291).

The emerging economies and developing countries are however facing a number of challenges and as such need to implement a number of processes and projects. They have to invest in the following three dimensions; online services, telecommunication infrastructure and education in order to narrow the current digital gap. In other words, having a great website does little in e-service provision if the majority of people in the country cannot read or write, or have no access to the internet (UN 2010: 61). United Nations (2010:5) revealed that universal access and use of new technologies are the benchmarks against which electronic and other innovative forms of public service delivery may be addressed. For e-government to be successful, people must be willing to use online services on a regular basis (UN 2008:13). In order for Tanzania to be in the e-government top-ranking index as other countries, there is a need to investigate the role that access and use of government information may play in the e-government adoption process.

1.3.1 Research problem

The adoption of e-government in developing countries is particularly important because a lot of e-government information is already available, but most of this information is not widely accessible to the majority, especially those in the rural areas (Schuppan 2009:122; Yang and Rho 2007: 1198). Some of the factors that contribute to this situation include lack of access to internet, the high cost of ICTs and high poverty and illiteracy rates, especially in the rural areas (Schuppan 2009:122). These factors have caused developing countries to score below the world average in the global e-government development ranking (UN 2008). However, the central question for

Tanzania is not whether e-government information and services are accessible to citizens, but rather it is on the role that the availability and access to e-government information and services plays in the e-government adoption process. Another question should ask whether there are obstacles to e-government adoption in Tanzania.

Various studies from the developing world assessed factors that may influence e-government adoption. For instance, Bwalya (2011) examined e-government adoption and synthesis in Zambia; Heeks (2003) examined causes of failure for e-government initiatives in developing countries; and Kaaya (2004) determined the status of government websites in east African countries. Others include Ndou's (2004) examination of e-government opportunities and challenges in the developing countries; Mofleh, Wanous and Strachan's (2008) review of ICT transformation in Jordan, which identify critical factors for slow adoption of e-government. In Tanzania, Mutagahywa, Kinyeki & Ulanga (2006) assessed the efforts of the government of Tanzania in e-government area and Yonazi (2010) studied the initiatives enhancing the adoption of e-government in Tanzania. The findings of these studies are discussed in Chapter Three and Six.

Looking at the studies above, one can notice that scholars have examined the e-government related interventions in developing countries and Tanzania but have not done a detailed assessment of access to government information, and e-government adoption issues. In line with this and to the best knowledge of the researcher, there is scant information about the extent of e-government adoption in Tanzania and the role that access of government information may play in the process of e-government adoption. This study, therefore, investigates the current e-government adoption situation, and plans and achievements in Tanzania's e-government initiatives. The study also examines and investigates how the access of government information contributes to e-government adoption in Tanzania.

1.3.2 Study purpose

This study aims at assessing the current situation and the critical factors affecting access and use of e-government information and adoption of e-government in Tanzania. In

addition, this research explores advanced nations' experiences in order to draw some valuable lessons for the Tanzania situation.

1.3.3 Research objectives

The major objective of this study was to assess the impact of access and use of government information on e-government adoption in the selected districts of Tanzania. The specific objectives are:

- To establish the current e-government information needs of Tanzanians in the selected districts.
- To investigate the role that access and use of government information may play in the e-government adoption process success.
- To determine factors that enhance access and use of e-government information and services.
- To investigate factors that might hinder the usage and access of e-government information and services.
- To assess the status of e-government in Tanzania.
- To review other developed countries' experiences with e-government for the lessons to be employed for the adoption of e-government in Tanzania.
- To determine opportunities for adopting e-government in Tanzania.
- To provide an e-government adoption model within which new initiatives might be evaluated.

Table 1-1: Research objectives, research questions and possible sources of data

| No | Research Objective | Research Question | Possible Source | Theory/Model |
|----|--|---|--|---|
| 1. | To establish the current government information needs of Tanzanians | What are the current government information needs? | Literature Questionnaires | Wilson (1996) Information behaviour model |
| 2. | To investigate the role that access of government information may play in the successful e-government adoption process | What role does the access of government information and services play to e-government adoption? | Literature review Questionnaire | DeLone & McLean (1992) Information system success model |
| 3. | To determine factors that enhance access of e-government information and services | What are the factors that enhance access of government information and services? | Literature Questionnaire Interview | Siau and Long (2005) synthesized stage model Wilson (1996) information behaviour model Davis (1989) TAM Rogers (1995) DOI model DeLone and McLean (1992) Information system success model Venkatesch <i>et al</i> (2003) the UTAUT model |
| 4. | To investigate factors that might hinder the access of government information and services | What are the factors that might hinder access of government information and services? | Literature Questionnaire Interview | Siau and Long (2005) synthesized stage model Wilson (1996) information behaviour model Davis (1989) TAM model Rogers (1995) DOI model DeLone and McLean (1992) information success model Venkatesch <i>et al</i> (2003) |

| | | | | |
|----|--|---|--|---|
| | | | | the UTAUT model |
| 5. | To assess the current status of e-government in Tanzania | What is the status of e-government in Tanzania? | Literature Interview | Siau and Long (2005) synthesized stage model |
| 6. | To review other countries' experiences with e-government for the lessons to be employed for the adoption of e-government in Tanzania | What lessons, can be learnt from other countries leading in e-government? | Literature | Not applicable |
| 7. | To determine opportunities for adopting e-government in Tanzania | What are the opportunities for e-government in Tanzania? | Interview | Not applicable |
| 8. | To provide an e-government adoption model within which new initiatives might be evaluated | Not applicable | Literature Questionnaire Interview | Siau and Long (2005) synthesized stage model Wilson (1996) information behaviour model Davis (1989) TAM Rogers (1995) DOI DeLone and McLean (1992) Information system success model Venkatesch <i>et al</i> (2003) UTAUT model |

1.4 Justification for the study

Justification of the study means proving that the study is original by its importance, benefits to the community, and its contribution to the body of knowledge of the field involved in the study (UNISA 2010:22). This section, therefore, focuses on the originality of the study and examines its original contribution to knowledge.

1.4.1 Originality of the study

I draw on suggestions made by Dunleavy (2003:27) and Phillips (1993), cited in Phillips and Pugh (2005:63) to outline the ways in which this study is making an original

contribution to knowledge. The study is based on empirical work that has not been done before in Tanzania; brings about a synthesis that has not been made before in the country; uses already known material, such as previous literature, with a new interpretation for e-government adoption studies, and examines areas, such as the impact of information access to e-government adoption, which scholars in the discipline have not looked at before.

This study draws on previous studies focusing on factors into the adoption of e-government in developing countries (Heeks 2003; Kaaya 2004; Mutagahywa, Kinyeki & Ulanga 2006; Ndou 2004; Mofleh, Wanous & Strachan 2008). Studies on Tanzania are of limited relevance to the current research as they focus on the use of ICT in other areas such as; access of electronic information resources (Shija 2009), e-learning in higher education (Ndume, Tilya & Twaakyondo 2008). The present study brings new knowledge by assessing the impact that access and usage of e-government information has on the adoption of e-government in Tanzania. The findings of this study focus on the Tanzanian context; hence, it is original in that perspective.

The study is also original in that it involved Tanzanian citizens from Dar es Salaam, Morogoro and Iringa, thus representing urban, peri-urban and rural Tanzania regions, while most of e-government studies have concentrated on the public sector organisations (G2G) alone. This study is also original in that it integrates the following models; e-government evolution life cycle model (Siau and Long 2005), the Technology acceptance model (TAM) (Davis 1989), information behaviour model (Wilson 1996), diffusion of innovation theory (Rogers 2002) and information system success model (DeLone & McLean 1992), which is something that has not been done in the existing studies.

This study also achieved originality by triangulating data collection methods, which are interviews and questionnaires. In addition, the following models/theories were triangulated: Siau and Long (2005); technology acceptance model (TAM) by Davis (1989), Wilson (1996); diffusion of innovation theory (DOI) by Rogers (2002) and DeLone and McLean (1992). Data sources including Tanzanian citizens and policy makers from Dar es Salaam, Morogoro and Iringa was also triangulated. Triangulation

enables the collection of multiple data using different strategies, approaches, and methods in such a way that the resulting mixture or combination is likely to result in complementary strengths and non-overlapping weaknesses (Johnson & Onwuegbuzie 2004; Neuman 2006:149; Patton 2002:247). Lastly, this study reviewed a range of literature from more advanced countries in e-government to draw lessons, which may be relevant to the Tanzanian situation, hence making this study different from previous studies conducted in Tanzania.

1.5 Significance of the study

Significance of the study refers to the manner in which a study relates to the larger issues and uses a persuasive rationale to justify the reason for the study (Kothari 2004). Significance of the study makes the study worth pursuing, and intends to answer the following questions:

- why is the study important;
- to whom is the study important; and
- what benefit(s) will the study have to the community? (Thomas 2006: 151).

The paragraph below explains the importance and contribution of this study.

This study is important due to the fact that previous studies on e-government in Tanzania focused on issues such as challenges of e-learning at higher learning institutions (Ndume, Tilya & Taakyondo 2008), ICT for rural development (Nungu & Kimasha 2006), government efforts in the e-government area (Mutahagahywa, Kinyeki & Ulanga 2006), and enhancing adoption of e-government initiatives in Tanzania (Yonazi 2010). Very few studies focused directly on the issue of access to government information and e-government adoption (Alshawi & Alalwany 2009; Bwalya & Healy 2010; Carter & Weerakkody 2008; Colesca & Dobrica 2008; Terry Ma & Zaphiris 2003). Therefore, there is a knowledge gap on the extent of e-government adoption in Tanzania and the role that access and usage of government information plays in the development process. This study is also significant in that of the few studies on this research focus, such as Mutahagahywa, Kinyeki and Ulanga (2006) and Yonazi (2010),

none has used the mixed methodology and a triangulation of a number of theories drawn from information science, information systems, and e-government, which are used in this study.

The Tanzanian government developed the National ICT policy in 2003 (Yonazi 2010). One of the policy challenges, according to Mutahagahywa, Kinyeki and Ulanga (2006:6), is on the creation of an e-government environment responsive to the needs of citizens. The key elements in this respect are to have a strong economy, availability of both e-government and ICT skills in the workforce, a formal government mandate and commitment for pursuing an e-government agenda, and an appropriate regulatory and legislative framework. This study, therefore, is of importance to the policy makers since it provides them with a model for the development and evaluation of e-government initiatives.

The findings of this study are also of benefit to officials from the private sector responsible for e-commerce. The adoption model covers e-commerce as well as e-government and describes the vital requirements ensuring high usage levels. In addition, this study is of benefit to scholars researching on e-government through its highlighting of the critical issues on e-government adoption. Scholars may investigate in depth the effect of these issues in different social contexts.

This study also contributes to the literature for e-government adoption in Tanzania since, as noted earlier; there is limited research on the topic. Previous studies of e-government in Tanzania focused on other issues on e-government and not the role that access and use of government information may play in the e-government adoption process success (Ndume, Tilya & Taakyondo 2008; Nungu & Kimasha 2006; Mutahagahywa, Kinyeki & Ulanga 2006; Yonazi 2010). This study intends to fill the gap left by the previous studies by assessing the access to government information and e-government adoption in Tanzania. Moreover, this study provides policy makers with a model for the development and evaluation of e-government initiatives. This model may help in building trust between governments and their citizens, an essential factor in good governance, by using internet-based strategies to involve citizens in the policy process, thus illustrating government transparency and accountability.

1.6 Definition of terms

This section presents the definition of key terms and concepts that are used in this study.

1.6.1 Government

It is essential to know what government is, in general, and to explore the means that have caused this transformation in order to get a definition of e-government. Government is defined as a dynamic mixture of goals, structure and functions, a complex concept involving many features such as organization, related agency; authority and organization's culture (Pardo 2000:2).

1.6.2 E-government

In order for e-government initiatives to be successful, Ndou (2004:3) suggests that e-government be well-defined and understood. Narrow ways of defining and conceptualizing e-government limit the range of opportunities it offers. E-government is defined as the association between governments, their customers (businesses, other governments and citizens), and their suppliers (businesses, other governments and citizens) using electronic means (Means & Scheneider 2000:121). Furthermore, E-government is an integration of computer supported government services that enable citizens and businesses to receive whatever government service they need through a single gateway. Government and employees can also benefit from this integration (Scholl & Klischewski 2007:889-890). Moreover, Kalu (2007:359) defines e-government as the production and delivery of government services through IT applications, or as a means to shorten and advance transactions between government and other actors, such as constituents, businesses, and other governmental agencies.

Ndou (2004:6) has categorized the following four major dimensions of e-government:

- (1) e-administration, which enables the automation and the computerization of departmental administrative tasks;

- (2) e-citizens that deal with connections and interrelationships between governments and citizens;
- (3) e-services which are used for the delivery of automated services; and
- (4) e-society that enables relationships and interactions to take place among the public agency, the private sector and civil community in general.

1.6.3 E-government adoption

Kumar *et al* (2007:69) describes adoption as a simple decision of using or not using online services depending on some factors. Similarly, Gilbert, Balestrin and Littleboy (2004:287) define e-government adoption as the individual's decision on whether or not to use the technology based on perceptions of the technology, for example, the relative advantage, compatibility, flexibility, usefulness, ease of use, perceived risk, trustworthiness, external influence, internet safety, interpersonal influence, relative advantage, and facilitating condition. The definition by Gilbert, Balestrin and Littleboy (2004:287) is used in this study in order to assess the factors affecting access and use of e-government information and adoption of e-government in Tanzania.

1.6.4 Electronic government information

Electronic government information is obtained through the use of internet and other associated technologies provided by the government. Citizens, governments, employees and businesses can receive whatever government information they need through a single gateway (UN & ASPA 2002: 1; Reddick & Howard 2007; Scholl & Klischewski 2007:889-890).

1.7 Literature review

This section discusses the models used in this study together with a review of empirical studies on e-government adoption. The study uses the information systems success model, information behaviour model, e-government evolution life cycle models, and the e-government adoption model to provide the theoretical guidance for this study. These multiple theories and models are used to cover some unique variances, which might be

neglected by single theories and models. This study does not use the technology adoption life cycle model (Darmawan 2001) since it resembles the stage model of Siau and Long (2005). The models are discussed in greater detail in Chapter Three.

1.8 Methodology

The purpose of the study is to assess the current situation and the critical factors affecting access and use of e-government information and adoption of e-government in Tanzania. This study used the mixed method approach for the broad purposes of breadth and depth understanding of corroboration ((Johnson & Christensen 2008:445; Creswell 2003:210; Johnson, Onwuegbuzie & Turner 2007:129). Both qualitative and quantitative data was collected from the three selected districts in Tanzania. This study used a sequential mixed method design, which used questionnaires to collect quantitative data and interviews to obtain qualitative data in order to supplement data from the questionnaires. A further and detailed discussion about the research methodology is explored in Chapter Four.

1.9 Ethical considerations

In any research, the following ethical issues need to be considered: Informed consent, privacy and confidentiality and protection from harm (Bailey 2007:16; Johnson & Christensen 2008:109). The informed consent protects the participants and as such, the researcher cannot include a person in the study without getting approval from them first. This protects the individual from harm and protects the researcher from litigation or having their research deemed invalid or unethical. With regard to confidentiality, the researcher guaranteed the participants that identifying information would not be made available to anyone who is not directly involved in the study. As recommended by Bailey (2007:24), it is the researcher's responsibility to assure personal confidentiality of the participants/respondents. Moreover, this study adhered to the University of South Africa research ethics policy (UNISA 2010). The research complied with the University's code of conduct throughout the study. In addition, all sources, used in the study are acknowledged. A further detailed discussion about the ethical considerations is explored in Chapter Four.

1.10 Scope and limitations of the study

Scope and limitation of the study is the boundary of the study, or what the study is going to cover (Kothari 2004). The sample investigated in this study was from Dar es Salaam, Morogoro, and Njombe and therefore conclusions reached might not relate to people from outside the mentioned regions. E-government can be viewed from different perspectives, such as government to government (G2G), government to citizen (G2C), and government to business (G2B). This study focused only on G2C to determine how information access impacts on the adoption of e-government and other factors, which might hinder e-government adoption.

1.11 Organization of the thesis

The thesis is divided into seven chapters as follows: Chapter One provides a general direction of the aims and objectives of the research, and describes the structure of the thesis. Thus, Chapter One includes a background to the statement of the problem, problem statement, and purpose of the study, significance and contribution of the study, originality of the study, scope and limitation of the study, ethical issues and outline of the thesis. Then, Chapter Two explains where the study was conducted and the reasons for selecting such a specific area for the study. In addition, Chapter Three reviews the literature related to the study. Moreover, the theoretical foundation for the study is provided in this chapter. Chapter Four describes the research methodologies, research design, justification for mixed methodology, data collection procedures and instruments, quantitative data analysis, qualitative data analysis, validity and reliability and the ethical issues. Chapter Five portrays the analysis of the study's questionnaires and interviews and presents the findings using tables and figures. Chapter Six presents the interpretation of the findings in the light of the research questions. Finally, Chapter Seven presents a summary of the study findings, limitations, conclusions and recommendations for further studies.

1.12 Summary of the chapter

This chapter introduced the core research problem and then laid the foundation for other chapters in the thesis. It presented the general background information of the

study, the statement of the problem, objectives of the study and research questions. Furthermore, this chapter discussed issues related to the significance of the study, a brief outline of the methodology and ethical issues. Key issues that emerged from Chapter One are that lack of access to e-government information is a challenge that can impact on trust and thus hinder e-government adoption. Despite the importance of accessibility to information in influencing the citizen's perspective of e-government services, studies show that governments either ignore or pay little attention to the whole concept of information accessibility to their citizens. Scholars have looked at the e-government related interventions in developing countries and Tanzania but have not looked into detail on access to government information, and e-government adoption issues. Thus, it was imperative to assess factors affecting access to e-government information and e-government adoption in Tanzania.

In addition, this chapter described the location, population and economy of Tanzania. Other issues discussed in this chapter included e-government in Tanzania, ICT infrastructure and access to government information in Tanzania. Finally, the chapter provided an overview of the three districts involved in the study. Key themes, which emerged in this chapter, are that Tanzania is making progress in e-government implementation as evidenced by a number of websites belonging to government ministries, departments and agencies. Moreover, progress in e-government is explained by an increased number of fixed line operators and mobile networks and introduction of internet cafes in urban and in rural areas.

The following obstacles to e-government implementation in Tanzania were discussed: The cost of connectivity is very high which creates barriers to the spread and use of the internet. Only 10% of the total population were connected to the national power grid with 1% of these being in rural areas. This chapter, therefore, gave an overview of the context of the current study, providing the way for the next chapter, the theoretical framework and the literature review. The following chapters provided answers to the research objectives in order to assess factors that influence access to electronic government information and e-government adoption in selected districts of Tanzania.

CHAPTER THREE: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

3.1 Introduction

This chapter provides the theoretical foundation for the study and a review of the literature on the e-government issues. The literature review is discussed in relation to the objectives of the study, which are : an overview of information needs and information seeking behaviour, the role that access and use of government information may play in the successful e-government adoption process, factors that enhance access and use of e-government information and services, and factors that hinder usage and access of government information and services. In addition, e-government adoption conceptual framework is developed from the theoretical literature, innovation adoption theories and models. Lastly, the chapter analyzes the experiences of other developed countries with e-government.

3.2 Significance, characteristics and types of literature review

A literature review is a body of text that aims to review the critical points of current knowledge, including substantive findings as well as theoretical and methodological contributions to a particular topic (Henning, van Rensburg & Smit 2004:27). Fink (2010:3) defines a literature review as a systematic, explicit, and reproducible method for identifying, evaluating, and interpreting an existing body of completed and recorded work produced by researchers, scholars, and practitioners. It provides the reader with a comprehensive overview and helps place that information into perspective (Green, Johnson & Adams 2001:102).

A literature review is significant because it (Johnson & Christensen 2008:65; Welman, Kruger & Mitchel 2005:38-39):

- helps the researcher to be aware of inconsistencies and gaps that may justify further research;
- provides the researcher with important facts and background information about the subject under study;

- enables the researcher to avoid duplicating previous research, and findings and conclusions of past studies;
- provides motivation;
- assists a researcher to form research questions; and
- can assist in the identification of appropriate data-collection instruments.

Cooper (1988:5) developed an instructive framework for reviews that had previously been lacking. This taxonomy addressed six characteristics of reviews:

- Focus: primary research outcomes, research methods, theories or the application of findings of research.
- Goals: integration, criticism or the identification of central issues.
- Perspective: neutral, where the reviewer attempts to present all arguments, espousal where the perspective is a particular argument or issue, paying little attention to other views.
- Coverage: may range from exhaustive to only a representative cover of the available research.
- Organisation: how the literature is presented in the review, for example, historically in chronological order, conceptually with literature relating to the same ideas presented together, or methodologically in which literature is grouped according to the methods employed in the primary research.
- Audience: the differing audiences to whom the reviewer is directing the work.

Various scholars have proposed various ways of discussing literature reviews. Cooper (1984) cited in Kowanko (2000:34) identified three different components and suggested that a comprehensive review will likely address two or more of these areas. The first component is integrative reviews that summarize past primary research, draw overall conclusions, highlight unresolved issues and provide direction for future research. The second is theoretical reviews that present theories to explain phenomena, and compares them in terms of breadth, internal consistency and the nature of their predictions. The third is methodological reviews that examine and critique the research methods and operational definitions that have been applied to a problem, and address rigour and the

risk of bias. Green, Johnson and Adams (2001:102) proposed three basic types of literature reviews, which are narrative reviews, qualitative systematic reviews, and quantitative systematic reviews (meta-analyses).

Kaniki (2000: 17) indicated that the literature review can present a historical review, which consider the chronological development of the literature. Another style is to break the literature into stages or phases and thematic reviews structured around different themes or perspectives and often focused on debates between different schools and theoretical reviews that trace the theoretical development in a particular area. The last style is to use empirical reviews, when summerizing the empirical findings on different methodologies.

The present study adopted a combination of the thematic, methodological, theoretical, and empirical approaches to present literature related to the study. In this background, the literature review was presented as follows:

- Literature review discussed various technology adoption models and information behaviour models as they relate to factors that influence access to electronic government information and e-government adoption in order to build the theoretical foundation of the study;
- The review of literature was also done to identify various methods that have been used by previous studies to study similar problems;
- Different literatures that are closely related to the study were reviewed thematically by structuring the literature around different themes that emerged from the research questions and objectives; and
- Various empirical studies as they relate to the current study were reviewed.

3.3 Theoretical framework

A theoretical framework is a collection of interrelated concepts that are similar to a theory but not necessarily so well worked-out. The theoretical framework guides research to determine the concepts it will measure, and the statistical relationships it should look for (Borgatti 1999). However, more often, the term model is used instead of, or interchangeably with, theory. In a broader context, a model is viewed as a

representation of reality, it delineates those aspects of the real world considered by the scientist as relevant to the problem under investigation, it makes explicit the significant relationships among these aspects, and it enables the researcher to formulate empirically testable propositions regarding the nature of these relationships (Frankfort-Nachmias & Nachmias 1996:44).

The following models guided the theoretical framework of this study: information systems success model, information behaviour model, technology adoption life cycle models, e-government evolution life cycle models and e-government adoption models as indicated in Table 1-1 of Chapter 1.

3.3.1 Information systems success model

DeLone and McLean (1992) model has been found to be a useful framework for organizing IS success measurements. The model has been widely used by IS researchers to understand and measure the dimensions of IS success. This model was updated although each of the variables describing success of an information system was consistent with one or more of the six major success dimensions of the updated model (Petter, DeLone & McLean 2008).

The dimensions of success include: (i) system quality: the desirable characteristics of an information system; for example, ease of use, system flexibility, system reliability, and ease of learning, as well as system features of intuitiveness, sophistication, flexibility, and response times. (ii) Information quality: the desirable characteristics of the system outputs; that is, management reports and web pages; to measure their relevance, understandability, accuracy, conciseness, completeness, understandability, currency, timeliness, and usability. (iii) Service quality: the quality of the support that system users receive from the IS department and IT support personnel focusing on responsiveness, accuracy, reliability, technical competence, and empathy of the personnel staff. (iv) System use: the degree and manner in which staff and customers utilize the capabilities of an information system to determine amount of use, frequency of use, nature of use, appropriateness of use, extent of use, and purpose of use. (v) User satisfaction: users' level of satisfaction with reports, web sites, and support services. (vi) Net benefits: the extent to which IS are contributing to the success of individuals, groups, organizations,

industries, and nations through improved decision-making, improved productivity, increased sales, cost reductions, improved profits, market efficiency, consumer welfare, creation of jobs, and economic development (Petter, DeLone & McLean 2008:238-239).

This study adopted DeLone and McLean model (1992) to assess the system quality, information quality, user satisfaction, and net benefits since they may affect user intention for continued usage of e-government websites thus affecting adoption of e-government (Teo, Strivastava & Liljiang 2008:100). Also, this model will be used in this study to determine the important role of information access in e-government adoption success.

3.3.2 Information behaviour model

The Wilson (1996) model is a major revision of that of Wilson (1981), drawing upon research from a variety of fields other than information science, including decision-making, psychology, innovation, and health communication and consumer research. The Wilson (1996) model focuses on describing general information behaviour. Using specific theories, the Wilson 1996 model explains how needs prompt people's information seeking behaviour, source preference, and why some people are more successful than others in pursuing a goal.

The Wilson (1996) model identifies variables such as psychological, demographic, and social/environmental factors, and the characteristics of information sources in determining information seeking behaviour that affect motivation. The model also expanded on different types of information seeking behaviour, including 'passive' methods of seeking information. Here, a 'passive search involves an unintentional search that leads to the acquisition of relevant information, just as a 'passive attention' involves a no intentional information seeking activity that results in in an unconscious acquisition of information.

This study adopted Wilson's (1996) model to answer the following research questions:

- What are the current government information needs?

- To what extent does the access and usage of government information and services contribute to e-government adoption?
- What are the factors that enhance access and use of government information and services?
- What are the factors that might hinder the usage and access of government information and services?

3.3.3 Technology adoption life cycle model

Technology adoption is defined as an organisation's decision to acquire a particular technology for various tasks, and the adoption process refers to the individual's decision whether to integrate an innovation into his or her life (Straub 2009:628-629). According to Rogers (1995), an adoption life cycle is the process through which an individual or other decision making unit passes, from first knowledge of innovation to forming an attitude towards the innovation to the decision to adopt or reject, implement the new idea, and finally confirm this decision. This study did not use the technology adoption life cycle but instead chose the Siau and Long (2005) stage model (e-government evolution life cycle model). This is due to the similarities of the models.

Darmawan (2001:102) developed a four phase conceptual model of innovation adoption and implementation process. These four-phase innovation adoption processes consist of initiation phase, adoption phase, implementation phase, and evaluation phase. These phases are different from the phases in e-government evolution life cycle models. The evolutionary approach examines e-government stages from developing a web page to integrating government systems behind the web interface. In the evolutionary view, governments evolve from one stage to the other.

Darmawan (2001) considered two levels of adoption. The first level is the organisational level adoption, which starts when an organisation realizes the need for strategic change and decides to incorporate information technology. This level ends with the acquisition of the technology. The second level is the individual level adoption that commences with the acquisition of the technology and ends with the utilization of the technology. In addition, Darmawan (2001:102) argues that environmental, technological, and human

factors influence these phases of innovation process. Therefore, the recognition of these factors can assist government agencies to be able to plan better strategies in adopting and implementing e-government.

3.3.4 E-government evolution life cycle models

Different e-government evolution models suggest that the e-government development process is divided into many stages (Silcock (2001) six stage model; Howard 2001 three stage model; Layne & Lee 2001 four stage model; Moon 2002 five stage model; Siau & Long 2005 synthesized model).

Silcock (2001:89-90) describes six dynamic stages, which include information publishing dissemination. This involves departments and agencies setting up their own websites to post information about themselves, the range of services available and contacts for further assistance.

At the official two-way transaction stage, the government websites are more sophisticated. Here, customers can submit new information about themselves, such as a change of address, without writing letters. Information and communication technologies facilitate a two-way communication between citizens and the public office and provide the channel for the public office to send information to the citizens (Cordela 2007:269).

Another stage involves multi-purpose portals that allow a customer to use a single point of entry to send and receive information and process transactions across multiple departments. In this case, ICTs provide the necessary tools not only to allow communication between citizens and public offices but also to allow for the tasks, previously carried out by public servants to become forms of an interaction or web-based self-service (Cordela 2007:269).

The portal personalisation stage empowers a customer's hand by allowing them to customise portals with their desired features. This assists the government to get a more accurate view of customer preference for electronic versus non-electronic service option (Silcock 2001:89-90).

The next stage involves a clustering of common services that enables the public to view the government as an entity with which they can engage a series of transactions. At this stage, government clusters services along common lines to accelerate the delivery of shared services (Silcock 2001:89-90).

The last stage is full integration and enterprise transformation where technology is integrated further to bridge the gap between the front and back office (Silcock 2001:89-90). This model is based on customer service perspectives and the relationship between the government and the citizens. However, the model lacks emphasis on efficiency and effectiveness of government administrations (Siau & Long 2005:450).

Howard (2001:7) has categorized e-government development process into three stages, namely, publish, interact, and transact. The Howard (2001) model focusses on the capabilities of the web technology. The shortcoming of this model is the omission of the important aspect of organizational issues and the political issues.

Layne and Lee (2001:123-127) provide a model with four stages, namely, cataloguing, transactions, vertical integration, and horizontal integration. This model concentrates on the degree of organizational and technological complexity and the degree of integration in terms of data and service delivery. One of the strengths of this model is the recognition that offering more complex e-government involves organizational issues as much as technological ones. The shortcoming of this model is the omission of political participation.

Moon (2002:426-427) suggests a five-stage evolution framework for e-government. Moon's model reflects the degree of technical sophistication and the internal aspects for users. The model also points out that the stages are just a conceptual tool to examine the evolution of e-government. It is not necessary to follow a true linear progression during the adoption of e-government practices. This model is similar to Layne and Lee's (2001) model as it combines technical, organizational and managerial feasibility except that Moon's (2002) model includes the political participation stage. Moon's (2002) model consists of the following stages: simple information dissemination, request and response, service and financial transaction, integration, and political participation.

As described in the models above, it can be seen that, there is no consensus regarding the number of stages that e-government should pass through during its life-cycle and the conditions for moving from one to stage to another. Some models emphasize on the need for e-government to pass through all the preceding stages before moving to the next and higher one, while other models skip certain stages or offer different services at varying stages of maturity. However, there are aspects of the e-government evolution life cycle in which there is consensus amongst scholars. That is, the life cycle should comprise of the important stages such as publishing, transaction and integration. However, these models differ on approaches and perspectives, such as the technological and the organizational perspectives, concerning the e-government life cycle (Layne & Lee 2001; Moon 2002).

This study adopted the Siau and Long (2005) stage model (see Figure 1-1 of Chapter One), which is a combination of Gartner's four-stage model, the UN's five-stage model, Deloitte's six stage model, Layne and Lee's (2001) four stage model and Moon's (2002) model. The advantages of this model are, firstly; the combination is comprehensive as it covers the main ideas from different models. Secondly, this model combines different perspectives, such as technology, organization, management and politics. For example, the Layne and Lee (2001) four-stage model does not consider the improvements of political development and democracy, which are the main visions of e-government. According to Siau and Long (2005:457), the synthesized stage model can be used to collect quantitative data or qualitative data to evaluate the e-government's development level based on the stage model. This model can be used to investigate possible factors (for example, information and computer technology, human development situation, economics, culture and political environment) as they influence e-government development stages. This study uses this model to assess the status and the factors for e-government adoption in Tanzania.

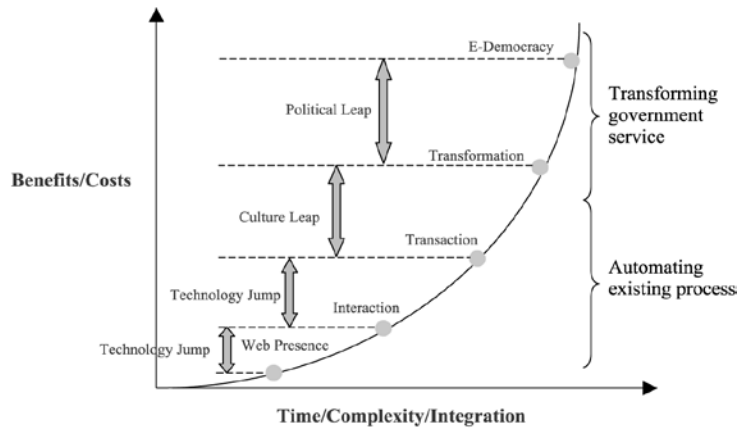


Figure 1-1: Stage model (Siau & Long 2005)

3.3.5 E-government adoption models

A number of studies, for example, Bwalya and Healy (2010), and Colesca and Dobrica (2008a) have investigated the adoption of e-government services using technology acceptance theories and models, such as the technology acceptance model (TAM) and the diffusion of innovation theory (DOI). These models were established from electronic commerce literature. Both e-commerce and e-government are based on internet technology designed to facilitate the exchange of goods, services and information between two or more parties (Carter & Belanger 2005).

Both the TAM and DOI models provide useful insights and implications for understanding an individual's intention of using e-government services. TAM and DOI have identified a number of factors that determine the adoption of e-government services, such as usefulness, ease of use, perceived risk, trustworthiness, compatibility, external influence, internet safety, interpersonal influence, relative advantage, image and facilitating condition (Al-Awadh & Morris 2009:584). However, the diffusion of innovation theory is criticized for not being suitable in complex and networked technologies (Raus, Flagge & Boutellier 2009:248). Furthermore, as Siegel (2008:13) observes, the technology acceptance model lacks explanations about the impact of motivation on technology acceptance. Despite their shortcomings, the models are used in this study to evaluate citizen adoption of e-government in Tanzania. To overcome

the shortcomings of these models this study used other models, which covered the external factors and the information needs factors not covered by e-government adoption models. The other models include; the Siau and Long (2005) stage model, the DeLone and McLean (1992) model and the Wilson (1996) model. The Siau and Long (2005) model addressed the external factors, which are culture, political situation, economics and computer technology. The Wilson (1996) model addressed the human behaviour (information needs).

In evaluation of citizen adoption of e-government, Rogers (2002:990) describes diffusion of innovation (DOI) as a popular model that explains user adoption of new technologies. According to DOI, an innovation's relative advantage, complexity, compatibility, triability and observe ability controls the rates of diffusion.

Many e-government adoption researches have been conducted using the technology acceptance model. The technology acceptance model has been comprehensively employed to analyze citizen's acceptance in various e-government researches (Horst, Kuttischereuter & Gutteling 2007:1839; Colesca & Dobrica 2008a: 207). The technology acceptance model (TAM) by Davis (1989:320) includes two primary constructs: perceived ease of use and perceived usefulness. Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance his or her job performance. Perceived ease of use is a degree to which a person believes that using a particular system would be free of effort.

It is acknowledged in the literature that the above models vary to some degree (Morgeson III, VanAmburg & Mithas 2010:6). However, scholars agree that the young, better educated and higher income citizens are more likely to adopt e-government than their counterparts. These models (TAM and DOI) were used to analyze factors for e-government adoption. This study included age and education as variables to be analyzed. Additionally, these models were used to determine the use pattern for e-government information and services.

3.4 Lessons learned from the models

Several models can be used to study e-government adoption. Since the main enabler of e-government is technology, the base models usually come from technology adoption studies (Davis 1989). Other models, such as UTAUT model and DOI model, have introduced additional constructs on top of TAM. However, a general evaluation of each model reveals that similar constructs can be observed in each model under different names.

Davis (1989) developed the TAM and showed that perceived ease of use of the technology characterized the beliefs that lead to system usage. In the DOI theory, Rogers (1995) identifies five constructs that influence a potential adopter's decision as follows: relative advantage, complexity, compatibility, trialability and observability. Relative advantage refers to the belief that a new system has benefits above and beyond the current system. Complexity refers to perceptions of difficulty associated with adopting a system. Compatibility posits that one will be more likely to adopt an innovation if it is consistent with his values, views, beliefs, and customs. Trialability posits that one will be more likely to adopt an innovation if it is tried out before actually committing to it. Observability suggests that one will be more likely to adopt an innovation if its benefits are visible and tangible. TAM constructs are included in the DOI model; perceived ease of use is represented by complexity and perceived usefulness is captured by relative advantage. According to Venkatesch *et al* (2003) the UTAUT three constructs have a direct effect on usage intentions: effort expectancy (complexity), performance expectancy (relative advantage) and social influence. Social influence is defined as the degree to which an individual believes others think he should use a new technology.

In addition, the DeLone and McLean (1992) model is a useful framework for organizing IS success measurements. This model provides a base for understanding e-government success by examining the impact of IT Quality constructs.

According to Chatfield and Alhujuran (2009), the Siau and Long (2005) model can be used to assess the status and factors for e-government adoption in developing countries. The Siau and Long (2005) model proposes information and computer technology,

human development situation, economics, culture and political environment as factors, which affect e-government adoption since they influence e-government development stages. In order for e-government implementations to be successful, human factors should be taken into account due to the fact that seekers with information needs use information systems to solve their problems (Spink and Wilson 1999). Komba & Ngulube (2012) assert that human factors should be taken into account when designing information systems. Information-seeking behaviour follows universally applicable stages, and that the information seeking behaviour model can be applied to current day information-seeking despite changes in the information environment Wilson (1999).

Models of information seeking behaviour suggest that information seeking behaviour arises as a consequence of a need perceived by an information user, who in order to satisfy that need, makes demands upon formal or informal information sources, which result in success or failure to find relevant information (Wilson 1999). Thus, the model of information seeking behaviour can enable the information content developer to clearly specify the navigational routes that are needed through the information and the kind of information, which needs to be in the record (Wilson 1999).

Moreover, social factors may also influence citizen's intention to use e-government. The social factors are; trust in terms of security and privacy and trust in government, attitudes and beliefs, education and accessibility. It is thus important to use a combination of models, which results in complementary strength and non-overlapping weaknesses. This study adopted the information systems success model, information behaviour model, e-government evolution life cycle models, and e-government adoption models to provide the theoretical guidance for this study. The Darmawan (2001) technology adoption life cycle model was not used in this study since its ideas resemble the (Siau & Long 2005) stage model.

3.5 E-government adoption: review of empirical studies

Several studies have been conducted on e-government adoption issues. The review of literature identified a number of barriers and success factors for e-government adoption. The discussion below presents the empirical findings of some of the e-government adoption studies.

Rokhman (2011) conducted a study in Indonesia to find out how acceptance of Indonesian internet users to e-government services in terms of relative advantage, image, compatibility, and ease of use variables. This study used the innovation diffusion theory by Rogers (1995) as the main theory and merged it with perceived characteristics of innovation (PCI) (Moore & Benbasat 2001). The findings of this study suggested that compatibility positively and significantly influenced the acceptance of internet in Indonesia.

Lin, Fofana and Liang (2011) conducted a study to assess citizen adoption of e-government initiatives in Gambia. This study examined the validity of the Technology Acceptance Model in the e-government setting in Gambia and focused on how Gambians behave differently, and exhibit different levels of acceptance, than other e-government users. This study focuses on citizens who use e-government systems to file applications or use e-government in their work. The findings of this study suggest that the core constructs of TAM have strong influences on a citizen's intentions of using the e-government systems. Both information quality and perceived ease of use positively influence on the perceived usefulness in the Gambian e-government system. Furthermore, perceived ease of use significantly affects citizens' attitudes to use the e-government systems. In addition, it was found that attitudes toward using the e-government systems significantly affect Gambian citizen's behavioural intentions. Consistent with prior technology acceptance model literature, the core constructs of the TAM (information quality, perceived usefulness, perceived ease of use, attitude towards using, and behavioural intention) have a significant influence on Gambia's e-government usage intention. However, Gambia's perceived usefulness was found to have a weak linkage with behaviour intentions and attitudes. This was due to Gambia's inconsistency and unstable electricity availability compared to western world. Perceived usefulness does not have a strong impact on behavioural intentions and attitudes in developing countries with inconvenient information technology infrastructure.

Another study by Alomari, Sandhu and Woods (2009) examined the social factors that may influence citizens' intention to use e-government. These factors were examined through literature search, and questionnaire. Data was collected from 400 Jordan participants. The research explored four different social factors, which are: trust in

terms of security and privacy and trust in government, attitudes and beliefs, education and accessibility. Accessibility was considered as a factor, which influences e-government adoption because it influences the citizens' experience with websites and their satisfaction and adoption of new technology. This study derived these factors from the technology acceptance model (TAM), diffusion of innovation (DOI) and literature of social factors in order to refine the main social factors influencing e-government adoption in Jordan. The results indicated that accessibility, beliefs, perceived usefulness, complexity, and trust in e-government are the factors that may influence e-government adoption in Jordan.

Carter and Weerakkody's (2008) study compared the factors for e-government adoption in the UK and US to determine whether the same factors are salient in both countries. Carter and Weerakkody (2008) constructed a model using models by Davis (1989), Rogers (2003) and Venkatesch *et al* (2003). This model indicates that relative advantage, trust, internet accessibility and internet skills have a significant impact on intention to use an e-government service in the UK. The findings show that relative advantage and trust were important for e-government adoption, while e-government adoption barriers, such as access and skill, vary by culture. The study is similar to Carter and Weerakkody (2008) in that it used the Rogers (2003) model and Davis (1989) model together with Venkatesch *et al* (2003) the UTAUT model, Siau and Long (2005), DeLone and McLean (1992) and Wilson (1996) models.

Gupta, Dasgupta and Gupta (2008) on the other hand, explored ICT adoption to improve government and employee interactions in a developing country's government organization. In examining adoption behaviour, the Unified Theory of Acceptance and Use of Technology (UTAUT) was used. It was revealed that performance and effort expectancy, social influence and facilitating conditions have a positive impact on the use of the ICT. The UTAUT model is the principal model on technology acceptance, and it has synthesized elements across eight well known technology acceptance models, which are: the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model (MM), the Theory of Planned Behaviour (TPB), the combined TAM and TPB, the Model of PC Utilization (MPU), the Innovation Diffusion Theory (IDT) and the Social Cognitive Theory (SCT). The UTAUT model is the best in

explaining the use of ICT in government organisation (Gupta, Dasgupta & Gupta 2008:145). However, this study used the technology acceptance model because it has been used to analyze citizen's acceptance in various e-government researches (Colesca & Dobrica 2008a: 207; Horst, Kuttschereuter & Gutteling 2007:1839). In addition, the UTAUT model has only been used to examine e-government adoption in the organizational environment. Two of its six variables rely heavily on the introduction of technology in an organization. Some of the criteria suggested to measure "social influence" include assisting the senior management, and organizational support for the new technology (Colesca & Dobrica 2008b:141). Since many e-government services are designed for use in the citizens' everyday life, this study used TAM to predict citizen acceptance of e-government in Tanzania.

Al-Shafi and Weerakkody (2010), just as Gupta, Dasgupta and Gupta (2008), employed a UTAUT to explore the adoption of e-government services in the state of Qatar. The results reveal that effort expectancy and social influences determine citizens' behavioural intention towards e-government. Moreover, facilitating conditions and behavioural intention were found to determine citizens' use of e-government information and services in Qatar.

Another study by Colesca and Dobrica (2008a) sought to identify factors that could affect the citizens' adoption of e-government services in Romania. The findings of this study indicate that citizens' higher perception of usefulness, ease of use, quality and trust of e-government information and services directly enhance their satisfaction and in turn the level of adoption of e-government. The study recommended that awareness campaigns be conducted to inform potential users of the benefits of e-government for an effective adoption of e-government services. The Technology Acceptance Model (TAM) was modified to suit the characteristics of this research and was utilized in this study. The original TAM posited that the effects of ease of use and usefulness beliefs on usage were mediated by attitude toward using the system. Satisfaction is commonly recognized as a quasi-attitudinal construct and often considered fully as an attitude. As a result, satisfaction plays a similar, if not identical, role to that of attitude in technology usage. Although excluded from most TAM studies, satisfaction was included in this study as an attitudinal construct on the basis of the e-government context. Satisfaction,

as an attitudinal construct, partially mediated the effect of usefulness, ease of use and quality on intentions to continue using a given e-government service.

Mofleh, Wanaous & Stratchan (2008) reviewed Jordan ICT initiatives to identify critical factors that might cause Jordan to lag behind in ICT transformation. The findings of this study indicated that inadequate infrastructure, complicated structural hierarchy and low levels of transparency were the main barrier to ICT transformation. The study suggested that for developing countries to achieve better e-transformation, governments should adopt a realistic long-term transformation strategy. The strategy should accommodate the country's ICT initiatives and reflect acceptable levels of change attuned to the country's resources. It should also be executed in stages and within acceptable periods that would respond to both social and cultural changes brought by ICT.

Bwalya and Healy (2010) examined two cases from Zambia focusing on ICT use in support of e-government initiatives. The study proposed a model drawing from a combination of Wangpipatwong, Chutimaskul and Papasratorn (2008) and Davis (1989) models that had been tested elsewhere (Bwalya & Healy 2010:29). The attributes in this model are; user characteristics (perceived risk, perceived control, and internet); website design (perceived usefulness, perceived ease of use); service quality; and client satisfaction and culture awareness and the need to improve on the ICT infrastructure for the information to be easily accessible. The findings of this study revealed that lack of adequate ICT infrastructure and political will, provision of information in English other than local languages and lack of proper change management procedures, hindered appropriate e-government adoption in Zambia.

Furthermore, Bwalya (2011) examined e-government adoption and synthesis in Zambia. The study used both qualitative and quantitative methods to assess the interventions employed to promote the proliferation of e-government in Zambia. It, thus, considered the institutional, legal and regulatory preparedness, availability of robust ICT infrastructure, e-government strategy, political will, and managerial capacity for e-government implementation. The study revealed that there was imbalance between the supply side and the demand side. Moreover, the study showed that potential consumers

did not have ICT skills to access e-government applications. Furthermore, there was a mismatch between availability of rigorous institutional, legal, policy and regulatory framework and actual implementation of e-government.

Heeks (2003) examined how the risks of e-government failure can be reduced. A mixed team of epidemiological services guided the study together with information systems specialists, ensuring that design elements such as processes or skill requirements did not fall too far out of line with existing realities in the epidemiology service. The study then provided a step-by-step guide to identifying and addressing failure risks for e-government projects.

Kaaya (2004) conducted a study to determine the status of government websites of three East African countries (Kenya, Tanzania, and Uganda), using establishment year, visibility and usability attributes. The results were matched with a four-stage model of e-government growth based on the status of website from simple to sophisticated features. The study identified 98 government websites consisting of 33 in Kenya, 37 in Tanzania and 28 in Uganda. More than 83% of the identified websites had been established between 2000 and 2003 and their creators were still undergoing the learning experience. The website visibility test ranged from 27% to 40% and the average for the three countries was 32%. Usability analysis revealed more interactivity features for Tanzanian and Ugandan websites than Kenyan websites. The study concluded that all the East African websites were in the first and second stages of the website development and corresponding e-government services.

Ndou (2004) discussed the opportunities and challenges facing e-government in developing countries. ICT infrastructure, policy issues, human capital development, change management, partnership and collaboration, strategy and leadership roles were identified as e-government challenges in developing countries. On the other hand, opportunities for e-government included, cost reduction and efficiency gains, quality of service delivery to business and customers, transparency, anticorruption and accountabilities. Other opportunities were network and community creation, improved quality of decision-making and improved use of ICT in other sectors of the society.

Mutagaywa, Kinyeki and Ulanga (2006) reported that the inadequacy of telecommunications infrastructure impacted on the current progress of e-government in Tanzania. For instance, at the time of this research, the country did not have a national broadband connectivity. Data and internet services were being provided through VSAT and leased lines from private companies. Additionally, connectivity availability is mainly localised in urban areas. The situation is similar in other supporting infrastructure such as roads and electricity in the country. This has caused a delay and difficulty in deploying more e-government initiatives. Consequently, the country had low performance and visibility in the international league.

Yonazi (2010) conducted a qualitative study to identify issues influencing the adoption of e-government initiatives in Tanzania. The study found that citizen adoption of e-government in Tanzania is still low due to the challenges on organizational preparedness, citizen preparedness, service intrinsic issues, access issues and organizational context. The study concluded that an appropriate approach is necessary to facilitate the identification, development, and deployment of citizen adoptable e-government initiatives to enhance adoption.

The studies above are similar to the current study except that majority of these studies have used either qualitative or quantitative methodology. Bwalya and Healy (2010) used qualitative methodology to propose a conceptual e-government adoption model that extends Davis' TAM to include other attributes and constructs that may be relevant to the local context of Southern African Development Community (SADC) region. A quantitative methodology was used by Al-Shafi and Weerakkody (2010); Carter and Weerakkody (2008); Colesca and Dobrica (2008b); Gupta, Dasgupta and Gupta (2008) to examine factors for e-government adoption in Qatar, UK, Romania and India, respectively. This study is going to use a combination of both qualitative and quantitative methodology in an effort to overcome and address the deficiencies of each of the single methods (Leech & Onwuegbuzie 2009: 273). According to Collins, Onwuegbuzie and Sutton (2006), the combinations of quantitative and qualitative methodologies enable confirmation or corroboration of each other through triangulation. In addition, combinations enable or to develop analysis and provide richer

data. Furthermore, combinations initiate new modes of thinking by attending to paradoxes that emerge from the two data sources.

The reviewed empirical findings regarding e-government adoption shows the various factors influencing e-government adoption. These include: relative advantage, trust, internet accessibility, internet skill, performance and effort expectancy, social influence and facilitating conditions, citizen's higher perception of usefulness, ease of use, quality and trust of e-government, lack of adequate ICT infrastructure, political will, language and management procedure hinder e-government adoption (Al-Shafi & Weerakkody 2010; Bwalya & Healy 2010; Carter & Weerakkody 2008; Colesca & Dobrica 2008). The studies did not adequately show the impact of information access to e-government adoption. The current study will fill in the gap by determining the factors, which influence e-government adoption and assess the impact which information access can have on e-government adoption in the Tanzanian context.

Although this study is built on previous studies on e-government adoption, the difference between the other studies and the current study is that the latter, unlike the former, used a number of theories and models: e-government evolution life cycle model (Siau and Long 2005), the Technology acceptance model (TAM) (Davis 1989), information model (Wilson 1996), diffusion of innovation theory (Rogers 2002) and information system success model (DeLone & McLean 1992). Moreover, the current study brings new knowledge by focusing on factors for e-government adoption in the Tanzanian context. This study will investigate the role that access and usage of government information may play in e-government adoption. In reality, not much has been done concerning e-government adoption in the Tanzanian context. The current study seeks to fill the gap by providing the empirical evidence on the factors for e-government adoption using mixed research methodology.

3.6 Information needs and information seeking behaviour: an overview

Information behaviour means those activities a person may engage in when identifying his or her own need for information, searching for such information in any way and using or transferring that information (Wilson 1999). Wilson (1981) defines a need as an experience, which occurs only in the mind of the person in need and, consequently, is

not directly accessible to an observer. As part of the search for the satisfaction of these needs, an individual may engage in information-seeking behaviour (Wilson 1981).

There are factors, which have an effect on information needs and information seeking. For example, Wilson (1996) described these factors as personal, emotional, educational, demographic, social/interpersonal, environmental, economic, and source characteristics. Other barriers may include high cost, illiteracy, and lack of ICT infrastructure (Oladokun & Aina 2009) which may fall within Wilson's (1996) intervening variables. Other barriers include culture, social, psychological and behavioural needs (Meyer, Fisher & Marcoux 2009). These factors may interfere positively or negatively in the process of information seeking, and thus may create barriers to information access in developing countries (Ikoja-Odongo & Mostert 2006; Ikoja-Odongo & Ocholla 2003; Dutta 2009).

3.7 E-government adoption models and human behaviour

A citizen-centred e-government implies that governments know what citizens want from e-government, and want to meet citizen expectations and needs. For this reason, governments focusing on citizen-centred e-government actively seek to discover what citizens want from e-government. It is thus essential to investigate citizen information needs and factors, which influence citizen attitudes and behaviour towards e-services. Information behaviour focuses on people's information needs; on how they seek, manage, give, and use information, both purposefully and passively, in the varied roles that comprise their everyday lives (Julien, Pecoskie & Reed 2011: 19). The core principle in marketing is to satisfy consumer needs (Rosenbloom & Dimitrova 2011: 53). However, in e-government context, most studies have focused on adoption models, such as, Technology Acceptance Model or Theory of Planned Behaviour, while forgetting citizens' needs, demands and expectations. Limited research has explored the relationship between human behaviour and information system design (Spink & Cole 2006:25). Information system designers have concentrated on human factors, but have not taken human behaviours, into account when designing information systems (Keshavarz 2008). Information seeking behaviour is an important factor in information

system design due to the fact that information seekers with information needs use information systems to solve their problems (Spink & Wilson 1999).

Belanche, Casalo and Flavian (2010) analysed how confirmation of citizens' expectations may influence perceptions and behavioural intentions in the e-government context. Data was collected from 232 Spanish-speaking citizens. The study was a web survey, when the potential informant entered the website; they found the research questionnaire and additional information about the project. The finding of this study revealed that confirmation of expectations and perceived usefulness effectively predicts citizen intention to use online public services. In addition, positive word of mouth among citizens is certainly affected by confirmation of expectations and intention to use these services. Finally, confirmation of expectations confirms its importance by influencing perceived usefulness too. The study recommended the improvement of citizen expectations and perceived usefulness on the public services for e-government to be successful. This will promote citizens' intentions to use and recommend online public service.

Few researches have explored the relationship between human behaviour and information system design (Julien, McKechnie & Hart 2005; Case 2006). Traditionally, designers have taken human factors, but not necessarily human behaviours, into account while designing information systems (Zhang and Fine 1996). The goal of information retrieval system is to support the range of information-seeking behaviours (Ingwersen & Järvelin 2005). Human information behaviour and the information retrieval system are in secondary or mediatory level, in that, information seekers with information needs implement information retrieval systems to solve their problems (Spink & Wilson 1999).

Human factors should be taken into account when designing information systems. Information-seeking behaviour follows universally applicable stages, and that the information seeking behaviour model can be applied to current day information-seeking despite changes in the information environment. Models of information seeking behaviour suggest that information seeking behaviour arises as a consequence of a need perceived by an information user who in order to satisfy that need, makes demands upon formal or informal information sources, which result in success or failure to find

relevant information (Wilson 1999). Thus, the model of information seeking behaviour can enable the information content developer to specify more clearly, what navigational routes are needed through the information and the kind of information which needs to be in the record (Wilson 1999).

This study uses the Wilson's (1996) model to assess the current information needs of Tanzanians. The Wilson (1996) model was used due to its relative simplicity, which enables understanding of this study.

3.8 The role of access and use of government information in e-government adoption

Access to e-government information is a challenge that can impact on trust and thereby hinder e-government adoption (Chircu & Lee 2005; Carter & Belanger 2005; Carter & Weerakkody 2008; Dimitrova & Chen 2006). The familiarity and usage of ICT, results in the greater use of e-government services (Kolsaker & Lee-Kelley 2008; Thomas & Streib 2003). Below is the discussion on these two important factors in e-government adoption.

3.8.1 Access to government information

Accessibility describes the degree to which a product (device, service, and environment) is accessible to as many people as possible. Accessibility is the ability to access the functionality and possible benefit of some system or entity (Keoduangsine & Goodwin 2009:610). The internet has changed the information behaviour of people and reshaped virtually every channel of information access, for example; newspapers, television, movies, magazines, books, music, and all forms of telecommunications in the past decade (Lyons 2009). Aldrich, Cornwell and Barkley (2000:274) examined the impact of transition to a mix of print and electronic material and found that the web has changed the way of accessing government information. People use the web (e-government) instead of physically going to the documents area or to the library at all to access a growing volume of government information.

E-government provides access to information and enables citizens to contact government agencies through national, state and local website (Means & Scheneider 2000:121). Services offered on national, state, and local Web sites include (Goings, Young & Hendry 2003:5-6):

- Ordering publications;
- Downloading publications or forms;
- Filing complaints;
- On-line databases (for example, access to voting records of elected officials);
- User payments (for example, pay parking tickets);
- Filing and paying state taxes,
- Fully-executable services (for example, driver's license renewals and voter registration);
- Voting on-line; and
- State park information.

Effective and timely user access to public information is one of the most fundamental requirements for e-government success (Alghamdi, Goodwin & Rampersad 2011:485). However, lack of availability of computers, internet access, or even basic electrical and telecommunications infrastructure hinders access to e-government information (Singh & Sahu 2008: 480). Mossenburg and Stansbury (2003) identify ethnicity, income, age and education as significant predictors of access to technology. Adoption of e-government is impossible without internet access (Singh & Sahu 2008: 481).

In addition, lack of access to technology is one of the barriers to universal usage of e-government. People seek assistance with e-government from public libraries because they lack the technical skills to use the online functions or are uncomfortable on engaging in online interactions without guidance (Bertot, Jaegar & McClure 2006; Bertot, McClure & Jaegar 2008). Even for people who are familiar with technology, e-government services are often limited by difficulties in searching for and locating the desired information, a general lack of familiarity with the structure of government, lack of education about the value of e-government, language barriers, and attitudes toward technology and government among many users (Jaeger & Thompson 2003; 2004).

This study examined the role that the access of e-government information may play in e-government adoption in Tanzanian context.

3.8.2 Use of e-government information

Missingham (2008:32) identified that a lack of knowledge about services, security and trust limits the use of government information online, hence restricting the success of online service delivery. The success of e-services depends, to a great extent, on how well the targeted consumers of such services, citizens in general, make use of them (Colesca & Dobrica 2008b:20).

The fundamental factors influencing citizens' continuance intention to use e-government websites are perceived usefulness, perceived ease of use of e-government websites and citizens' computer self-efficacy directly enhanced by the citizens' continuance intention to use e-government websites (Wangpipatwong, Chutimaskul & Papasratorn 2008:55). People initially use the internet for what particularly interests them, and may not use it beyond this self-created limit unless it is seen as particularly advantageous (Pilling & Boeltzig 2007:30).

E-government users define use value in terms of information and service functionality (Kolsaker & Lee-Keely 2008). Perceived value in e-government service significantly raises usage intentions (Carter & Belanger 2005a). Perceived usefulness determines the degree of actual e-government adoption (Wangpipatwong, Chutimaskul & Papasratorn 2008). Experienced users of e-government expectedly perceive greater value than less frequent users. This suggests that user efficacy influences value perceptions, but non-users of e-government may also perceive potential value in e-government.

Greater use of ICT enables a comfortable use of digital technology in dealing with government, as suggested by a number of studies (Kolsaker & Lee-Kelley 2008; Thomas & Streib 2003). This is due to the following reasons; experience and comfort with the use of ICT, some experience that may deliver benefits, and simply a more positive stance towards technology developed (and confirmed) through use, are likely to encourage greater use of e-government measures (Mao & Palvia 2008; Ping, Aikman & Heshan 2008).

Existing limited studies examine use of e-government. Many are technology focused and examine e-government development (Yang & Rho 2007; Liou 2008). The few existing studies examine the provision of web-based services information and internet-based transactions, capacity to utilize e-government services including the number of public internet connections, and broadband penetration (Layne & Lee 2001; Norris & Moon 2005). This study examined the role that the use of e-government information may play in e-government adoption in the Tanzanian context.

3.9 Conceptual framework

This section presents an integrated conceptual framework that addresses the key factors related to e-government adoption as discussed in the previous sections in this chapter. The proposed model follows the TAM and explains the intention towards the actual use of e-government website with perceived usefulness and perceived ease of use as e-government adoption determinants (Davis 1989).

The Siau and Long (2005) model was used to investigate possible factors (information and computer technology, human development situation, economics, culture and political environment). Wilson (1999) was used to explore the e-government information needs, and Rogers (1995) was used to measure relative advantage, compatibility and image. The DeLone and MacLean model (1992) was used to measure quality aspects of government websites and user satisfaction and trustworthiness (Carter & Belanger 2005), (see Table 1-1 of Chapter 1). The research model is depicted in Figure 3-1.

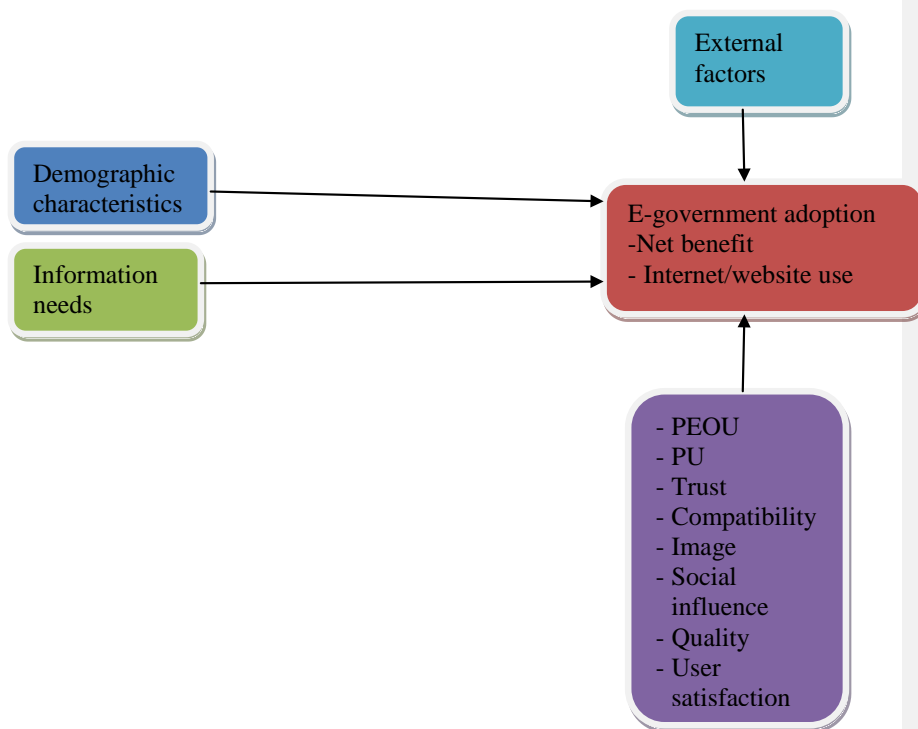


Figure 3-1 Factors affecting access of e-government information and e-government adoption.

Note: the external factors in this model constitute necessary knowledge, necessary resources, awareness, confidence to use the website, availability and reliability of internet connections, positive incentives, getting information on demand, guidance for effective use of the internet, possession of ICTs such as computers, mobile phones, security and privacy, lack of support from the top management, and electricity. Others were geographical location, language, age, and occupation. The following is a discussion of some of the variables in figure 3-1. Other variables are discussed in Chapter 6.

3.9.1 Culture

There is a lot of discussion concerning the importance of culture to the success of information system/information technology adoption (Bagchi *et al*, 2003; Erumban & Jong 2006; Leidner & Kayworth 2006; Straub 1994; Twati 2006). These studies

highlighted the importance of culture, and how it is linked to the success of IS/IT adoption and use. For example, Erumban and Jong (2006) found a significant relationship between cultural factors and the adoption decisions on new technologies across countries. Erumban and Jong (2006) further observed that the power distance (PD) and uncertainty avoidance (UA) dimensions are the most significant cultural factors by which some of the differences in ICT adoption rates among countries can be explained. Countries with high scores in uncertainty avoidance (UA) and power distance (PD), such as the Arab countries, have a lower rate of ICT adoption than countries with low UA and PD scores (Erumban & Jong 2006). Similarly, Leidner and Kayworth (2006) stated that UA plays a significant role in determining how groups potentially adopt and diffuse ICT. Countries high in UA are less likely to adopt frame relay technology (Leidner & Kayworth 2006). Since ICT is inherently risky, those less comfortable with uncertainty will be less likely to adopt new technologies.

Similar studies found that cultural dimensions influence the TAM variables (Twati 2006; Veiga, Floyd & Dechant 2001. In addition, Warkentin *et al* (2002) proposed that PD and UA are most likely to differentiate e-government adoption and use. According to Erumban and Jong (2006), PD and UA dimensions are the most significant cultural factors by which some of the differences in ICT adoption rates among countries can be explained.

3.9.2 User satisfaction

DeLone and McLean (2003) created a comprehensive model containing six constructs: system quality, information quality, use, user satisfaction, individual impact, and organizational impact, which have effects on the success of information systems. Conrath and Mignen (1990) asserted that in order for e-government adoption to succeed, a high level of satisfaction with the online service provided by the government is required. Furthermore, Conrath and Mignen (1990) argue that the measurement of user satisfaction will have an immediate, meaningful and objective feedback on users' reference and expectation. In addition, Yaghoubi, Haghi and Asl (2011) supported that e-government performance will be evaluated in relation to a set of satisfaction

dimensions that indicate the strong and the weak factors affecting user satisfaction of e-government service.

3.9.3 Social influence

Social influence is defined as the degree to which peers influence use of a system; It is a very important factor in many aspects of the lives of citizens and is likely to be influential, whether this is positive or negative (Venkatesh *et al*, 2003). Relevant references, such as citizen's family, colleagues and friends may have an influence on citizens' decisions (Irani *et al*, 2009; Tan & Teo 2000). The findings of many scholars, such as, Rogers (1995), Taylor and Todd (1995), and Pavlou and Fygenson (2006), suggest that social influences are an important determinant of behaviour.

3.9.4 Compatibility

Compatibility can take on a very broad meaning. Moore and Benbasat (1991) introduced the concept of work practice compatibility. Work practice compatibility can be further refined into task compatibility, workflow compatibility and professional compatibility (Tulu, Horan & Hurkhard 2005). Karahanna, Agarwal and Angst (2006) also defined various forms of compatibility that include compatibility with values, past experience, current practices and preferred practices. In the context of this research, compatibility is defined as a citizen's belief that e-government fits the way one works and lives. If citizens find e-government services compatible, then it is likely that they will want to use it.

3.9.5 Perceived ease of use (PEOU) and perceived usefulness (PU)

Perceived usefulness, originally defined by Davis, is the belief that using a particular system would enhance one's job performance (Davis 1989). Perceived ease of use refers to one's perceptions of the amount of effort required to use the system. The model predicts that higher perceptions of usefulness and ease of use will increase intention to use a system (Davis 1989).

3.9.6 Trust

Trust is the belief that the other party will behave as expected in a socially responsible manner, and in doing so, it will fulfil the trusting party's expectations (Gefen 2000, Lewis & Weigert 1985, Luhmann 1979). Trust is crucial in economic transactions because it reduces the risk of falling victim to opportunistic behaviour (Fukuyama 1995; Williamson 1985). Perceptions of trustworthiness could also influence citizens' intention to use state e-government services (Carter & Bélanger 2005). Thus, it should be imperative to establish citizen trust in e-government if it is to succeed (Fukuyama 1995).

3.9.7 Website quality

Aladwani and Palvia (2002) defined web quality as a user's positive evaluation of a website's features, which ensures that it meets the user's needs and reflects the overall excellence of the website. Therefore, they identified three dimensions of web quality: technical adequacy, web content, and web appearance. Moreover, Zhong and Ying (2008) stated that website quality includes the features of the website system, which present measures of quality, such as system, information, and service quality. In the website quality literature, several researchers have pointed out that website quality includes multiple dimensions, such as information quality, system quality, security, ease of use, user satisfaction, and service quality (Aladwani & Palvia 2002; DeLone & McLean 2003; Hoffman & Novak 2009; Urban, Cinda & Antonio 2009). Furthermore, Floh and Treiblmaier (2006) emphasized that website quality, which includes web design, structure and content, is an important factor for achieving customer satisfaction. Schaupp, Fan & Belanger (2006) conducted a survey to investigate the impact of information quality and system quality on website satisfaction. The results showed that information quality and system quality were significant predictors of website satisfaction, and, therefore, intention to use the website. In addition, Li and Jiao (2008) confirmed that there is a significant relationship between website quality and user satisfaction and that this relationship affects the actual use of online services.

3.9.8 Relative advantage

According to Rogers (2003), relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes. The use of e-government contributes to valuable promotions of the company; enhances the quality and speed of customer services; creates competitive advantages; entices shoppers and encourages customer interaction; supports core business functions that are integral to business strategy; and provides new business opportunities by increasing market presence and facilitating online purchasing (Drinjak, Altman & Phil 2001; Polatoglu & Ekin 2001; Tan & Teo 2000). According to Polatoglu and Ekin (2001) and Tan and Teo (2000), these advantages may have an effect on individuals' adoption decisions. Yet, Agarwal and Prasad (1997) found that there is no significant relationship between adoption of online services and its relative advantages. From the above debate, it is apparent that an individual, who perceives online services as a useful innovation, would be likely to adopt the online service.

3.9.9 Image

Image construct is defined as the degree to which an individual believes that the adoption of an innovation will bestow them added prestige (Plouffe, Hulland & Vanderbosch 2002). Moore and Benbasat (1991) present image, as a factor that influences the acceptance and use of an innovation. In contrast to this observation, Carter and Belanger (2005) suggested that higher levels of perceived image do not directly affect citizen's intentions to use e-government services. This is also consistent with previous work where image was not a good predictor of e-commerce use intention when compared to the other diffusion of innovation constructs (Van Slyke, Belanger & Comunale 2004).

3.9.10 Demographic characteristics

The demographic characteristics of citizens such as the age, gender, education, occupation and income have an imperative role in explaining the citizen's access and adoption of e-government services. The following section explains the effects of demographic characteristics on e-government adoption.

3.9.10.1 Gender

Morgan (1986) argued that gender can be employed as a descriptive variable as well as an explanatory variable. A number of studies have investigated the role of gender in the adoption and usage of ICTs (Leonard & Cronan 2005, Venkatesh *et al*, 2003; Choudrie & Lee 2004, Haines & Leonard 2007). The findings of the previous studies revealed that gender has an important role when considering technology adoption and usage in both the organizational and household contexts. Other findings have shown that gender has no effect on e-government adoption. For example, the study by Venkatesh, Chuan-Fong & Stolzoff (2000) illustrated that male users used a computer more often than females, and suggested the male gender to be one of the most important variables when examining PC adoption in the household. On the other hand, Choudrie and Lee (2004) highlighted the role of housewives on the purchasing decisions of broadband, and have not suggested differences in gender when considering adoption.

3.9.10.2 Age

Age can be employed as a factor or independent variable to explain a particular social grouping, social process, or piece of individual or collective behaviour (Burgess 1986). Many scholars have found evidence that explains the significant, direct and moderating effect of age on the behavioural intention, adoption and usage behaviours (Harris, Medlin & Dave 1996; Venkatesh *et al*, 2003). Venkatesh, Chuan-Fong and Stolzoff (2000) suggest that the age group in the United States of America (USA), which mostly adopts computers, is 15-17 years, followed by that of 26-35 years. Similarly, Choudrie and Lee (2004) found that in South Korea the group that increased the adoption of broadband via the personal computer bangs was also the younger age group. In turn, the younger generation's usage of broadband in South Korea exerted a substantial influence on parents' decisions for subscribing to broadband, since parents considered broadband as imperative for educational and entertainment purposes. Carveth and Kretchmer (2002), found that in many West European countries, the older demographic groups are less likely to use the internet compared to the younger groups. According to their findings, 85 percent of those aged 16-24, in the UK, had internet access compared to just 15 percent in the 65-74 age range, and 6 percent over the age of 75 years (Carveth

and Kretchmer 2002). In addition, Anderson, Gale and Jones (2002) suggest that the demography of dial-up users is different to that of broadband users.

3.9.10.3 Education level

Burgess (1986) argues that individuals and citizens that have educational qualification are more likely to attain better occupation and are more likely to adopt innovations. Venkatesh, Chuan-Fong and Stolzoff (2000) suggest that there is a positive correlation between the level of education, technology ownership and usage. Similarly, Choudrie and Papazafeiropoulou (2006) mentioned that education is one of the most important drivers in technology usage. Moreover, Dwivedi and Lal (2008) argue that education can be considered as an independent variable in explaining the differences between adopters and non-adopters of technology, in this case e-government.

3.9.10.4 Income

Rogers (1995) described income as a correlate or antecedent of innovativeness. The diffusion of innovation theory suggests that new technologies are initially adopted by those with more resources (Rogers 1995). The findings of a longitudinal study using the USA census data found a positive correlation between income and computer ownership (Venkatesh, Chuan-Fong & Stolzoff 2000). Furthermore, this study suggested that a considerable gap persists between the lower and higher income groups (Venkatesh, Chuan-Fong & Stolzoff 2000). A study by Choudrie and Dwivedi (2005) also confirmed that income and occupation drive the general pattern of ICT ownership and usage. Similarly, Carveth and Kretchmer (2002) suggested that in the USA, the higher the household income, the more likely the members of the household will own a computer and use the internet. A similar pattern was suggested for Western European countries and the UK. This study suggested that only 23 percent of the lower income group in comparison to 68 percent of the higher income group in the UK used the internet (Carveth and Kretchmer 2002). A recent study, focusing upon the determinants of the global digital divide, also confirmed the importance of per capita income in explaining the gap in computer and internet use (Carveth & Kretchmer 2002). The previously mentioned theoretical arguments and empirical evidence support the inclusion of both

income and occupation as an independent variable that explains the difference between broadband adopters and non-adopters.

3.9.10.4 Occupation

Gilligan and Wilson (2003) argue that, occupation can be used to differentiate the adopters and non-adopters of broadband. This is because broadband is useful in performing job related tasks. As a result, respondents with higher and skilled occupation categories are more likely to adopt broadband, which is not expected for the lower occupation categories. This study assesses the effect of occupation to e-government adoption in the selected districts of Tanzania.

3.9 E-government experiences of countries in Africa and lessons that can be learned

African countries are the last to adopt the necessary technologies for e-government services, and little attention has been paid to the topic by previous literature. A large number of countries in Africa have improved their online presence (Rorissa & Demissie 2010:167). However, eight of the twelve countries in the world that were not online in 2008 were from Africa, despite the fact that many African governments have set up national websites (UN 2008). Tunisia leads Africa in e-government development, followed by Mauritius and Egypt. The majority of countries in the top ten ranking are developing countries from Northern and Southern Africa (UN 2010). The following are e-government experiences from the leading countries in Africa, according to the United Nations e-government survey in 2010 (UN 2010).

3.9.1 Tunisia experience

The leading country in Africa in ICT competitiveness is Tunisia, and it is ranked 37 out of 132 assessed economies. Tunisia is amongst the first countries in Africa to implement an ICT based national strategy for modernizing telecommunication infrastructure, formulating a regulatory framework of digital economy, enhancing international cooperation in ICT and developing human resource management. The country went on a drive to create a national digital culture, which is at the centre of how

government speedily improves ICT competitiveness. Also, information society and development plan is an integral part of government's strategy and plans to eradicate societal inequalities (Netshitenzhe 2011).

In order to modernize Tunisian public administration system, the government of Tunisia initiated several actions and projects inscribed within a general e-government strategy. The declared objectives of such strategy are the following (Jebali 2008):

- Simplification and transparency of administrative procedures;
- Universality and standardization of services;
- Development of a service economy;
- Improvement of the efficiency of administrative services;
- Reinforcement of the relationships between public service and citizens;
- Enhancement of citizen participation in the functioning of government; and
- Improvement of the general productivity in the administrative and economic environment; and
- Promotion of the knowledge society.

The above objectives generally allow for multiple modes of implementation. The following are e-government related programs and infrastructural projects (Jebali 2008; Netshitenzhe 2011).

3.9.1.1 ICT infrastructure in Tunisia

The modern Tunisian telecommunication network is made up of seven nodes; equipped with high flow multi-service commutators, including phone traffic, internet and multimedia. The following are telecommunications operators in Tunisia (Jebali 2008):

- Tunisie-Telecom (TT): It was established in 1996, as a public limited liability corporation. Its current shareholders are the government of Tunisia (65%) and Dubai Holding through its TECOM subsidiary (35%). TT provides fixed lines, 2G cellular telephony services, and data transmission services (ADSL, Frame Relay, ISDN, Leased Lines, VSAT, WiMax).

- ORASCOM Telecom-Tunisie (TUNISIANA): It was awarded the second mobile telephony license in the country in December 2002 and rose to compete ferociously with TT. It only offers 2G cellular telephony services and boasts over 3.6 million subscribers on its network with a market share of 47.7% as of December 2007.
- DIVONA Telecom: It is the first and only telecommunication operator in Tunisia that offers satellite telephony along with WiMax services. Its client base is restricted to corporations, which seek telecommunication infrastructure services; solutions for call centres, WAN services and internet telephony.

El Ghazala Pole for Communication Technologies, (<http://www.elgazalacom>) is a technology park that was created to fulfill the following objectives;

- Host innovating companies in the field of communication technologies;
- Develop the synergy between Industry, Research and Higher Education;
- Promote innovatory ideas;
- Animate the Technological City of Communications;
- Establish an international cooperation network.

The park has been relatively successful in attracting a large number of professionals and researchers and is considered as the core element for research and development in Tunisia's ICT sector. Moreover, ICT literacy is compulsory in all fields of study, and internet has become an infrastructural requirement in all secondary schools as well as universities. According to the Ministry of Higher Education, 46% of students in Tunisia pursue studies in science and technology; 12.6% of whom specialize in ICT fields (MES 2008). Furthermore, the number of higher education institutions that specialize on or offer ICT programs are constantly on the rise, especially with the ongoing reform of higher education modeled after the European Bologna process (Sahraoui 2007). A key competitive advantage of the Tunisian ICT sector is the low cost of highly qualified personnel (Jebali 2008).

3.9.1.2 Digital culture

Low individual usage and adoption of ICTs is a key challenge with regard to developing the Tunisian information society. Government initiatives, such as family PC, were supposed to increase the number of people using computers at home. Internet access is also concerned with these initiatives (Netshitzhe 2011).

The family PC program comes, as a manifestation of the Tunisian State's political will to enable all social strata to adhere to the information society, thereby concretizing the presidential Tunisia of Tomorrow programme, which involves enabling one million families to acquire their personal computer at home by the end of 2009. In its latest edition, the program has selected nine providers of PC units (including portable ones) among 28 candidates. The operation has already taken place, with reasonable prices (Jebali 2008).

In addition, the latest edition of the program included the provision of the list of computer providers and machine configurations, which is reviewed every three months to avail beneficiaries of latest IT developments and preempt the program from becoming a dumping ground of old and obsolete technologies for vendors. The sale of laptop computers at competitive prices is primarily targeting the youth, especially students and pupils, in line with the government strategy to bring about the information society. A major incentive of the program, other than its competitive pricing, consists of the provision of loans and other modes of deferred payment at low interest rates, through the Tunisian Bank of Solidarity (TBS). Finally, public and private enterprises are encouraged to finance their employees' acquisition of computers through corporate social funds (Jebali 2008).

The government also initiated actions to enhance internet access for all citizens, the main objectives of these actions being (MTC 2008):

- The generalization of internet access all over the country, including rural and remote areas;
- Increasing, fivefold, the current bandwidth to the international internet network during the next five years;

- Gradual generalization of broadband internet through ADSL by providing enhanced services for ADSL internet subscribers; gradually decreasing the monthly subscription fee with a premium for families and individuals, and attractive packages for corporations; and
- Securing a 50% access rate to ordinary internet service for regular citizens, above and beyond corporate and other official access such as through schools and libraries.

According to the Tunisian Internet Agency (TIA), the number of internet users is currently hovering around 1.750.000 users; which is roughly 17.5% of the total population. There are also 12 internet service providers (ISPs) in Tunisia; seven of them are public and five private (Jebali 2008:3).

3.9.1.3 Main tasks in the implementation of e-government in Tunisia

According to Sadok and Djemaiel (2007), the Tunisian e-government experience started in 1997. There were three main tasks in the implementation of e-government in Tunisia:

- The creation of new e-government services and websites to provide online administrative information, such as, an electronic payment mechanism “e-dinar”, public centres for internet access that are available to all citizens, Tunisian administrative portal etc.
- The creation of new bodies of certification and audit, for example the national digital certification agency, the national agency for computer security which ensures the execution of rules related to the obligation of periodical audit over the security of the computer systems and the networks, and the national telecommunication, an authority which ensures that reliable and efficient telecommunication services are made available to the citizens.
- Establishment of a legal frame for electronic transactions and commerce bill. A legal frame is among needs for a successful e-government infrastructure. It allows the definition of legal aspects associated with this new field. A set of laws were adopted in 2000 (www.bmck.com/commerce/tunisia.htm) that

addresses the cryptography, digital signature, electronic transactions, the protection of personal data, and the creation of certification and audit entities (Sadok & Djemaiel 2007).

According to Jebali (2008), 60% of Tunisian cabinet ministries, namely 16 out of 26, have online presence. All the sites provide bilingual (Arabic/French) support, and some of them provide an English support. The sites are information sources on various requirements for transactions, policies and regulations; which is typical of emergent presence or stage I e-government in the stage model (UN 2008). Many sites also provide downloadable forms, as well as contact and other basic information; a feature of enhanced presence or stage II e-government. E-tasrih is an internet-based portal, automating the process of tax declaration and paying different types of fiscal levies. A single stop shop for lodging indirect taxes, income tax, and property tax is accessible through the internet, with a number of associated on-line services <http://www.impots.finances.gov.tn/>. The development went in conjunction with the presidential program for modernizing public service and improving the administration's communication with citizens. E-tasrih is the closest to a proper online transaction or stage IV e-government (e-tasrih 2008).

Moreover, the Tunisian National Social Security Fund site provides an on-line salary declaration service enabling independent contributors (non-salaried) and expatriate citizens to benefit from social security services at par with salaried employees. Employers are also able to make on-line declarations on behalf of all their employees. This site is considered a stage IV service. The Tunisian post offers some of the most developed e-services. These include: e-dinar enabling the post to act as a national payment gateway for all electronic transactions in the country as well as offering e-cash services; fatouranet a bill payment service for public services such as utilities; registration in public universities, and a number of other e-services that are more e-commerce than e-government: e-shop, CCPnet, and e-telegram. Every online postal service has an independent website because of the heterogeneous nature of the services offered and the different clientele addressed. Most e-services of the Tunisian post are at stage IV of development.

In summary, the current online presence in Tunisia is between stages II and III with an increasing number of applications being at stage IV; most sites provide G2C as well as G2B services. As the developments above illustrate, Tunisia musters a comprehensive and exhaustive policy framework for the development of e-government. However, implementation and execution of plans are a different panacea, where resistance to change and die-hard bureaucratic cultures refuse to succumb to the tide of e-government.

In addition, the country's infrastructural readiness is yet insufficient to reach the desired objectives. The internet is still beyond the reach of many and considered relatively expensive when indexed on the income per capita. Other problems consist of the modest size of service providers (vendors and consultants) in the e-government field; the limited appreciation and uptake of the digital culture among the public and the corporate world; and the small number of mobilizing projects initiated by important national decision makers, and involving local competencies. E-government in Tunisia is essentially a national project steered and controlled at the highest levels of government and ministries with little role devolved to local authorities.

3.9.2 Mauritius' experience

Mauritius continues to lead the Eastern African countries, largely because of the island nation's e-government readiness (Rorissa & Demissie 2010:165). Mauritius had high infrastructure scores, which increased its overall e-government index. In addition, Mauritius has one of the highest ICT ratings in the East African countries (Bagchi 2007:329).

3.9.2.1 Main tasks in the implementation of e-government in Mauritius

The government of Mauritius has been paving the way to e-government through numerous projects. These include the 1996 government internet project, which initiated a portal to all ministries/department websites. There is also the trade net project, which has been operational since 1994, under the Ministry of Finance. It allows the customs department to authorize, electronically, the delivery of goods. Other initiatives include the government email services project, launched in 2001, which has provided 2,620

senior officers with email accounts. About 20,000 civil servants (out of 55,502) have been trained in office automation applications related to specific activities. Government employees can in addition obtain loans, made possible by the government, to facilitate the purchase of PCs for home use (eUser 2004). To complement these efforts, the Government Online Centre (GOC) was initiated in the same year by the National Computer Board (NCB) to create a connected government through which ministries and departments will communicate and work together for better delivery of governmental services (eUser 2004).

The government has also taken certain measures to address the regulatory and legal framework for ICTs. In this regard, several bills were drafted, and with the passing of the Copyright Bill at the National Assembly in July 1997, the legal challenges posed by the use of ICTs are bound to be reduced significantly. This can be deduced from an assessment of the Information and Communication Technologies Act 2001, which lays out the institutional and procedural guidelines for the regulation and democratisation of information and communications technologies and related matters (National Computer Board 2003).

The government in Mauritius implemented the ISO/IEC 17799 information security standards in 2002. This was implemented throughout the civil service in order to address threats posed by viruses, hackers, fraud, natural disasters and other dangers. These standards have been successfully implemented in four pilot sites and will be rolled out throughout the civil service. In the meantime, the Government Intranet System (GINS) project is serving as an important component of e-government infrastructure for the interconnection of governmental bodies. Under this project, all ministries and departments have been wired and all buildings interconnected into an integrated and secure network to facilitate collaboration, information sharing and coordination of activities within the civil service (Waema & Adera 2011: 142-149).

The Cyber City project is another Mauritian government initiative. This initiative envisaged, when fully completed (with a target date of 2007) that, the Cyber City would employ some 20,000 people, including 5,000 to 7,000 computer professionals. The project was expected to have a spill over effect and spread ICT throughout Mauritius,

from the Cyber Tower to the Cyber City and finally to the Cyber Island. Apart from this major undertaking, a number of initiatives were started by the government for human resource development in ICT. These include the setting up of the e-education and training task force, the establishment of the Human Resource Development Council (HRDC) in 2004 and the introduction of pre-operational training grants. The government's policy seeks to ensure widespread access to affordable information services. A Universal Service Fund is being set up to provide ICT services in every corner of the country, especially in remote areas where operators are reluctant to offer services. The Universal Service Fund has been structured to take into account the parameters of affordability, accessibility, availability, quality of service and sustainability. Today, all ministries and most governmental bodies have websites (Waema & Adera 2011).

In addition, connection to the internet is via dedicated leased lines for agencies that can afford it and dial-up for others. Large e-government projects, like Government Online, an e-government intranet and a crucial step towards electronic service delivery, are being planned. To support these developments, there is a strong emphasis on training and education to sensitize the population and to try to meet the projected shortfall in ICT professionals. The e-government master plan, which charts out strategies and action plans for the short, medium and long-term phases for e-government, was prepared in 2003. The aim of this e-government master plan is to establish a roadmap towards a coherent and integrated approach to the implementation of e-government (Waema & Adera 2011: 142-149).

Moreover, the government in Mauritius sets out its vision to make ICT the fifth pillar of the economy. This will be achieved by increasing ICT contribution to GDP and building collaborative ventures in the field of ICT with countries of the region. This new plan also includes programme monitoring indicators and milestones that will ensure that the right track is followed in achieving ICT targets. To realize this vision, the Plan targets four strategic areas: providing support to the legal, institutional and infrastructural framework related to ICT; promoting e-business adoption; accelerating ICT adoption in society; transforming the island into an ICT expertise hub in the region that is able to take up leadership roles and become an investment nucleus for ICT. This

achievement would make the island a global point of reference for offshore services (Information and Communication Technologies Authority n.d.).

The government gives high priority to the development of the ICT sector in an effort to transform Mauritius into a cyber island. As a result, local authorities have become conscious of the need to adopt ICT in order to enhance their efficiency and productivity in administrative tasks and contribute to good governance. This is revealed in the nature of various initiatives. For example, all five municipalities and four district councils have websites, which provide general information on services provided, activities undertaken and information on organisational structure. At the Pamplemousses and Rivière du Rempart District Councils, citizens can make complaints online through an embedded feature in the websites (Board of Investment Mauritius n.d.).

In the case of the municipality of Quatre Bornes, the annual budget is accessible online. The websites of Quatre Bornes Municipality and Pamplemousses District Council make it possible for citizens to post upcoming events or social programmes they are organising, with date, time, venue and event descriptions. They can also create their own email accounts. In addition, they can use the websites to give online feedback on the web portal and cast their votes online in opinion polls. The website has many visitors, for example, between October 2004 and May 2008; the Quatre Bornes website registered 15,592 visitors. Between March 2005 and October 2007, the district council of Pamplemousses had registered 49,410 web page views. Almost every local authority on the island has an IT section, headed by an information technology officer and assisted by a database supervisor (Board of Investment Mauritius n.d.).

Moreover, an E-Business Plan for Local Authorities is another prominent project, which is intended to provide online services to citizens and the business community 24 hours a day, seven days a week. The main objective of this project is to improve operational efficiency and service delivery by local authorities through the optimization of ICT. The e-governance Portal for Local Authorities, which forms part of the e-business plan, is expected to improve interaction with local authorities, in cases requiring clearance permits and licenses. It will allow online payment of fees and rates through the payment gateway of the e-governance portal. The treasury module will also

be integrated with the trade fee module to ensure the availability of online updated information on the fee. In order to enhance transparency, this portal will provide a secure login area for businesspersons and citizens. This will enable customers to check the status of payments made and of any arrears (Waema & Adera 2011).

The proposed portal will also allow electronic data exchange with external entities such as the Registrar of Business and the Valuation Office. These developments do not mark the end of traditional payment modes. Local Authorities will continue to provide the existing traditional payment facility through cash counters at Treasury Department and at Citizen Facilitation Centres. They can also give direct debit instructions through banks. Running parallel systems may imply higher costs, but initially this may be important to allow the gradual elimination of resistance to change. Once people get used to the online system, the traditional systems can be phased out. (Waema & Adera 2011: 142-149).

3.9.3 Egypt's experience

The Egypt e-government program, launched in 2001, is considered to be relatively successful. This is because of the evolution of Egypt's e-government readiness ranking from 140 in 2003 to 79 in 2008, where the web index evolved in the same period from the 162nd to the 28th position, according to the e-government readiness index issued by the UNPAN. Local government initiatives were set off in Egypt as one of its e-government program axes in order to become close to the citizens and to interact with various levels of governments (Abdelsalm, Elkadi & Gamal 2010: 67).

The vision of e-government initiative in Egypt is to deliver high quality government services to the public in the format that suits them. Such a mission relies mainly on three principles that are: 1) citizen centric service delivery; 2) community participation; and 3) efficient allocation of government resources (Hassan, Shehab & Peppard 2010:373). Egypt's e-government program has identified a number of objectives to realize a successful implementation of e-government. These objectives, include but not limited to: 1) tailoring government services to meet citizens' expectations; 2) creating a conducive environment to investors (local and international); 3) availing accurate and updated government information; 4) increasing government efficiency through modern

management techniques and new working models; 5) reducing government expenditure; and 6) fostering local competitiveness and increasing globalization readiness (Hassan, Shehab & Peppard 2010:374).

3.9.3.1 Main tasks in the implementation of e-government in Egypt

Egypt invested heavily in improving its ICT infrastructure and in providing affordable access to ICT services, over the past decade. Major initiatives to adopt e-government as a means to leverage ICTs in its development efforts were also launched in Egypt (Gulati, Yates & Tawileh 2010:77-78). These initiatives, however, have focused more on basic services, for example, e-information services than on e-consultation or e-decision-making. Egypt is also considered a regional leader in providing public information through portals and official sites (Dutta, Shalhoub & Samuels 2007).

Egypt has a head-of-state website where citizens can directly ask the president's office about policies. In order to raise public awareness of its online e-government services, the Egyptian government has been distributing information using mobile phones and other devices (United Nations 2008). In addition, the government has built an integrated portal to act as a one-stop shop for government information (Egypt E-government Portal 2011). Community participation and addressing citizens' demands are taken care of through the citizen-relationship management (CRM) services. Citizens can interact directly with over 10 different government entities through the national portal. They can submit complaints and send suggestions and enquiries. The national portal is also supported by a call centre. Further support to participatory measures was facilitated by the Egyptian government's launch of a national portal poll and blog (Liebenau 2010:196-197).

A major e-government plan is also underway to build a media city and several smart villages to offer training and software development services and to link ministries via a centralized network (Gulati, Yates & Tawileh 2010:77-78). One important factor in introducing e-participation in tools in Egypt was financial investment in the further development of its ICT infrastructure in order to build its e-government capacity and increase access to ICTs among the wider population (Gulati, Yates & Tawileh 2010:77-78).

However, despite the progress in e-government, Egypt faces a variety of obstacles to the complete success of its e-government development. These range from insufficient physical infrastructure to inadequacies in its legal framework, and the digital divide. Until recently, there was no comprehensive e-government strategy, which caused coordination problems (Liebenau 2010:197). Furthermore, the legal foundation could still be improved to provide greater confidence and encourage more e-commerce users (Salem & Jarrar 2008).

The Egyptian government has decided to reduce, or even waiver, the cost of many online services compared with their manual versions in an effort to persuade citizens to use online services, (Salem & Jarrar 2008). However, despite these incentives, citizens continue to opt for manual processes (Salem & Jarrar 2008). This could be related to convenience, resistance to change and unfamiliarity (Salem & Jarrar 2008). The Ministry of State for Administrative Development is trying to overcome these barriers by running an awareness campaign on using the internet (Liebenau 2010:198).

3.9.4 Lessons that can be learned from Tunisia, Mauritius and Egypt's experiences with e-government

Tunisia has shown significant progress in e-government development. For instance, Tunisia has an ICT based national strategy for modernizing telecommunication infrastructure, formulated a regulatory framework of digital economy, enhanced international cooperation in ICT and developed human resource management in ICT (Jebali 2008; Netshitzhe 2011). In addition, Tunisia has created a national digital culture, which helps to overcome the problem of low individual usage and adoption of ICT, as evidenced by the implementation of the family PC program and internet access program (Jebali 2008; Netshitzhe 2011). However, Tunisia faces the following challenges; the infrastructure and e-readiness is not sufficient for the objectives of the declared strategy to be reached. The internet is expensive and beyond the reach of many. The online presence is between stage II and III. Moreover, there is limited citizen acceptance and use of e-government services due to the dominant bureaucratic cultures. In addition, there is diminutive support from the local government authorities of Tunisia (Jebali 2008; Sadok & Yacine 2007).

Mauritius has a high infrastructure score and developed various e-government initiatives (Rorissa & Demissie 2010; Board of Investment Mauritius n.d; Waema & Adera 2011). The establishment of an information infrastructure to connect the various local government authorities is the key enabler of the e-government initiatives in Mauritius (Waema & Adera 2011). In addition, the government of Mauritius has a strong vision for ICT, thus providing a base for e-government (Information and Communication Technologies Authority n.d.). Moreover, the government has taken various measures to address the regulatory and legal framework for ICT (National Computer Board 2003). The government has implemented security standards in order to address threats (Waema & Adera 2011). All ministries and departments are wired, and all buildings interconnected into an integrated and secure network to facilitate collaboration, information sharing and coordination of activities within the civil service (Waema & Adera 2011).

Egypt has also invested heavily on ICT infrastructure and in providing affordable access to ICT services (Abdelsalm, Elkadi & Gamal 2010; Liebenau 2010). Like Tunisia, the Egyptian government has reduced the cost of online services in order to influence citizens to use online services (Salem & Jarrar 2008). Despite the efforts, citizens continue to use manual processes, which is a hindrance to e-government success (Salem and Jarrar 2008). In addition, lack of a comprehensive e-government strategy and physical infrastructure is another hindrance to e-government success in Egypt (Liebenau 2010). Other obstacles are poor legal frameworks, digital divide and resistance to change (Salem & Jarrar 2008).

Despite the outlined challenges, these countries have shown that some e-government services can be successfully implemented. It is therefore important to look at these countries to find good practices in the implementation of e-government and to examine their strategies and solutions to identify what is working and what is not.

E-government has a number of benefits to governments, businesses, and citizens alike (Araujo & Grande 2003; Colesca & Dobrica 2008b: 205; Mofleh, Wanaous & Strachan 2008:3; Moon 2002:426-427; Wang & Liao 2008:718). Yet, how these benefits will be achieved is still a debate. Despite the feasibility and availability of technology,

government agencies have confronted many challenges and problems in successfully developing and implementing e-government systems. These challenges and problems include, lack of awareness (Nour, AbdelRahman, Fadlallah 2008), access to e-services (Jaegar & Bertort 2010:373), usability of e-government web sites (Al-Busaidy & Weerakkody 2008:1; Porter 2002), lack of trust (Bhattacharjee 2002; Navarra & Cornford 2003), security concerns (Jarvenpaa, Tractinsky & Vitale 2000), resistance to change (Margetts & Dunleavey 2002), lack of skills and funding (Weerakkody & Choudrie 2005), data protection laws (Ali, Weerakkody, El-Haddede 2009:6), and lack of strategy and frameworks (Al-Busaidy & Weerakkody 2008:1). Therefore, overcoming these challenges, is one of the biggest tests for any country planning to implement e-government.

In order to implement e-government successfully, a systematic and well-defined approach is needed for e-government projects to impact positively on the beneficiaries. For e-government to succeed, the right technology has to be chosen; organizational capability has to be taken into account; institutional and regulatory constraints; political, social, environmental, and cultural challenges; as well as the required human resources have to be taken into account (Nour, AbdelRahman, Fadlallah 2008; Jaegar & Bertort 2011:100; Banerjee & Chau 2004; Ali, Weerakkody, El-Haddede 2009:6; Gil-García & Pardo 2005; Montagna 2005; Weerakkody & Choudrie 2005).

3.10 Summary of the chapter

This chapter briefly reviewed several models used to study e-government adoption in developing countries. Since the main enabler of e-government is technology, the base models usually come from technology adoption studies (Davis 1989) other models such as UTAUT model and DOI model have introduced as additional constructs to those of TAM. However, a general evaluation of each model reveals that similar constructs can be observed in each model under different names. Davis (1989) developed TAM and showed that perceived ease of use of the technology characterized the beliefs that lead to system usage. In DOI theory, Rogers (1995) identified five constructs that influence a potential adopter's decision, for example: relative advantage and compatibility. Relative advantage refers to the belief that a new system has benefits above and beyond the

current system. Compatibility posits that one is more likely to adopt an innovation if it is consistent with their values, views, beliefs, and customs. TAM constructs are included in the DOI model. Perceived ease of use and the three constructs of UTAUT have a direct effect on usage intentions (i.e. effort expectancy (complexity), performance expectancy (relative advantage) and social influence (Venkatesch *et al*, 2003). The DeLone and McLean model is a useful framework for organizing IS success measurements. The model provides a base for understanding e-government success by examining the impact of IT quality constructs. According to Chatfield and Alhujuran (2009), the Siau and Long's (2005) model can be used to assess the current status and the factors for e-government adoption in developing countries. The Siau and Long (2005) model proposes information and computer technology, human development situation, economics, culture and political environment as factors, which affect e-government adoption as they influence e-government development stages.

Furthermore, this chapter showed that the human factors should be taken into account when designing information systems. Information-seeking behaviour follows universally applicable stages, and that the information-seeking behaviour model can be applied to current day information-seeking despite changes in the information environment. Models of information seeking behaviour suggest that information-seeking behaviour arises as a consequence of a need perceived by an information user who in order to satisfy that need, makes demands upon formal or informal information sources, which result in success or failure to find relevant information (Wilson 1999). Thus, the model of information-seeking behaviour can enable the information content developer to specify more clearly, the navigational routes needed through the information and the kind of information that needs to be in the record (Wilson 1999). Such an approach may assist in developing e-government platforms that appeal to the citizens.

Moreover, noted from the review is that social factors may as well influence citizens' intention to use e-government. The social factors are; trust in terms of security and privacy and trust in government, education and accessibility. It is thus important to use a combination of models, which results in complementary strength and non-overlapping weaknesses. A research model was formulated in this chapter on the basing on UTAUT, TAM, DOI, Siau and Long (2005) stage model, Wilson's (1999) information

behaviour model, and a literature review. Lastly, this chapter explored e-government in Tunisia, Mauritius and Egypt and identified lessons, which can be learnt.

The research model was tested and further verified using empirical data collected from three districts in Tanzania as presented and discussed in Chapters Four, Five and Six. The following chapters discuss the research methodology and analytical techniques adopted in the study.

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction

The previous chapter provided an overview of the research literature. This chapter describes the research methodology used in this study. Specifically, the section covers and reflects on issues regarding research purpose, research logic, research paradigm, research design, and methods employed for data collection and analysis, as well as ethical issues and evaluation of the methods used for this study.

4.2 Research methodology

Somekh and Lewin (2005:346) define methodology, as both the collection of methods or rules by which a particular piece of research is undertaken, and the principles, theories and values that underpin a particular approach to research. Walter (2006:35) argues that methodology is the frame of reference for the research, which is influenced by the paradigm in which our theoretical perspective is placed or developed. The most common definitions suggest that methodology is the overall approach to research linked to the paradigm or theoretical framework while the method refers to systematic modes, procedures or tools used for collection and analysis of data. Research methodology focuses on the research process and the kind of tools and procedures to be used (Babbie & Mouton 2001:75).

4.3 Research purpose

The classification of research purpose most often used in the research methods' literature is divided into the following categories (Saunders, Lewis & Thornhill 2009:139);

1. to explore a new phenomenon (exploratory),
2. to describe a phenomenon as it exists (descriptive),
3. to explain why or how something is happening (analytical or explanatory),
4. to predict certain phenomena (predictive research).

To identify an appropriate research methodology, the researcher first needs to consider the purpose of the study (Neuman 2006:33). In the same way as the research question can be both descriptive and explanatory, so the research may have more than one purpose (Neuman 2006:33; Saunder, Lewis & Thornhil 2009:139). The current research falls mainly into the second and third category.

4.4 Research reasoning process

There are two different approaches to the strategy of scientific inquiry in terms of theory building and testing, which are deduction and induction. Deductive arguments are attempts showing that a conclusion necessarily follows a set of premises or hypotheses. A deductive argument is valid if the conclusion follows necessarily from the premises, for instance, the conclusion must be true if the premises are true. A deductive argument is sound if it is valid, and its premises are true (Johnson & Christensen 2008:15). While the purpose of deductive research is to test the validity of proposed theories in real world situations, there are references to the emergence of categories, themes, and patterns from empirical data in inductive analysis (Janesick 2000; Lancaster 2005).

Inductive researchers therefore, begin with the specific observation of the empirical world, and then develop theories or hypotheses based on the evidence collected from their observations (Neuman 2006). Inductive reasoning, as reflected in the literature, is applicable to many qualitative studies, as well as to a number of quantitative research works (McMurray, Pace & Scott 2004). Decisions on the reasoning process/processes of a research study depend on the nature of the phenomenon under investigation. The choice of an inductive process will be more logical when little is known about the topic (McMurray, Pace & Scott 2004). This study used both deductive and inductive logic in a distinctive sequence to study factors that influence access to electronic government in Tanzania.

4.5 Research paradigm (philosophy)

The term paradigm refers to a set of philosophies and assumptions regarding the world and the nature of knowledge held by a community of scientists, which influences the

type of problems they investigate and their way of conducting research (Babbie 2004; Collis & Hussey 2003). A scientific paradigm, as Neuman (2006:1) observes, is generally a whole system of thinking. There are many different research philosophies, including positivism, realism, interpretivism, objectivism, subjectivism and pragmatism (Saunders, Lewis & Thornhill 2009). The most common research paradigms are the positivist and interpretivist paradigms; sometimes carrying alternative labels such as objectivist or experimentalist, as opposed to subjectivist or phenomenological (Saunders, Lewis & Thornhill 2009). The two paradigms are distinguished on the basis of their fundamentally different views on reality, on what reality is and how one should investigate it (Lodico, Spaulding & Vogtle 2006).

4.5.1 Positivism, interpretivism, and pragmatism

Positivists regard reality as independent objects, and apply logical reasoning to investigate research problems (Collis & Hussey 2003). The positivist researchers, firstly, make general statements or the knowledge base of the researcher or reject these statements or predictions (Lodico, Spaulding & Vogtle 2006). Positivists apply deductive reasoning to gain access to reality (Lodico, Spaulding & Vogtle 2006). Nevertheless, interpretive researchers, tend to understand a particular social setting based on the understanding of people in it (Neuman 2006).

Interpretivists apply inductive reasoning to find out reality and according to inductive reasoning, systematic observation takes place first, and then the research draws conclusion from this observation (Lodico, Spaulding & Vogtle 2006). In other words, the journey of interpretivists in gaining access to reality is from more specific and concrete findings to general and abstract statements (Punch 2009). The differences in the knowledge claims of the positivists and interpretivists led to the purist debate where energies were spent on fostering the qualitative and quantitative divide (Ngulube 2010: 253).

Pragmatism is a position that argues that the most important determinant of the adopted research philosophy is the research question, arguing that it is possible to work within both positivist and interpretivist positions (Creswell 2009). It applies a practical approach, integrating different perspectives to help collect and interpret data. It is

unrealistic in practice to choose between positivism and interpretivism because both positions have limitations (Guba & Lincoln 1994; Ngulube 2010). Pragmatists are driven by the problems, which people face, and want to find out what works. Howe (1988) argues that qualitative and quantitative methods are compatible, and that a good research design often involves mixed methods. This means that the decision about whether to use qualitative or quantitative methods (or both) depends on the research question and on the current stage of the research cycle (for example, using inductive or deductive reasoning).

This study, therefore, adopted the pragmatic approach since it prevents the researcher from engaging in pointless debates about such concepts as truth and reality and thus enabled the researcher to answer the research questions (Tashakkori & Teddlie 1998).

4.6 Research design

Research designs are procedures for collecting, analyzing, interpreting and reporting data in research studies (Creswell & Plano Clark 2007: 58). Decisions on research design are based on the research purpose, and on what best match the research problem (Saunders, Lewis & Thornhill 2009). The research conducted for this study was descriptive and explanatory in nature. Descriptive research was conducted in this study because the problem was clearly structured and the researcher had no intention of finding connections between causes and symptoms (Yin 2003).

Explanatory research identified factors for e-government adoption (Yin 2003). Quantitative and qualitative methods can be employed in descriptive and explanatory research (Pickard 2007: 94). This study adopted a mixed-methods research procedure in order to enjoy the benefits of both quantitative and qualitative approaches. Mixed methods research is characterized as research that contains elements of both qualitative and quantitative approaches (Brewer & Hunter 1989; Howe 1988; Miles & Huberman 1984; Patton 1990; Reichardt & Cook 1979).

4.6.1 Mixed-method design

The mixing of methods in social sciences research has been given many names, including blended research, integrative, multi-method, multiple methods, triangulated studies, ethnographic residual analysis, and mixed research (Harrison & Reilly 2011). A mixed method research integrates approaches from different research methods in a single research study (Leech & Onwuegbuzie 2009: 273). Mixed-method research assists in overcoming and addressing the deficiencies of each of the single methods (Leech & Onwuegbuzie 2009: 273). For many years, researchers have employed both qualitative and quantitative approaches in the study of the same phenomenon, mixing the data and putting them together is a new idea, which has led to the introduction of the multi-method or mixed-method research style (Cresswell & Plano- Clark 2007).

The purpose of mixing qualitative and quantitative methods in any mixed study, should be clear in order to determine how the analytic techniques relate to one another and how, if at all, the findings should be integrated (O’Cathain, Murphy & Nicholl 2008; Onwuegbuzie & Teddlie 2003). Collins, Onwuegbuzie and Sutton (2006), and Rossman and Wilson (1985) listed three reasons for combining quantitative and qualitative research. First, the combinations used enable confirmation or corroboration of each other through triangulation. Second, combinations enable or develop analysis in order to provide richer data. Third, combinations are used to initiate new modes of thinking by attending to paradoxes that emerge from the two data sources.

4.6.1.1 Types of mixed methods design

There are several types of integrative designs, based on a sequence of and different emphasis on, using different techniques including; (Cresswell 1995; McMurray, Pace & Scott 2004; Tashakkori & Teddlie 2003). These include:

- Two phases/sequential versus simultaneous/concurrent design: Two phases or sequential design includes the use of methods sequentially, in separate stages of the study. In contrast, concurrent or simultaneous design occurs when the researcher uses the two methods in parallel, or simultaneously.

- Dominant/less dominant versus equivalent status design: Dominant/less dominant design involves more focus on one technique as the primary approach. However, in equivalent status designs, the weight of emphasis on different methods is almost equal.

The dominant-less-dominant model (or embedded design) was adopted in this study. This design can be carried out sequentially or concurrently (Creswell 2009; Creswell & Plano-Clark 2007). This study used the sequential research design, in which data were collected and analyzed in a particular sequence with the purpose of informing, rather than being integrated with, the use of, or findings from, the other method (Onwuegbuzie & Teddlie 2003). Qualitative data was then embedded within the dominant quantitative approach (Creswell 2003:218; Creswell & Plano-Clark 2007:118). Semi-structured questionnaires were primarily used to collect quantitative data (see Section 4.11.2.1). The secondary purpose was to gather qualitative data through semi-structured interviews (see Section 4.11.2.2). Both quantitative and qualitative data analyses were kept separate, and then they were combined or integrated into meta-inferences (Creswell & Plano-Clark 2007:118; Teddlie & Tashakkori 2009). Both data sets were used for descriptive and explanatory purposes.

One method is usually given priority over the other, when qualitative and quantitative methods are mixed in a single study. In such cases, the aim of the study, the rationale for employing mixed methods, and the weighting of each method determine whether, and the ways in which the empirical findings can be integrated. This is less challenging in sequential mixed methods studies where one approach clearly informs the other, however, guidance on combining qualitative and quantitative data of equal weight, for example, in concurrent mixed methods studies, is rather less clear (Foss & Ellefsen 2002). This is made even more challenging by a common flaw, which is to insufficiently and inexplicitly identify the relationships between the epistemological and methodological concepts in a particular study and the theoretical propositions about the nature of the phenomena under investigation (Kelle 2006).

In addition to the above classifications, which reflect the influence of timing and weighting factors on the choice of an appropriate design in multi-method research,

Cresswell and Plano Clark (2007) referred to the 'mixing decision' for example, how to mix the data from different methods, as the third procedural consideration in picking a mixed-methods design. There are three general strategies for mixing different sets of data, which lead to the development of four major types of mixed-method designs. The mixing strategies and their related designs include (Cresswell & Plano Clark 2007):

- Embedding the data of one set within the design of another set. The design associated with this strategy is called embedded design, and is used when the research design can be enhanced by a second source of data.
- Connecting the two data types, when the researcher realizes the need for further data collection, after analyzing the first set of data. The second phase of the research, which follows from the results of the initial phase, is therefore, marginal and supportive, intended to explain the initial results. This strategy may lead to two different types of designs, called explanatory design and exploratory design, depending on whether the design begins quantitatively or qualitatively. Explanatory design is used when the researcher needs to enrich and explain the quantitative results with qualitative data. Exploratory design, however, is used when the researcher needs more than exploration of the research problem to further understand the topic.
- Merging/or integrating the two sets of data either at the stage of data analysis or later on interpretation. The design using this strategy is known as triangulation. Triangulation is used when the researcher needs both types of data to address research problems. This design signifies the greatest extent of integrating methods, and includes the integration of different approaches at all or many steps in the study. The current study used triangulation strategy as a means of seeking convergence across qualitative and quantitative approaches (Greene, Caracelli & Graham 1989).

4.6.1.1.1 Triangulation

Triangulation has been broadly defined by Denzin (1978:291) as the combination of methodologies in the study of the same phenomenon. It is one of several rationales for multi-method research using different methods to investigate research questions (Bryman 2004). Denzin (1971) extended the concept of triangulation to cover more than the combination of research methods, to integrate multiple theories or perspectives,

researchers, and empirical materials. According to Denzin (1971) there are four types of triangulation which are:

- Data triangulation: Including gathering data from a variety of data sources across three dimensions, either at different times, in multiple locations, or from different people.
- Researcher or investigator triangulation: Including the involvement of several researchers in the study.
- Theoretical triangulation: Including the use of more than one theoretical paradigm or perspective to interpret data.
- Methodological triangulation: Involving the use of more than one method for data collection.

This study has triangulated the following;

- Data collection methods (interviews and questionnaires)
- Models/theories which are: the Siau and Long (2005) model; technology acceptance model (TAM) by Davis (1989), Wilsons' (1996) model; diffusion of innovation theory (DOI) by Rogers (2002) and Petter, DeLone and McLean (2008) model.
- Data sources, including Tanzanian citizens and policy makers from Dar es Salaam, Morogoro and Iringa.

The purpose of triangulation is to add rigor, breadth, complexity, richness, and depth to the research, through the creation of complementary data (McMurray, Pace & Scott 2004). There are many instances of applying triangulation as a strategy for validation, to enhance the confidence of ensuing findings (Flick 2004). The rationale behind this is that all research approaches have their own strengths and limitations. By applying a combination of approaches, a researcher may reduce the intrinsic bias of findings from one single method, and strive for more accurate data with a higher degree of validity (McMurray, Pace & Scott 2004). As a result, researchers often apply triangulation to examine the construct and internal validity of their research, and to increase the reliability of their results by crosschecking data, that is to confirm and verify data collected in different approaches.

The main goal of triangulation is that of confirming a study's results (Dunning *et al*, 2008:147). To extend the application of this approach, Jick (1979: 138) refers to the purpose of completeness in some triangulation studies. Jick (1979) highlights the function of triangulation, beyond confirmation or convergent validation, to assist in reaching a more complete, holistic, and contextual portrayal of the unit(s) under study.

However, some scholars have criticised triangulation. Fielding (1986: 33) for example, referred to the problem of extreme eclecticism in applying triangulation as a validation strategy, and reminded readers that each method provides a unique way of investigating the issue. Furthermore, Fielding (1986) recommended that triangulation should be implemented with the intention of adding breadth or depth to their analysis, and not for the purpose of pursuing objective truth. Therefore, triangulation is considered less as a validation strategy, and more as a strategy leading to deeper understanding of the topic, and as an approach for justifying and underpinning knowledge by gaining additional knowledge (Flick 2004).

Methodological old schools believe strongly in the dichotomy of world views and research methods (Creswell & Plano-Clark 2007). As a result, they argue against the combination of quantitative and qualitative approaches. However, Martens (2003) suggests that the practicality inherent in pragmatism is concerned with finding the most appropriate method to answer a research question or set of research questions. Tashakkori and Teddie (2003) argue that researchers within the pragmatist tradition follow the rule of the research question, meaning they consider the research question to be more important than either the method or the paradigm that underlies it. Likewise, Johnson and Onwuegbuzie (2004) share their aspirations that the field of mixed methods research will move beyond quantitative versus qualitative arguments and will instead focus on recognizing the usefulness of both paradigms and identifying how these approaches can be used together in a single study to maximize the strengths and minimize the weaknesses of each other. They further contend that taking a non-purist position allows researchers to design research studies that combine methods that will offer the best chance of answering their specific research questions.

Other criticisms or weaknesses of a mixed methods approach are more practical in nature. Johnson and Onwuegbuzie (2004) suggest that it may be difficult for one researcher to carry out a mixed methods study if the qualitative and quantitative phases are to be undertaken concurrently. In this case, a research team may be required. Ivankova, Creswell and Stick (2006) note that sequential studies also have drawbacks as it may take considerable time and resources to undertake distinct phases of a study. Within a mixed methods study, there is also a requirement that the researcher must have a sufficient knowledge of both quantitative and qualitative methods independently and how to mix these methods appropriately to achieve good study outcomes. As highlighted, there are drawbacks to using a mixed methods research approach. Therefore, it is essential that mixed methods researchers can anticipate the questions or criticisms of their chosen approach to design appropriate studies and defend these studies when required.

4.6.2 Justification for a mixed methods approach

The use of the mixed methods in this study was motivated by the desire to improve the quality of this study by counterbalancing or compensating for the biases, limitations, and weaknesses of a one-approach method, by mixing it with a method belonging to the other approach (Fidel 2008). This study applied a mixed method approach in the data collection, data analysis and interpretation of the findings in order to draw upon the strengths and perspectives of each method, recognizing the existence and importance of the physical, natural world as well as the importance of reality and influence of human experience (Johnson & Onwuegbuzie 2004).

Denzin (1989:307) advised the combination of multiple observers, theories, methods, and data sources, so that the intrinsic bias that comes from single-methods, single-observer, and single theory studies can be prevented. Triangulation evolved to include using multiple data collection and analysis methods, multiple data sources, multiple analysts, and multiple theories or perspectives (Patton 2002). A mixed methods approach deployed in this study for triangulation purposes sought convergence across qualitative and quantitative approaches (Greene, Caracelli & Graham 1989). In addition, triangulation was used to acquire the following advantages as Jick (1979) noted; (a) To

allow researchers to be more confident of their results; (b) to stimulate the development of creative ways of collecting data; (c) to obtain thicker, richer data; (d) To acquire a synthesis or integration of theories; (e) to uncover contradictions, and (f) by virtue of its comprehensiveness, to serve as the litmus test for competing theories.

Furthermore, this study used triangulation in order to test for consistency rather than to achieve the same result using different data sources or inquiry approaches. Inconsistencies are an opportunity for the development of further insight into relationships between the methods chosen and the phenomenon studied, thus allowing researchers and the readers of their reports, alike, to improve their understanding of that phenomenon (Patton 2002).

According to Kelle (2006), it can be very useful to combine qualitative and quantitative methods, by starting with a quantitative study, followed by a qualitative inquiry (a sequential design). The problem of quantitative research that is addressed by this design is the frequent incomprehensibility of statistical findings, which are often difficult to understand without additional socio-cultural knowledge. A quantitative study is performed in this study in order to identify problem areas and research questions, which have to be further investigated with the help of qualitative data and methods.

The quantitative part of a sequential quantitative-qualitative design in which quantitative is dominant is used to guide systematic case comparison in the subsequent qualitative inquiry by helping to identify criteria for the selection of cases and by providing a sampling frame. This design helped to overcome an important threat for validity of qualitative research that researchers focus on remote and marginal cases (see Section 4.13). A further problem of qualitative research was addressed by this design: as a large-scale quantitative study can capture heterogeneity and describe the distribution of a set of predefined phenomena in the research field, it helps to avoid a qualitative study with an oversized scope, a study with a research question covering a domain too heterogeneous to be captured with the help of a small qualitative sample. This study used the sequential research design to combine or integrate both quantitative and qualitative data in two phases of data collection.

The first phase involved data collection through questionnaires from Tanzania citizens in Kinondoni district, Morogoro urban district and Njombe district. The second phase involved data collection through interviews with policy makers of e-government in Tanzania. These policy makers were interviewed on e-government policy issues. The results of these interviews were used to enhance the results from the questionnaires.

Moreover, a mixed method approach was used in this study for the following reasons; participant enrichment (through mixing quantitative and qualitative research to optimize the sample using techniques that include recruiting participants, ensuring that each participant selected is appropriate for inclusion); instrument fidelity (assessing the appropriateness and utility of existing instruments, creating new instruments, monitoring performance of human instruments); treatment integrity (assessing fidelity of intervention) and significance enhancement (facilitating thickness and richness of data, augmenting interpretation and usefulness of findings) (Collins, Onwuegbuzie & Sutton 2006).

4.7 Population

Population constitutes the total collection of all units of analysis about which the researcher wishes to make specific conclusions (Johnson & Christensen 2008: 224; Welman, Kruger & Mitchel 2005:52). This study focused on two categories of population, namely the Tanzanian citizenry and Tanzania policy makers. The study involved residents in Dar es Salaam, Morogoro and Iringa regions located in Kinondoni district, Morogoro town district, and Njombe district. These districts were chosen because they represent regional dynamics, which are characteristic of Tanzania, namely urban, peri-urban and in remote regions. Chilimo (2008) used the same criteria to select four telecentres in analysing the role of ICTs for poverty reduction in Tanzania. Lwoga (2009) also used the same criteria to select six districts in Tanzania to assess the application of ICTs in managing agricultural indigenous knowledge in the rural areas.

The methodological instruments employed in this research include, questionnaires to citizens in the selected districts of Tanzania and interview surveys to Tanzania e-government policy makers. The study involved three regions, which are Dar es Salaam, Morogoro and Iringa. Dar es Salaam is regarded as an urban region, Morogoro is

regarded as a peri-urban region and Njombe is regarded as a rural region. One district is selected in each region. Furthermore, the study was conducted in the urban, peri-urban and rural areas of each of the selected districts. These districts were chosen because of their varying levels of development, for example, accessibility by roads; presence of public access ICTs, such as telecentres, internet cafes and their presence in the following regions; urban, peri-urban and in remote regions.

In sub-Saharan Africa, rural and urban populations differ demographically, in socio-economic and cultural composition. Urban populations are generally younger, better educated, and more ethnically heterogeneous than rural populations (Molyneux *et al*, 1999). Peri-urban zones are considered as a transitional zone between urban and rural areas. Some of the characteristics of the peri-urban area include the diversity of populations, heterogeneity of land uses, morphological conditions and densities of the built areas, complex functional relations and changing social structures (Tacoli 2001). These characteristics of peri-urban area are then transformed to the urban system.

Xiao *et al* (2006) observed that urban expansion is governed by geographic and socio-economic factors such as population growth, policy and economic development. Kaur (1995) further observed that as cities expand physically, the frontiers between urban, peri-urban and rural activity distort and merge, thereby, presenting opportunities for beneficial linkages. According to Allen (2001), a substantial and growing proportion of the population in developing countries lives in or around metropolitan areas and large cities, including the peri-urban zone. Rapid growth at the peri-urban fringe has resulted in increased commercial development along arterial roads connecting cities and the countryside (Sullivan & Lovell 2006).

The same characteristics (that is, presence of telecentres, economic activities and geographical location) were used to select four telecentres in analysing the role of ICTs for poverty reduction in Tanzania (Chilimo 2008). Lwoga (2009) also used the same criteria to select six districts in Tanzania to assess the application of ICTs in managing agricultural indigenous knowledge in the rural areas.

The following section describes the methods and procedures applied in the selection of the sample for the study.

4.8 Sample frame

Johnson and Christensen (2008:223) define a sampling frame as a list of all elements in a population. The current study involved people in Kinondoni district, Morogoro town district, and Njombe district. These districts are located in Dar es Salaam, Morogoro and Iringa regions respectively.

Dar es Salaam is a major commercial, administrative and industrial centre of Tanzania. It consists of three local government areas: Kinondoni to the north, Ilala in the center of the region and Temeke to the south. The Kinondoni district had a population of 1,083,913 according to the 2002 census. Though Dar es Salaam lost its official status as a capital city to Dodoma in 1974, it remains the centre of the permanent central government business. Morogoro was also chosen on the basis of her geographical position, infrastructure and public services. Morogoro was classified as semi-urban in this regard. Morogoro town district had a population of 263,012 according to 2002 census. Njombe district is one of the seven districts of Iringa Region; it shares borders with Mufindi District to the North, Ludewa District to the South, Morogoro and Ruvuma Regions to the East, Makete District to the West and Mbeya Region to the Northwest. According to the 2002 Tanzania National Census, the population of the Njombe District was 420,348. The district was chosen because it is located in the inland region.

The sample frame of this study involved two categories of respondents. The first category was Tanzanian citizens in Kinondoni district, Morogoro urban district and Njombe district. The second category of respondents involved policy makers of e-government in Tanzania. These policy makers were interviewed on e-government policy issues.

4.9 Sampling procedures

Purposive or non-probability sampling, as pointed out by Kemper *et al* (2003:279), is quite common in mixed-method studies, and occurs when the researcher applies some criterion or purpose to replace the principle of cancelled random errors. According to Patton (1990:169), the logic and power of purposive sampling lies in selecting

information-rich cases for in depth study. With due attention to this point, the present survey used purposive sampling to select regions, districts, wards and participants involved in the study. This study used the non-probability method, which is also referred to as quota sampling (Picard 2007: 63). Quota sampling is based on the researcher ease of access to the sample. With this method, a required percentage of the total research population is identified (the quota) with some visible characteristics that are used to guide the sample and then the researcher takes up a position in a convenient location and asks all possible participants who pass to be involved in the research.

The quota sampling method was used in this study due to the following reasons; it was not possible to get a list of households and participants in advance, limited budget, and financial constraints. Additionally, it was difficult to use probability sampling methods due to the fact that Tanzania does not have a systematic arrangement of habitation (Nchimbi 2002). Therefore, it was not possible to sample households and participants using the simple random approach.

Participants were drawn from each of the three wards in each district (see the sample size in Table 4-1). Households were selected on the basis of a criteria of high, medium and low concentration of households as follows: In Kinondoni district, participants were obtained at a sampling interval of one in every ten households. In Morogoro town district, participants were obtained at a sampling interval of one in every five households and in Njombe district; participants were obtained at a sampling frame of one in every three households. In the households, participants were purposively selected based on their position in the house, age and gender. The study strived to have an equal representation of men, women, the young and the elderly.

Regions, districts and wards were selected purposively based on accessibility by roads; presence of public access ICTs such as telecentres, internet cafes; a diverse combination of urban area, peri-urban area and rural areas, geographical location and economic activities taking place in these regions. Onwuegbuzie and Leech (2005: 280-281) view purposive sampling as belonging to quantitative approach due to the fact that it can be used to generalize the findings. The selection of urban, peri-urban and remote regions means that a representation of the whole country was assured.

Lastly, snowball sampling was used in this study to obtain qualitative data. Snowball sampling is used when the population of interest is not fully visible, and where compiling a list of the population poses difficulties for the researcher (Tansey 2007:9). Thompson (2002) defines snowball sampling as a situation whereby members of a rare population are asked to identify other members of the population, those so identified are asked to identify others for the purpose of obtaining a non-probability sample or for constructing a frame from which to sample. Interviews were conducted with the e-government policy makers in order to get their views, plans, achievements and problems facing the development of e-government initiatives in Tanzania. Snowball sampling was used to sample the policy makers.

Snowball sampling was used to sample the interviewees who then assisted the researcher in the current study to get other likely research participants (Stratford, Ellerbrock & Chamblor 2007:123; Thompson 2002). Data saturation was the guiding principle for the sample size (Polit & Beck 2003). Data saturation means that sampling continues to the point at which no new information is obtained, and redundancy is achieved (Marshall 1996; Patton 2002:246; Polit & Beck 2003; Teddlie & Tashakkori 2009). This point of data saturation is compared to information redundancy, which means that the sampling procedure continues until the researcher recognises that no new data is forthcoming (Lincoln & Guba 1985; Patton 2002:246).

4.10 Sample Size

The sample size of this study was divided into two categories of respondents as previously discussed. Below is the detailed explanation of each category.

4.10.1 Sample size of participants in Kinondoni District, Morogoro town district and Njombe district

A sample is defined as a set of elements taken from a larger population according to certain rules and the number of people or elements in a sample is regarded as sample size (Johnson & Chrisensen 2008:224). Social researchers believe that the size of a sample should be based on some percentage of the population from which it is drawn, this is not the case (Ngulube 2005:134). There are other factors, which determine a

sample size of a study, for example; purpose of the study, population size, practical constraints and time frame (Dillon, Madden & Firtle 1994; Lenth 2001; Ngulube 2005).

There was no current frame during the time of this study since the last national population census was done in 2002 (URT 2006). Due to unavailability of a reliable current list of households and individuals (lack of sampling frame), the sample size was informed by the purpose of this study, financial and time constraints, practical constraints, geographical distribution of the districts, wards and households.

Since this study uses Factor Analysis, regression analysis and Pearson Chi-square test, the sample choice is largely dependent on multivariate analysis requirements. One of the important requirements of this analysis is that it requires a sample whose size should preferably be 100 or larger (Hair *et al*, 2006; Malhotra 2006). A sample size of 448 citizens was used in the current study. The distribution of the sample across the four regions is shown in Table 4-1.

Table 4-1 Sample size

| Region | N | % |
|---------------|-----|-------|
| Dar es Salaam | 148 | 32.88 |
| Morogoro | 150 | 33.55 |
| Njombe | 150 | 33.55 |
| Total | 448 | 100.0 |

The proposed study targeted at least 450 respondents for data collection. In each of the three districts, three wards were selected, making a total of nine wards, which include: rural, urban and mixed ward (peri-urban). As discussed above, an urban ward is more advanced in terms of geographic and socio-economic factors such as population growth, policy and economic development than a rural ward. Peri-urban refers to the area where urban and rural features and processes meet, intertwine and interact, usually located between city and countryside (Molyneux *et al*, 1999).

4.10.2 Sample Size of e-government policy makers

Five (5) e-government policy makers were purposively selected because they possess the information concerning the government strategies and policies. Moreover, the policy

makers were interviewed to get their views, plans, achievements and problems facing the development of e-government initiatives in Tanzania, which helped in answering the research questions. Their sample was small and data was collected until no new information was generated, to reach a saturation point since it is a qualitative part of the study. Data saturation means that sampling continues to the point at which no new information is obtained, and redundancy is achieved (Teddlie & Tashakkori 2009).

4.11 Data collection strategies

The study used multiple data collection strategies, noted by Jack and Raturi (2006) as used under the assumption that weaknesses inherent in one approach will be counterbalanced via strengths in another. This study used both mixed questionnaires and semi-structured interviews in collecting data and used both quantitative and qualitative methodologies to analyze the data. Furthermore, the introduction letter obtained from the researcher's employer (Mzumbe University in Tanzania) was used to get the permission to conduct research in the selected regions of Tanzania (see Appendix 7). The instruments for collecting data were developed according to the guidelines from the literature, and then they were pre-tested to ensure quality of the instruments (see Section 4.11.1). Additionally, these data collection methods were translated into the Swahili language since most Tanzanians are more comfortable in speaking Kiswahili than the English language. A semi-structured questionnaire was used to collect data from 448 respondents using quota-sampling technique (see Section 4.9). The aim of using semi-structured questionnaire was to obtain citizens' views on factors affecting access to e-government information and services. Moreover, Semi-structured interviews were conducted with e-government policy makers. Interviewees were chosen according to an initial survey and assessment of e-government progress in Tanzania. Key officials were interviewed to provide the needed information. These people were chosen according to their roles in e-government and policy-making. Access to these key people was through snowball sampling (see Section 4.9).

4.11.1 Data collection tools pre-testing

Questions containing clarity and consistence in meaning to all respondents can be instrumental in reducing bias; and well-constructed research instruments may contribute

to reduce non-response. In addition, poor construction may lead to erroneous conclusions. Pre-testing of the research instruments is meant to ensure that the indicators would yield the same results, irrespective of when or where they are applied (Synodinos 2003). The research instruments need to be tested during their development and application for acceptability, feasibility, reliability, sensitivity to change and validity (Ngulube 2005; Neuman 2000). Errors in a research exercise can be either systematic or random, whereby; systematic error refers to those arising from poor wording of questions. The researcher made an effort to minimize systematic errors by subjecting the research instruments to a rigorous process of editing and pre-testing (Neuman 2000). Pre-testing involves a use of a smaller number of participants to examine the appropriateness of the questions and their comprehension (Sekaran 2003:249).

The questionnaire and interview guides were pre-tested at the Mzumbe University, and Morogoro town district between March 2012 and April 2012. Semi-structured questionnaires were distributed to ten respondents and three information system specialists were interviewed. All the participants were conveniently sampled. The data collection instruments are briefly described below.

4.11.2 Data collection instruments

Semi-structured interviews (see Appendix 6) and face-to-face administered mixed questionnaires (see Appendix 2) are the primary data collection tools, which were used throughout the study. Essentially, the literature review guided the development of survey and interview instruments, which was employed to refine, elaborate upon and expand survey results. Participants were chosen using purposive sampling technique.

4.11.2.1 Questionnaires

A questionnaire is a self-report data collection instrument that each research participant fills in as part of a research study (Johnson & Christensen 2008: 203). There are three types of questionnaires namely, qualitative questionnaire, quantitative questionnaire and mixed questionnaire. A qualitative questionnaire is unstructured and consists of a series of open-ended questions to be answered by participants. A quantitative questionnaire is

based on completely structured items. A mixed questionnaire includes a mixture of completely open and closed- ended items (Tashakkori & Teddlie 2003:304).

This study used a mixed questionnaire, which comprised a number of sections all incorporating both open-ended and closed questions. These different sections sought responses on attitudes and opinions on factors that influence access to electronic government information and e-government adoption in Tanzania. Appendix 2 provides the English version of the final questionnaire, and Appendix 3 provides the Swahili version of it. The Swahili version was used to collect the data (as the target population is Swahili speaking) while the English version remained for the documentation purposes of this study.

The questionnaire was divided into different sections for easy reading and completion. A short, simple informative cover letter was written to inform citizens of the aims and importance of the research (see Appendix 1). A questionnaire draft was prepared using information from the literature and the research questions. This questionnaire draft was pre-tested using convenience sampling in order to increase the reliability and validity of the findings.

4.11.2.2 Interview

An interview is a data collection method in which an interviewer asks an interviewee questions (Johnson & Christensen 2008:203). There are three types of interviews, which are: unstructured, structured, and semi-structured. An unstructured interview is not about structure and hierarchy but about talking and mutual discovery. Unlike in an unstructured interview, the researcher in a structured interview asks the interviewees, questions in specific order and precise questions of interest to him or her. In a semi-structured interview, the interviewer uses an interview guide with specific questions that are organized by topics but are not necessarily asked in a specified order (Bailey 2007). In this study, a semi-structured interview was used. In order to increase the reliability, validity and practicability of the research instruments, the interview guide was also pre-tested.

The interviews were conducted to assess the perceptions, plans, achievements and barriers encountered in e-government development from the decision makers' point of view. The interviews also intended to review current progress and planned future activities for Tanzania e-government. The results of these interviews supplemented the questionnaires' results. Semi-structured interviews are easy and require less interviewing skills (Kothari 2004).

4.12 Data analysis

Data gathered from questionnaires and interviews was analyzed using qualitative and quantitative methodologies. The questionnaires were used to draw a profile of those respondents most likely or least likely to use e-government initiatives in the regions under the study. They were examined to define variables and relationships using basic statistical techniques. Interview results were used to refine and supplement these profiles, and elaborate on the possible barriers to the adoption of e-government. The current study followed a sequential explanatory strategy as explained by Creswell (2003) that qualitative results can be used to explain and interpret the findings of a primarily quantitative study. The following sub-sections describe in detail the specific analysis strategies undertaken during the analysis phase.

4.12.1 Quantitative analysis

The aim of quantitative analysis is to determine the strength of the relations among a set of variables within the context of a phenomenon. Estimates of these relations are compared to the predictions of a theory to determine if the theory provides an acceptable account of the phenomenon. The majority of quantitative studies are theory-driven, with the researcher's expectations influencing the selection of what factors are studied, how those factors are measured, and which relations among the factors are examined (Popper 1959).

An important strength of quantitative methods is that they provide replicable evidence to support theoretical predictions. Moreover, quantitative analysis can detect smaller relations that can be uncovered by human examination of the data. Humans are also limited in the amount of information they can personally review and summarize,

whereas the amount of data presents very little difficulty for a quantitative analyst with access to a computer. In addition, quantitative analysis is useful for uncovering complex relations among variables. While humans are able to identify simple relations between a pair of variables with relative ease, it is much more difficult for them to detect conditional relations involving a third variable (Fiedler *et al*, 2002).

While these methods permit stronger tests of pre-existing theories, they limit their ability to inform hypotheses that were not developed beforehand. If the results fail to support the original hypotheses, the researcher will likely need to conduct a new study to find out why, since quantitative studies are specifically tuned to examine variables relating to the hypothesis of interest. This makes quantitative methods poor tools for exploring relatively unknown phenomena. A quantitative study cannot tailor its methods to the traits or experiences of individual participants because this would prevent the measurements from being comparable across subjects. It also limits the ability of the participants to express their thoughts and feelings in their own words, or to indicate that the response options do not match their specific experience (DeCoster & Lichtenstein 2007).

Quantitative data were analyzed statistically using SPSS software package to summarize the relations among the variables assessed by this study. The general purpose of this analysis was to uncover meaningful relations among the measured variables and to represent important aspects of the phenomenon under consideration. However, close attention was given to relations that have implications for the theories being investigated. According to Mook (1983), quantitative researchers will commonly not make inferences directly based on the results of their studies. Instead, they use the studies to provide support for a particular theory of the phenomenon and then draw inferences from the theory.

4.12.2 Qualitative analysis

As quantitative research, the overall goal of qualitative research is to produce common explanations of real-world phenomena (Mason 1996). Qualitative methods, however, are interpretive and reflexive, and they generate subjective data based on the perspectives of the interviewees. The methodological focus of qualitative research is to draw out

reports of lived experiences through a variety of means, including in-depth interviewing or taped recordings of conversations between individuals or groups. Qualitative methods collect a volume of data in natural conversation settings, analyze them inductively, focus on the experiences of the participants through narrative accounts, and describe social processes and contexts through these narratives (Cresswell 1998).

In contrast to the thin description of quantitative work, Gronn (1982) argues that qualitative analysis of conversation or discourse seeks to produce a rich textual tapestry that brings the social world of the participant to life in inductively meaningful detail. Qualitative research methods are common in the social sciences. However, they are often viewed as fuzzy, soft, or non-research compared to quantitative studies (Pope & Mays 2000). These descriptors suggest that qualitative research is different from quantitative research. Qualitative research involves a sequence of steps for theory building. The first step is to make sense of texts by performing a first pass analysis to identify preliminary themes (Pope, Ziebland & Mays 2000). This task involves making sense of the materials and identifying social contexts, interactions, and perspectives that provide clues to patterns of meaning or behavior. The initial task is to identify broad themes or key words that emerge as consistent patterns in the data. Once identified, text blocks for each topic are coded, usually in a program designed for qualitative analysis (for example, Nud*IST, NVIVO, or Ethnograph) (Pope, Ziebland & Mays 2000). In this study, the collected data were coded and analyzed using a computer database program called NUD.IST Vivo (Nvivo). This software is suitable for qualitative research studies. It provides a ready means of storing, segmenting and organizing lengthy field notes, and it is designed to help the researcher find patterns in the field notes (Leedy and Ormrod 2005).

Qualitative analysis is important for several reasons (DeCoster & Lichtenstein 2007);

- The worldview of the researcher may not fit with the population being studied so that there may be gaps in descriptions or conclusions unless the participant is actively involved in the research process.
- The participant's priorities, motivations, and circumstances may be unknown to the researcher but may be important in answering the research question.

DeCoster and Lichtenstein (2007) state the following as drawbacks to qualitative analysis:

- Qualitative analysis requires a keen understanding of the participant's situation in order to understand the phenomenon of interest.
- The value of qualitative research relies more on the expertise of the researcher as an interpreter of subjective data than it does for quantitative research in which statistical programs perform much of the analysis.
- The individuals responsible for collecting the data for a qualitative study must be well trained in qualitative methodology and sensitive to the study context. Therefore, the qualitative analyst must be present at the interviews to ensure the integrity of the data.

4.13 Validity and reliability

There are two measures of the quality of research design: validity and reliability. Validity is the appropriateness, meaningfulness, and usefulness of the specific inferences made from the measures. Reliability is the degree to which observed scores are free from errors of measurement (Dooley 2001:76).

According to Yin (1994:33), all credible research must consider internal and external validity, as well as reliability. Internal validity deals with the establishment of a causal relationship whereby certain conditions lead to other conditions. As most case studies deal with prior events, one must use inferences to establish causality.

The challenge of validity is greater in mixed methods studies than in single studies (quantitative research or qualitative research alone). The challenge of validity refers to the difficulty in obtaining findings and/or making inferences that are credible, trustworthy, dependable, transferable, and/or confirmable (Onwuegbuzie & Johnson 2006). There is a wide range of threats to the validity and reliability of mixed methods research in the following categories: internal (contextual) validity, external validity (generalizability and transferability) and (procedural) reliability (Ryan *et al*, 2002). The threats may occur during the following phases of research: research design, data collection, analysis and interpretation (Onwuegbuzie 2003). While validity addresses

important issues that need to be taken into consideration, the traditional criteria are not sufficient alone for the purposes of mixed methods research. Other more specific threats are likely to exist in mixed methods research when quantitative and qualitative approaches are combined in research design, data collection, analysis and interpretation.

Onwuegbuzie and Johnson (2006) provided a typology of nine types of validity or legitimation for mixed methods researchers to consider (inside outside, sample integration, weakness minimization, sequential, conversion, paradigmatic mixing, commensurability, multiple validities, and political validity). According to Cohen, Manion and Morrison (2007: 133) attaining absolute validity and reliability in any study is an impossible goal for any research model. Nevertheless, investigators may approach these objectives by conscientiously balancing the various factors enhancing credibility within the context of their particular research problems and goals.

This study used the following methods to enhance validity and reliability:

- **Triangulation.** Leedy (1997) defines triangulation as the process of using multiple data collection methods, data sources, analysts, or theories to check the validity of the findings. Through triangulation, accuracy of data was sought in several ways: triangulation of data collection methods, triangulation of theories, and triangulation of data sources (see Section 4.6.1.1.1).
- **Pre-testing.** The interview guide and the questionnaire were pre-tested so as to increase reliability and validity and practicability of these instruments (Kothari 2004:111) (see Section 4.11.1). These tools were pretested in Morogoro urban district. Three wards were selected, which include; one urban ward, one mixed ward, and one rural ward. All these respondents comprised a convenience sample.
- **External validity** deals with the findings of a study being applicable or generalizable beyond the specific unit of analysis. In this area, case study research has drawn much criticism, especially from studies utilizing only one case (Yin 1994:36). This research addressed this issue by focusing on three regions in Tanzania, which represents the whole country.

- Most of the measures used in this study were drawn from previous research and have been proven to be reliable. This was to make sure that what was measured is what was intended to be measured.

However, once the data had been collected it was also deemed important to determine the degree to which it was reliable and internally valid. Various methods can be used to measure reliability but the common measure of reliability is internal consistency. This research project assessed consistency of the entire scale by drawing on Cronbach's Alpha (Hair et al. 2006). Cronbach's Alpha measures the internal reliability of a set of related items. Specifically, it summarises the extent to which a set of items are interrelated with each other (Hair et al. 2006). The measure has a coefficient ranging from 1 to 0; a value of 0.7 or less generally indicates unsatisfactory internal reliability. Furthermore, Factor Analysis was employed for the validation of the model.

4.14 Ethical considerations

In any research, there are a number of ethical issues, which need to be taken into consideration. The first ethical issue concerns informed consent, which means that prospective research participants must be fully informed about the procedures and risks involved in research and must give their consent to participate. Informed consent requires that participants be informed in advance about the overall purpose of the research (Bailey 2007:16; Johnson & Christensen 2008:109); for example, the main features of the study, its importance, as well as the risks and benefits of their participation. The consent can be communicated in written format, verbally and audio taped, or videotaped depending on the nature of the study. An informed consent form facilitates voluntary participation in the study (see Appendix 5). The informed consent protects the participants so that the researcher could not include a person in the study without getting approval from them first. This protects the individual from harm and protects the researcher from being sued or having their research deemed invalid or unethical.

In this study, the interviewed public and private officials were personally handed an introductory letter (see Appendix 4) explaining the purpose of this study and its

importance to the researcher's programme, and the public at large. In addition, the introductory letter explained the importance of respondents' participation in the research.

The researcher also guaranteed confidentiality by assuring the participants that their information would not be made available to anyone who is not directly involved in the study. As recommended by Bailey (2007:24), it is the researcher's responsibility to assure personal confidentiality of the participants/respondents. Moreover, this study adhered to the University of South Africa research ethics policy (UNISA 2010). The research complied with the University's code of conduct throughout the study. Furthermore, all sources used in the study are acknowledged.

4.15 Evaluation of research methodology

Research methods should be evaluated in order to explain the information that is needed, and how it is collected and analyzed (Ngulube 2005: 139). To evaluate is to judge or calculate the quality, importance, amount or value of something. The methodological shortcomings and the limitations of the research design have to be considered. In evaluating the research methodology, this study considered several issues, including the appropriateness of the data collection methods, the successes and challenges faced during data collection, how the study overcame the challenges, and if the researcher would recommend this methodology to future research in the same field.

This study aimed at assessing the current situation and the factors affecting access and use of e-government information and adoption of e-government in Tanzania. This study used the mixed method design for the purpose of triangulation of data collection methods, triangulation of theories, and triangulation of data sources. The validity and reliability of this study's findings were enhanced through triangulation. In addition, the mixed methods approach allowed the limitations of each approach to be minimized while strengths were built upon, thereby providing stronger and more accurate inferences (Creswell *et al*, 2003). The use of mixed questionnaires and semi-structured interviews enabled the researcher to get data, which answered the research questions.

Probability sampling techniques are primarily used in quantitatively oriented studies (Teddlie and Yu 2007: 77). However, in this study, probability sampling techniques could not be used due to lack of sample frame, time and financial constraints. Nonetheless, certain criteria (accessibility by roads; presence of public access ICTs such as telecentres, internet cafes; a diverse combination of urban area, peri-urban area and rural areas, geographical location and economic activities taking place in these regions) were used to select the areas which were involved in the study (regions, districts and wards) in order to make the findings valid and reliable. Moreover, households were selected on the criteria of high, medium and low concentration of households. Participants were selected basing on their position in the house, age, gender. This study strived to ensure equal representation of men, women and the elderly.

The mixed methods approach enabled the study to bring together a more comprehensive account of the area of inquiry where both quantitative and qualitative research methods were used. This study thus recommends that future researchers use mixed research design when conducting studies that investigate access of e-government information in citizen perspective (G2C).

4.16 Summary of the chapter

The chapter focused on the research methodology used in this chapter. It explains the research purpose of this study together with the research reasoning process. This study was descriptive and explanatory in nature. Deductive and inductive logic were applied in sequence to study the factors that influence the access to electronic government information. Three research paradigms were discussed (positivism, interpretivism and pragmatism). The pragmatic approach was adopted in this study. This study used the mixed method research for the purpose of triangulation to gather both quantitative and qualitative data and to check the accuracy of the data gathered by each method. Issues of validity and reliability were adhered to in order ensure credibility and trustworthiness of the research findings. Ethical guidelines, which were followed in this study were also presented in this chapter. The research findings are now presented in Chapter Five.

CHAPTER FIVE: DATA ANALYSIS AND PRESENTATION OF FINDINGS

5.1 Introduction

This study assessed the factors affecting access to e-government information and adoption of e-government in Tanzania in order to provide an e-government adoption model within which new initiatives might be evaluated. In addition, this research explored advanced nations' experiences in order to draw some valuable lessons for the Tanzania situation. The previous chapter discussed the research methodology adopted in the study. Having applied the research methodology, this chapter presents the results generated from the survey (questionnaires, interviews and the literature review). Nine wards in three districts of Tanzania were surveyed. These districts included Kinondoni district (Dar es Salaam Region), Morogoro Town district (Morogoro Region) and Njombe Town district (Njombe Region).

Four hundred and fifty respondents participated in the study, as observed in the previous chapter, but three questionnaires were not usable. It should be noted that while the total number of the useful questionnaire was 448 in certain circumstances, the reported results are based on fewer cases because some respondents did not answer all the questions. In other words, the results indicated the percentage of the actual respondents to a particular question rather than the percentage of the total sample. With respect to the descriptive results, in situations where all or two of the tools were used, the results from the questionnaire are reported first and followed by those from the interview.

This chapter is divided into three main sections. The first section presents the descriptive statistics. The second section deals with factor analysis for the items which were used to measure the role of access to government information to e-government adoption and factor analysis for the items which were used to measure factors that enhance/inhibit e-government adoption. The third section answers the following research questions;

- What are the current government information needs?

- What role does the access and use of government information and service play to e-government adoption?
- What are the factors that enhance access and use of electronic government information and services?
- What are the factors that might hinder the usage and access of electronic government information and services?
- What is the current status of e-government in Tanzania?
- What lessons can be learnt from other countries leading in e-government?
- What are the opportunities for e-government in Tanzania?

5.2 Characteristics of the respondents

The discussion on the characteristics of the respondents who participated in the semi-structured questionnaires is based on gender, age, education level, occupation and ownership of electricity and ICTs in the surveyed districts of Tanzania. The study of these characteristics may show the effects of these characteristics to the adoption of e-government in Tanzania.

5.2.1 Gender and age

It was observed that 246 (54.7%) of the respondents were male and 202 (44.9%) were female. The distribution of the respondents by age revealed that 152 (33.8%) were aged between 20-30 years; 166 (36.9%) were between 31-40 years; and 82 (18.2%) were between 41-50 years; 40 (8.9%) were aged between 51-60 years; 7 (1.6%) were above 60 years. From these findings, it can be noted that majority of the respondents were aged between 41-50 years followed by those who were aged between 20-30 years while those beyond sixty years were the minority in the group.

5.2.2 Education

This study indicated that male respondents dominated the highest education category as compared to female respondents. Male respondents accounted for 5 (2%) of those who never attended school; 80 (32.5%) with primary school education; 35 (14.2%) with O-level secondary education; 9 (3.7%) with A-level secondary education; 76 (30.9%) with

advanced diploma or university degree; 38 (15.4%) with post graduate, masters degree or doctoral degree and 3 (1.2%) with other qualifications.

The larger number of the respondents who never attended school was found in Njombe town districts: Njombe peri-urban 2 (4.0%); Njombe rural 3 (6.0%) and Njombe urban 1 (2.0%). Other respondents who never attended school were also found in Dar-es-Salaam urban ward 1 (2.0%) and in Morogoro rural ward 5 (10.0%) as indicated in Table 5-1.

Table 5-1 Respondents' education level

| Ward | | Never attended school | Primary school | O-level secondary school | A-level secondary school | advanced diploma or university degree | post graduate or masters degree | other | Total |
|--------------------------|--------|-----------------------|----------------|--------------------------|--------------------------|---------------------------------------|---------------------------------|---------|------------|
| Kinondoni- peri-urban | Male | | 3 (8.3%) | 4(11.1%) | 3(8.3%) | 19(52.8%) | 7(19.4%) | - | 36(100%) |
| | Female | - | - | 2(13.3%) | - | 10(66.7%) | 3(20.0%) | - | 15(100%) |
| | Total | - | 3(5.9%) | 6(11.8%) | 3(5.9%) | 29(56.9%) | 10(19.6%) | - | 50(100.0%) |
| Kinondoni- rural | Male | - | 3(10.7%) | 5(17.9%) | 3(10.7%) | 14(50.0%) | 3(10.7%) | - | 28(100.0%) |
| | Female | - | 1(5.0%) | 10(50.0%) | - | 7(35.0%) | 2(10.0%) | - | 20(100.0%) |
| | Total | - | 4(8.3%) | 15(31.3%) | 3(6.3%) | 21(43.8%) | 5(10.4%) | - | 48(100.0%) |
| Kinondoni- urban | Male | - | - | - | 1(4.2%) | 14(58.3%) | 9(37.5%) | - | 24(100.0%) |
| | Female | 1(4.0%) | 1(4.0%) | 4(16.0%) | 3(12.0%) | 6(24.0%) | 10(40.0%) | - | 25(100.0%) |
| | Total | 1(2.0%) | 1(2.0%) | 4(8.2%) | 4(8.2%) | 20(40.8%) | 19(38.8%) | - | 49(100.0%) |
| Morogoro- peri-urban | Male | - | 4(13.3%) | 2(6.7%) | - | 12(40.0%) | 11(36.7%) | 1(3.3%) | 30(100.0%) |
| | Female | - | 3(15.0%) | 3(15.0%) | - | 8(40.0%) | 6(30.0%) | - | 20(100.0%) |
| | Total | - | 7(14.0%) | 5(10.0%) | - | 20(40.0%) | 17(34.0%) | 1(2.0%) | 50(100.0%) |
| Morogoro- rural | Male | 4(16.7%) | 18(75.0%) | 2(8.3%) | - | - | - | - | 24(100.0%) |
| | Female | 1(3.8%) | 23(88.5%) | 2(7.7%) | - | - | - | - | 26(100.0%) |
| | Total | 5(10.0%) | 41(82.0%) | 4(8.0%) | - | - | - | - | 50(100.0%) |
| Morogoro- urban | Male | - | 4(17.4%) | 6(26.1%) | 2(8.7%) | 6(26.1%) | 4(17.4%) | 1(4.3%) | 23(100.0%) |
| | Female | - | - | 8(29.6%) | - | 13(48.1%) | 6(22.2%) | - | 27(100.0%) |
| | Total | - | 4(8.0%) | 14(28.0%) | 2(4.0%) | 19(38.0%) | 10(20.0%) | 1(2.0%) | 50(100.0%) |
| Njombe- | Male | - | 23(79.3%) | 6(20.7%) | - | - | - | - | 29(100.0%) |

| Ward | | Never attended school | Primary school | O-level secondary school | A-level secondary school | advanced diploma or university degree | post graduate or masters degree | other | Total |
|-------------------|--------------|-----------------------|----------------|--------------------------|--------------------------|---------------------------------------|---------------------------------|---------|------------|
| peri-urban | Female | 2(9.5%) | 16(76.2%) | 3(14.3%) | - | - | - | - | 21(100.0%) |
| | Total | 2(4.0%) | 39(78.0%) | 9(18.0%) | - | - | - | - | 50(100.0%) |
| Njbe-rural | Male | - | 19(86.4%) | 3(13.6%) | - | - | - | - | 22(100.0%) |
| | Female | 3(10.7%) | 22(78.6%) | 1(3.6%) | - | 1(3.6%) | - | 1(3.6%) | 28(100.0%) |
| | Total | 3(6.0%) | 41(82.0%) | 4(8.0%) | - | 1(2.0%) | - | 1(2.0%) | 50(100.0%) |
| Njbe-urban | Male | 1(3.3%) | 6(20.0%) | 7(23.3%) | - | 11(36.7%) | 4(13.3%) | 1(3.3%) | 30(100.0%) |
| | Female | - | 4(20.0%) | 9(45.0%) | 1(5.0%) | 4(20.0%) | 1(5.0%) | 1(5.0%) | 20(100.0%) |
| | Total | 1(2.0%) | 10(20.0%) | 16(32.0%) | 1(2.0%) | 15(30.0%) | 5(10.0%) | 2(4.0%) | 50(100.0%) |

5.2.3 Occupation

In this study 127 (28.2%) respondents were government employees, 64 (14.2%) were business sector employees, 47 (10.4%) were self-employed, 48 (10.7%) were students; 134 (29.8%) were farmers, 21 (4.7%) were academicians, 2 (0.4%) were retired or unemployed and 5 (1.1%) were in other categories.

5.2.4 Income

The study found out that 103 (22.9%) belonged to the income class of less than TZS. 30,000 per month, while 62 (13.8%) belonged to the income class of higher than 1000,000 Tanzanian shillings (TZS) per month as summarized in Table 5-2, which shows different categories of respondents' income per month. The amounts are reported in TZS because some amounts become very small when they are reported in US dollars, hence distorting the meaning. The 1595.83TZS per US dollar exchange rate was used, as per the Bank of Tanzania of 29th March 2013, to obtain the US dollar equivalent.

Table 5-2 Respondents income categories

| Monthly income | Frequency | Percent |
|-------------------------|-----------|---------|
| Less than 30,000 | 103 | 22.9 |
| 30,000-100,000 | 65 | 14.4 |
| 101,000-400,000 | 62 | 13.8 |
| 401,000-600,000 | 35 | 7.8 |
| 601,000-1,000,000 | 56 | 12.4 |
| Above 1,000,000 | 62 | 13.8 |
| Not applicable | 43 | 9.6 |
| I do not want to answer | 22 | 4.9 |

5.2.5 Access to electricity and ownership of ICT equipment

Table 5-3 shows the percentage of respondents who had electricity and access to a laptop, desktop computer, mobile, radio and television. Respondents were required to indicate which of earlier mentioned equipment they owned, and multiple responses were allowed.

Table 5-3 Responses on ICTs ownership

| Item | Frequency | Percent |
|------------------|-----------|---------|
| Electricity | 292 | 64.9 |
| Laptop | 161 | 35.8 |
| Desktop computer | 83 | 18.4 |
| Mobile | 390 | 13.3 |
| Radio | 331 | 73.8 |
| Television | 236 | 52.4 |

5.3 Access to internet and e-government adoption

The results in Table 5-4 indicate that consulting internet or websites when seeking government information and services was disagreed or strongly disagreed to by a majority of the respondents 258 (57.4%). This was followed by 170 (37.8%) of the respondents who strongly agreed or agreed that they consulted the internet or websites when they needed government information and services.

Table 5-4 Access to internet

| | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly disagree | 215 | 48.0 |
| Disagree | 43 | 9.6 |
| Undecided | 20 | 4.5 |
| Agree | 54 | 12.1 |
| Strongly agree | 116 | 25.9 |
| Total | 448 | 100.0 |

As observed in Table 5-5, the majority of the respondents indicated that they benefited from accessing electronic government information. For example, 82 (18.2%) agreed that they were able to access new and better markets and 59 (13.1%) strongly agreed that they were able to access new and better markets.

Table 5-5 Responses on net benefit

| Factors | Ratings (number & percentage) | | | | |
|---|-------------------------------|----------|----------|----------------|-----------|
| | Strongly disagree | Disagree | Agree | Strongly agree | Undecided |
| It has enabled me to make rational decision and take appropriate action | 72(16.0) | 35(7.8) | 52(11.6) | 65(14.4) | 68(15.1) |
| My business has improved or expanded | 68(15.1) | 36(8.0) | 85(18.9) | 51(11.3) | 46(10.2) |
| Easy coordination of activities | 71(15.8) | 43(9.6) | 52(11.6) | 59(13.1) | 59(13.1) |
| Improvement in skills | 74(16.4) | 35(7.8) | 54(12.0) | 67(14.9) | 62(13.8) |
| Improved in awareness of government services | 49(10.9) | 51(11.3) | 49(10.9) | 70(15.6) | 69(15.3) |
| Accessed new and better markets | 66(14.7) | 42(9.3) | 82(18.2) | 59(13.1) | 40(8.9) |
| Improved living standards | 71(15.8) | 41(9.1) | 72(16.0) | 51(11.3) | 50(11.1) |
| Increased income | 71(15.8) | 39(8.7) | 69(15.3) | 53(11.8) | 57(12.7) |
| New and better opportunities | 65(14.4) | 42(9.3) | 63(14.0) | 63(14.0) | 57(12.7) |
| Job opportunities | 69(15.3) | 38(8.4) | 66(14.7) | 61(13.6) | 57(12.7) |
| Access to educational opportunities | 69(15.3) | 42(9.3) | 57(12.7) | 69(15.3) | 53(11.8) |
| Access to medical services | 63(14.0) | 54(12.0) | 69(15.3) | 52(11.6) | 53(11.8) |

Factor analysis was carried out for items such as net-benefit, quality, trust, satisfaction, intention to use, relative advantage, image and compatibility. In addition, factor analysis was carried out on perceived ease of use, perceived usefulness, social influence, cultural barriers and information needs items, which were used to measure the role that access to e-government information may play in e-government adoption and for the items that were used to measure factors influencing e-government adoption. Factor analysis was carried out for the following reasons:

- To explain the pattern of correlations within a set of observed variables.
- To identify a smaller number of factors that explain most of the variances observed in a much larger number of manifest variables.
- To screen variables for subsequent analysis.

Factor analysis was carried out on net benefit with regard to the role of access to e-government information to e-government adoption.

5.3.1 Factor analysis (net benefit)

Net benefit was measured by twelve (12) items (question 514). Table 5-6 shows the correlation matrix for the twelve items as designed in the questionnaire. All items are strongly correlated at 0.01 level of significance, which gives a strong base to continue with factor analysis.

Table 5-6 Correlation among the items used to measure net benefit

| 514a | 514b | 514c | 514d | 514e | 514f | 514g | 514h | 514i | 514j | 514k | 514l |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| 1 | | | | | | | | | | | |
| .459** | 1 | | | | | | | | | | |
| .740** | .589** | 1 | | | | | | | | | |
| .694** | .428** | .786** | 1 | | | | | | | | |
| .725** | .311** | .629** | .747** | 1 | | | | | | | |
| .278** | .631** | .427** | .306** | .306** | 1 | | | | | | |
| .375** | .493** | .458** | .441** | .363** | .590** | 1 | | | | | |
| .143* | .473** | .262** | .172** | .069 | .613** | .628** | 1 | | | | |
| .501** | .499** | .552** | .461** | .393** | .590** | .612** | .601** | 1 | | | |
| .222** | .415** | .370** | .336** | .248** | .521** | .521** | .470** | .552** | 1 | | |
| .432** | .402** | .496** | .474** | .426** | .422** | .429** | .349** | .517** | .548** | 1 | |
| .009 | .286** | .118* | .096 | .010 | .443** | .332** | .484** | .349** | .378** | .291** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Before proceeding with factor analysis, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were conducted to determine whether or not it was appropriate to conduct factor analysis. The determined KMO measure of sampling adequacy was 0.872. The Bartlett' test of Sphericity was found to be significant (0.000). The results suggested that the data could support factor analysis. Crobanch's alpha was calculated among the twelve set of variables used in the factor analysis to determine the reliability of those questions for measuring a single construct. The value of Crobanch alpha was 0.898, hence, a good internal consistency of the scores for the twelve items. This is due to the fact that the level of alpha that indicates an acceptable level of reliability is 0.70 or higher. The factor analysis results are presented in Table 5-7.

Table 5-7 Factor analysis of net benefit

| Item | Component | |
|---|-----------|-------|
| | 1 | 2 |
| Increased income | .850 | .003 |
| Accessed new and better markets | .796 | .245 |
| Job opportunities | .703 | .219 |
| Access to medical services | .701 | -.172 |
| Improved living standards | .701 | .359 |
| New and better opportunities | .692 | .450 |
| Business improved or expanded | .613 | .444 |
| Access to educational opportunities | .504 | .453 |
| Make rational decision and take appropriate actions | .103 | .876 |
| Improvement in skills | .168 | .867 |
| Improved awareness of government services | .043 | .864 |
| Easy coordination of activities | .309 | .835 |

As noted from Table 5-7, the exploratory factor analysis yielded two constructs from the twelve items. The factor loadings of the items ranged from 0.5 to 0.9. The weight of all the factor items is not less than 0.5. These factors are listed as ne_1 and ne_2.

5.4 Factor analysis: factors which enhance/hinder access to electronic government information

The literature mentioned several factors that have a negative or positive impact on accessing electronic government information (Al-Shafi & Weerakkody 2010; Belanger & Carter 2008; Choudrie & Dwivedi 2005; Gupta, Dasgupta & Gupta 2008). Questions 401a-401y were assessed to find the factors, which enhance and those that inhibit access to electronic government information. Table 5-8 shows the correlation matrix for the items assessed (401a-401y). An inspection of the correlation matrix reveals that the majority of the correlations are significant, at 0.001 level, which provides a strong basis to proceed with factor analysis. The findings from the factor analysis show the emergence of a five-factor solution as indicated in Table 5-9. The factors were labelled as fact_1, fac_2, fac_3, fac_4 and fac_5. The KMO measure of sampling adequacy was 0.921, which is good for factor analysis and the Bartlett's Test of Sphericity found to be significant at 0.000. The internal consistency of the items was also good with the Cronbach alpha value of 0.927.

Table 5-8 Correlation among the factors that enhance/hinder access to e-government information

| | 401a | 401b | 401c | 401d | 401e | 401f | 401g | 401h | 401i | 401j | 401k | 401l | 401m | 401n | 401o | 401p | 401q | 401r | 401s | 401t | 401u | 401v | 401w | 401x | 401y | 401z |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 401a | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 401b | .698** | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| 401c | .486** | .518** | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| 401d | .154** | .200** | .317** | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 401e | .766** | .664** | .543** | .225** | 1 | | | | | | | | | | | | | | | | | | | | | |
| 401f | .269** | .358** | .262** | .288** | .275** | 1 | | | | | | | | | | | | | | | | | | | | |
| 401g | .467** | .502** | .451** | .235** | .467** | .393** | 1 | | | | | | | | | | | | | | | | | | | |
| 401h | .600** | .724** | .522** | .166** | .649** | .247** | .488** | 1 | | | | | | | | | | | | | | | | | | |
| 401i | .143** | .258** | .301** | .122** | .275** | .234** | .289** | .200** | 1 | | | | | | | | | | | | | | | | | |
| 401j | .219** | .231** | .116* | .317** | .250** | .248** | .219** | .162** | .152** | 1 | | | | | | | | | | | | | | | | |
| 401k | .084 | .134** | .177** | .225** | .196** | .090 | .122* | .111* | .236** | .137** | 1 | | | | | | | | | | | | | | | |
| 401l | .085 | .060 | .116* | .359** | .108* | .175** | .130** | -.031 | .050 | .339** | .373** | 1 | | | | | | | | | | | | | | |
| 401m | .218** | .185** | .213** | .230** | .228** | .183** | .229** | .077 | .184** | .189** | .246** | .363** | 1 | | | | | | | | | | | | | |
| 401n | .398** | .435** | .440** | .258** | .476** | .305** | .395** | .381** | .223** | .135** | .213** | .267** | .399** | 1 | | | | | | | | | | | | |

| | 401a | 401b | 401c | 401d | 401e | 401f | 401g | 401h | 401i | 401j | 401k | 401l | 401m | 401n | 401o | 401p | 401q | 401r | 401s | 401t | 401u | 401v | 401w | 401x | 401y | 401z |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 401o | .439** | .391** | .295** | .288** | .389** | .285** | .356** | .317** | .166** | .322** | .126** | .231** | .275** | .390** | 1 | | | | | | | | | | | |
| 401p | .619** | .596** | .446** | .175** | .658** | .291** | .413** | .592** | .214** | .191** | .140** | .120** | .255** | .533** | .465** | 1 | | | | | | | | | | |
| 401q | .395** | .475** | .502** | .246** | .487** | .187** | .368** | .471** | .269** | .078 | .229** | .132** | .250** | .563** | .262** | .527** | 1 | | | | | | | | | |
| 401r | .202** | .193** | .193** | .196** | .177** | .238** | .210** | .120** | .182** | .208** | .129** | .204** | .129** | .315** | .150** | .179** | .301** | 1 | | | | | | | | |
| 401s | .251** | .338** | .371** | .341** | .240** | .390** | .317** | .223** | .218** | .234** | .190** | .214** | .225** | .406** | .296** | .237** | .340** | .404** | 1 | | | | | | | |
| 401t | .371** | .382** | .397** | .371** | .357** | .329** | .389** | .328** | .221** | .210** | .151** | .239** | .303** | .577** | .331** | .443** | .431** | .417** | .436** | 1 | | | | | | |
| 401u | .403** | .365** | .435** | .332** | .418** | .302** | .390** | .307** | .143** | .185** | .132** | .200** | .323** | .593** | .321** | .429** | .443** | .351** | .441** | .700** | 1 | | | | | |
| 401v | .338** | .364** | .383** | .379** | .377** | .264** | .400** | .323** | .159** | .189** | .176** | .218** | .287** | .617** | .297** | .425** | .530** | .336** | .390** | .655** | .696** | 1 | | | | |
| 401w | .513** | .480** | .413** | .176** | .439** | .271** | .385** | .434** | .221** | .153** | .139** | .144** | .191** | .428** | .399** | .491** | .389** | .259** | .327** | .430** | .481** | .443** | 1 | | | |
| 401x | .222** | .164** | .191** | .318** | .178** | .270** | .286** | .092 | .106* | .330** | .167** | .318** | .184** | .283** | .355** | .205** | .169** | .330** | .332** | .387** | .367** | .363** | .346** | 1 | | |
| 401y | .275** | .331** | .452** | .245** | .347** | .217** | .338** | .391** | .234** | .110* | .268** | .088 | .170** | .414** | .203** | .383** | .452** | .122 | .254** | .318** | .315** | .438** | .355** | .225** | 1 | |
| 401z | - | -.413* | -.102 | -.444* | - | - | -.189 | -.107 | -.152 | -.364 | -.434* | -.098 | -.429* | -.208 | -.206 | .002 | -.337 | -.282 | -.139 | -.320 | -.359 | -.206 | -.075 | -.492* | .189 | 1 |

The * and ** indicate that the correlation coefficient is significant at 0.01 and 0.05 levels respectively.

Table 5-9 Factors which enhance/hinder access to e-government information

| Items | Components | | | | | | | |
|---|------------|-------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Internet connections are available and reliable | .890 | .115 | .137 | .185 | .069 | .050 | .133 | .048 |
| I have the necessary knowledge to access government information through the government website | .806 | .174 | .223 | -.126 | -.275 | -.032 | -.010 | .179 |
| My government conducts marketing campaigns for people to use internet when seeking for information (awareness programs) | .675 | .115 | -.210 | -.361 | -.256 | -.039 | .237 | -.111 |
| I am confident to use government website | .647 | .146 | .303 | -.060 | -.081 | .029 | .025 | .193 |
| I have the necessary resources to access information from the government website (for example IT infrastructure, internet access) | .617 | .301 | -.109 | -.099 | .103 | .091 | .557 | -.171 |
| Geographical location does not affect information accessibility through the internet | -.002 | .876 | .278 | .113 | -.145 | .036 | -.003 | .012 |
| I get as much information about the services as possible | .273 | .804 | -.164 | -.028 | .032 | -.041 | -.082 | -.048 |
| The government sector devotes funds to support the provision of government information through internet | .285 | .703 | -.244 | .036 | .235 | .381 | .008 | -.370 |
| I am not worried about security and privacy of information in the government website | .232 | .655 | -.008 | .253 | .319 | -.056 | .260 | .187 |
| There is reliable electricity | .006 | .624 | .259 | .136 | .260 | -.412 | -.439 | -.032 |
| The information content is in the language which I understand | -.099 | .597 | -.141 | .357 | -.296 | .159 | -.163 | .395 |
| Information and services are accessible conveniently using devices such as cell phones | -.131 | .043 | -.808 | -.281 | -.076 | -.115 | .093 | .085 |
| The website offers disability access | .376 | -.342 | .750 | .079 | .123 | .161 | .027 | -.206 |
| I get information on demand | .198 | .333 | .741 | -.114 | -.245 | .246 | .136 | .199 |
| There is a positive incentive that has resulted from using the internet to search for government information | .072 | .093 | .694 | -.468 | .343 | -.039 | .168 | -.050 |
| I have a computer/mobile phone | -.061 | .027 | .098 | .829 | -.061 | -.090 | -.138 | -.202 |
| There is up to date information | .143 | -.061 | .013 | .802 | -.063 | -.079 | -.139 | -.037 |
| Guidance is available for me to use the internet effectively for information access | .107 | .324 | -.015 | .739 | .068 | -.086 | .109 | .235 |

| Items | Components | | | | | | | |
|--|------------|-------|-------|-------|-------|-------|-------|-------|
| I can afford internet costs | .291 | .047 | -.033 | -.037 | -.764 | .137 | .124 | -.092 |
| There is a search criteria making easy access | .269 | .247 | .199 | -.039 | .710 | .202 | .185 | -.376 |
| Our government motivates citizens to use internet when seeking government information by for example giving free computers/laptops, mobile phones and providing free public internet access points | .434 | .076 | -.436 | .073 | .456 | -.265 | .277 | .353 |
| I get the information I need | -.003 | .314 | .228 | .105 | -.018 | .847 | -.222 | .051 |
| The internet can be easily domesticated into personal everyday routines, hence, used more often | .101 | -.355 | .242 | -.191 | -.073 | .777 | .273 | .095 |
| My previous experience with internet has enhanced my continuous usage | .039 | -.125 | .105 | .099 | -.001 | -.034 | .914 | -.082 |
| There is a national policy and regulation for usage, data protection and copyrights | .401 | .002 | -.093 | -.001 | .008 | .137 | -.140 | .843 |

Internet/website use was employed as a dependent variable to assess factors, which enhance/hinder e-government adoption in Tanzania.

5.5 Other factors which enhance/hinder e-government adoption

This section demonstrates the results of factor analysis of quality, trust, satisfaction, intention to use, relative advantage, image, compatibility, perceived ease of use, perceived usefulness and social influence. These factors were used as independent variables in the subsequent analysis.

5.5.1 Quality

Sixteen items were used to measure quality (question 502). Table 5-10 shows the correlation matrix of the scale used to measure quality. All the items are strongly correlated and are significant at the 0.01 level. The result of KMO measure of sampling adequacy was 0.901, which is good for factor analysis. The Bartlett's test of Sphericity was found to be significant at 0.000.

Table 5-10 Correlation among the items used to measure quality

| | 501a | 501b | 501c | 501d | 501e | 502a | 502b | 502c | 502d | 502e | 502f | 503a | 503b | 503c | 503d | 503e |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| 501a | 1 | | | | | | | | | | | | | | | |
| 501b | .872** | 1 | | | | | | | | | | | | | | |
| 501c | .724** | .805** | 1 | | | | | | | | | | | | | |
| 501d | .711** | .758** | .815** | 1 | | | | | | | | | | | | |
| 501e | .316** | .324** | .361** | .436** | 1 | | | | | | | | | | | |
| 502a | .280** | .308** | .301** | .333** | .205** | 1 | | | | | | | | | | |
| 502b | .328** | .378** | .366** | .404** | .230** | .864** | 1 | | | | | | | | | |
| 502c | .255** | .281** | .265** | .325** | .208** | .792** | .822** | 1 | | | | | | | | |
| 502d | .382** | .438** | .353** | .389** | .239** | .669** | .718** | .698** | 1 | | | | | | | |
| 502e | .373** | .398** | .353** | .425** | .249** | .657** | .647** | .642** | .717** | 1 | | | | | | |
| 502f | .349** | .359** | .356** | .392** | .246** | .670** | .659** | .624** | .620** | .706** | 1 | | | | | |
| 503a | .344** | .347** | .385** | .380** | .271** | .587** | .624** | .577** | .531** | .635** | .698** | 1 | | | | |
| 503b | .428** | .458** | .478** | .477** | .296** | .548** | .622** | .563** | .534** | .582** | .655** | .782** | 1 | | | |
| 503c | .369** | .383** | .430** | .469** | .318** | .524** | .551** | .552** | .514** | .580** | .635** | .774** | .864** | 1 | | |
| 503d | .243** | .259** | .356** | .381** | .263** | .452** | .466** | .467** | .455** | .452** | .478** | .589** | .632** | .710** | 1 | |
| 503e | .234** | .246** | .338** | .377** | .280** | .428** | .464** | .495** | .422** | .455** | .508** | .632** | .625** | .681** | .832** | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 5-11, factor analysis of the items suggests a three factor solution which was labelled qual_1, qual_2 and qual_3. Item 501e was not included in the constructs because its factor loading was less than 0.5. The Cronbach's alpha for the entire scale was found to be 0.773, which indicates that internal consistency was high.

Table 5-11 Factor analysis of quality

| Items | Components | | |
|---|------------|------|------|
| | 1 | 2 | 3 |
| 502a accuracy: the website provides accurate information | .871 | .106 | .199 |
| 502b reliability: the website provides reliable information | .867 | .174 | .240 |
| 502c relevance: the website provides relevant information | .845 | .048 | .255 |
| 502d easiness: the website provides easy to understand information | .783 | .249 | .182 |
| 502e the information provided by this website is in useful format | .748 | .228 | .281 |
| 502f information provided by this website meets my needs | .703 | .177 | .390 |
| 501b the government website is easy to learn | .211 | .914 | .058 |
| 501a the government website is easy to use | .189 | .889 | .059 |
| 501c I find it easy to get this website to do what I want it to do | .133 | .867 | .219 |
| 501d using government the website does not require a lot of effort | .190 | .837 | .238 |
| 501e using the government website is not often frustrating | .031 | .403 | .321 |
| 503e the government website is designed to satisfy the needs of citizens | .253 | .098 | .856 |
| 503d the government website is designed with citizens' best interest at heart | .227 | .126 | .842 |
| 503c the government website gives prompt services to citizens | .383 | .254 | .779 |

| Items | Components | | |
|--|------------|------|------|
| 503b the government website provides services at the times it promises | .434 | .311 | .685 |
| 503a the government website provides reliable services | .516 | .194 | .655 |

5.5.2 Trust

Seven items were used to measure trust (question 504). Table 5-12 shows the correlation matrix for the seven items used to measure trust. The correlation table shows that all of the correlations are significant at the 0.01 level. Factor analysis can be done on the items since the items are correlated.

Table 5-12 Correlations among the items used to measure trust

| | 504a | 504b | 504c i | 504d | 505a | 505b | 505c | 506a |
|-------------|--------|--------|--------|--------|--------|--------|--------|------|
| 504a | 1 | | | | | | | |
| 504b | .830** | 1 | | | | | | |
| 504c | .820** | .880** | 1 | | | | | |
| 504d | .759** | .856** | .887** | 1 | | | | |
| 505a | .479** | .500** | .505** | .572** | 1 | | | |
| 505b | .469** | .509** | .488** | .507** | .796** | 1 | | |
| 505c | .444** | .467** | .452** | .492** | .749** | .882** | 1 | |
| 506a | .413** | .473** | .464** | .491** | .460** | .475** | .489** | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

The factor analysis results indicate that the items are valid, as the KMO measure is 0.852 and Bartlett's Test of Sphericity was significant (0.000). Factor analysis led to two factors, and all the items had a significant loading (Table 5-13). The first factor was labelled trus_1 and the second factor was labelled trus_2. The Crobach alpha for the entire scale was found to be 0.876, which shows that the internal consistency was high.

Table 5-13 Factor analysis of trust

| Item | Component | |
|------|-----------|------|
| | 1 | 2 |
| 504c | .920 | .253 |
| 504b | .908 | .267 |
| 504a | .879 | .258 |
| 504d | .877 | .317 |
| 505b | .266 | .923 |
| 505c | .232 | .915 |
| 505a | .327 | .841 |

5.5.3 Satisfaction

Seven items were used to measure satisfaction (question 506). Table 5-14 shows the correlation matrix for the seven items used to measure trust. The correlation table shows that all of the correlations are significant at the 0.01 level. Factor analysis can be done on the items since the items are correlated.

Table 5-14 Correlations among the items used to measure trust

| | 506a | 506b | 506c | 506d | 506e | 506f | 506g |
|------|--------|--------|--------|--------|--------|--------|------|
| 506a | 1 | | | | | | |
| 506b | .872** | 1 | | | | | |
| 506c | .646** | .703** | 1 | | | | |
| 506d | .604** | .591** | .800** | 1 | | | |
| 506e | .572** | .579** | .480** | .499** | 1 | | |
| 506f | .510** | .542** | .337** | .328** | .703** | 1 | |
| 506g | .521** | .521** | .376** | .389** | .695** | .748** | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

The factor analysis results indicate that the items are valid, as the KMO measure is 0.812 and the Bartlett Test of Sphericity is significant at 0.000. Factor analysis led to two factors, and all the items had a significant loading as observed in Table 5-15. The factors are labelled Satis_1 and Satis_2. The Cronbach alpha for the entire scale was found to be 0.738 which shows the internal consistency is high.

Table 5-15 Factor analysis of satisfaction

| Item | Component | |
|--|-----------|------|
| | 1 | 2 |
| My overall satisfaction level with regard to the internet is better than I expected | .912 | .165 |
| The overall quality of the internet is better than I thought it would be | .875 | .167 |
| Using internet to obtain government information is effective to accomplish my purpose | .761 | .457 |
| Using the internet to obtain government information is adequate to accomplish my purpose | .743 | .463 |
| I will continue accessing government information on the internet even if others in my community do not | .179 | .907 |
| I prefer accessing government information from the internet when I need government services | .232 | .869 |
| I will recommend the website that provides government information to friends/colleagues/family | .377 | .789 |

5.5.4 Intention to use

Four items were used to measure intention to use (question 507). Table 5-16 shows the correlation matrix of the scale used to measure intention to use. All the items are strongly correlated and significant at the 0.01 level. The result of KMO measure of sampling adequacy was 0.737, which is good for factor analysis. The Bartlett's Test of Sphericity was found to be significant at 0.000.

Table 5-16 Correlations among the items used to measure intention to use

| | 507a | 507b | 507c | 507d |
|------|--------|--------|--------|------|
| 507a | 1 | | | |
| 507b | .515** | 1 | | |
| 507c | .854** | .661** | 1 | |
| 507d | .698** | .519** | .663** | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

As displayed in Table 5-17, the entire load is on one factor, which is labelled int_us1. The internal consistency of scores on the four items is good, with Cronbach alpha at 0.860. This suggest that these items can be used together to create a composite variable for the intention to use factor.

Table 5-17 Factor analysis of intention to use

| Item | Component |
|--|-----------|
| | 1 |
| I intend to increase my use of the internet to access government information in the future | .930 |
| I intend to continue using internet to access government information in the future | .900 |
| I will continue using internet to access government information in the future | .834 |
| I will regularly use internet to access government information in the future | .766 |

5.5.5 Relative advantage

Four items were used to measure relative advantage (question 508). Table 5-18 shows the correlation matrix of the scale used to measure relative advantage. All the items are strongly correlated and significant at 0.01 level.

Table 5-18 Correlations among items used to measure relative advantage

| | 508a | 508b | 508c | 508d |
|------|--------|--------|--------|------|
| 508a | 1 | | | |
| 508b | .669** | 1 | | |
| 508c | .611** | .686** | 1 | |
| 508d | .480** | .503** | .519** | 1 |

The results of KMO measure of sampling adequacy was 0.803, which can be used for factor analysis. The Bartlett's Test of Sphericity was found to be significant at 0.000. As displayed in Table 5-19, the entire load is on one factor. The internal consistency of scores on the four items is good, with Cronbach alpha at 0.847. This suggests that the items can be used together to create a composite variable for the relative advantage factor and is labelled rel_ad1.

Table 5-19 Factor analysis of relative advantage

| Item | Component |
|---|-----------|
| Internet enables me to meet my government information needs | .883 |
| Internet offers me personalized government services | .856 |
| Using internet to access government information enabled me to better manage my daily activities | .842 |
| Using internet enables me to have access to timely government information and services | .729 |

5.5.6 Image

Five items were used to measure the image factor (question 509). The KMO measure of sampling adequacy was 0.698, which is sufficient for factor analysis. The Bartlett's Test of Sphericity is significant at 0.000. The correlations are significant at 0.01 level as indicated in Table 5-20

Table 5-20 Correlations among the items used to measure image

| | 509a | 509b | 509c | 509d | 509e |
|------|--------|--------|--------|--------|------|
| 509a | 1 | | | | |
| 509b | .701** | 1 | | | |
| 509c | .702** | .706** | 1 | | |
| 509d | .104 | .084 | .031 | 1 | |
| 509e | .161** | .260** | .160** | .454** | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

The factor analysis led to two factors, and all items had a significant loading as indicated in Table 5-21. The first factor is labelled *imag_1* and the second is labelled as *imag_2*. The items had internal consistency with Cronbach alpha at 0.717, which indicates inter-relatedness between the items. After factor analysis, the value of alpha dropped to 0.257. This could be due to a low number of questions. The items would be discarded in the event of a low Cronbach alpha due to poor correlation between items.

Table 5-21 Factor analysis of image

| | Component | |
|---|-----------|------|
| | 1 | 2 |
| People who use the internet to obtain government information are trendy | .899 | .018 |
| Using internet to obtain government information improves my image | .885 | .090 |
| People who use the internet to obtain government information are IT savvy | .884 | .145 |
| Only young people use the internet to obtain government information | -.001 | .864 |
| People who use the internet to obtain government information have more prestige | .166 | .832 |

5.5.7 Compatibility

Four items were used to measure compatibility (question 510). Table 5-22 shows the correlation matrix of the scale used to measure compatibility. All the items are strongly correlated and significant at the 0.01 level.

Table 5-22 Correlations among the items used to measure compatibility

| | 510a | 510b | 510c | 510d |
|------|--------|--------|--------|------|
| 510a | 1 | | | |
| 510b | .885** | 1 | | |
| 510c | .738** | .794** | 1 | |
| 510d | .775** | .824** | .776** | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

The result of KMO measure of sampling adequacy was 0.835, which is good for factor analysis and the Bartlett's Test of Sphericity was found to be significant at 0.000. As displayed in Table 5-23, the factor analysis results led to one factor. The Cronbach's alpha for the entire scale was found to be very high (0.941). These results suggest that these items can be used together to create a composite variable for compatibility factor. The items in this factor are labelled as Comp_ty.

Table 5-23 Factor analysis of compatibility

| Item | Component |
|--|-----------|
| | 1 |
| I think that using internet to obtain government information fits well with the way I live my life | .951 |
| Using internet fits well with my lifestyle | .923 |
| Using internet is compatible with all aspect of my life | .915 |
| Using internet to access government information is completely compatible with my current situation | .898 |

5.5.8 Perceived ease of use

Three items were used to measure perceived ease of use (question 511). Table 5-24 shows the correlation matrix of the scale used to measure perceived ease of use. All the items are strongly correlated and are significant at 0.01 level.

Table 5-24 Correlations among the items used to measure perceived ease of use

| | 511a | 511b | 511c |
|------|--------|--------|------|
| 511a | 1 | | |
| 511b | .419** | 1 | |
| 511c | .753** | .507** | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

The KMO measure of sampling adequacy was 0.631 and the Bartlett's Test of Sphericity was significant at 0.000. These values allow factor analysis. As displayed in Table 5-25, the entire load is on one factor and is labelled peao. The Crobach's alpha for the entire scale was found to be 0.788, which means that the internal consistency of the items is good.

Table 5-25 Factor analysis of perceived ease of use

| Item | Component |
|--|-----------|
| Navigation: it is easy to navigate around the government website | .911 |
| Usability: it is easy to use the internet to obtain government information and service | .876 |
| Accessibility: the government websites provides access for persons with disabilities | .732 |

5.5.9 Perceived usefulness

Five items were used to measure perceived usefulness (question 512). Table 5-26 shows the correlation matrix of the scale used to measure perceived usefulness. All the items are strongly correlated and significant at 0.01 level.

Table 5-26 Correlations among items used to measure perceived usefulness

| | 512a | 512b | 512c | 512d | 512e |
|------|--------|--------|--------|--------|------|
| 512a | 1 | | | | |
| 512b | .764** | 1 | | | |
| 512c | .519** | .610** | 1 | | |
| 512d | .535** | .565** | .735** | 1 | |
| 512e | .466** | .492** | .421** | .525** | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

The result of the KMO sampling adequacy was 0.792 which is good for factor analysis and the Bartlett's Test of Sphericity was found to be significant at 0.000. The results of factor analysis reveal that all the items loaded in one factor, which was labelled as PU (Table 5-27). The Cronbach's alpha for the entire scale was found to be 0.869, which indicates high internal consistency of the items.

Table 5-27 Factor analysis of perceived usefulness

| Item | Component |
|--|-----------|
| Timeliness: usually the government information from the government website is up-to-date | .866 |
| Accountability: I am able to communicate with government officials through the government website/email/internet | .838 |
| Content: the website provides the precise government information I need | .824 |
| Transparency: the government website enable me to actively give my opinion to the government | .821 |
| Pricing: I save money and time when using information from the government website | .699 |

5.5.10 Social influence

Six items were used to measure social influence (question 513). Table 5-28 shows the correlation matrix for the six items used to measure social influence. The correlation table

shows that all the correlations are significant at 0.01 level. Factor analysis can be carried out as the items are correlated.

Table 5-28 Correlations of the items used to measure social influence

| | 513a | 513b | 513c | 513d | 513e | 513f |
|------|--------|--------|--------|--------|--------|------|
| 513a | 1 | | | | | |
| 513b | .828** | 1 | | | | |
| 513c | .822** | .832** | 1 | | | |
| 513d | .805** | .826** | .919** | 1 | | |
| 513e | .725** | .755** | .778** | .780** | 1 | |
| 513f | .711** | .715** | .756** | .769** | .770** | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

The factor analysis results indicate that the items are valid, as the KMO measure is 0.914 and the Bartlett's Test of Sphericity is significant at 0.000. All the factors loaded together to produce one factor, labelled as soc_inf (Table 5-29). The internal consistency of scores on the six items is very high, with Crobach alpha at 0.957. This suggests that these items can be used together to create a composite variable for the social influence factor.

Table 5-29 Factor analysis of social influence

| Item | Component |
|---|-----------|
| If your family would look favourably on you for accessing information on the internet | .943 |
| If your friends would look favourably on you for accessing government information on the internet | .938 |
| If your leader from local government access government information on the internet | .912 |
| If your close friend access government information on the internet | .905 |
| If it is a culture in my community to access government information on the internet | .884 |
| My decision to access, (or not to access) government information on the internet is influenced by my family/friends | .866 |

5.5.11 Cultural barriers

Five items were used to measure cultural barriers (question 515). Table 5-30 shows that the correlations of these items. The correlations are significant at 0.01 level.

Table 5-30 Correlations of the items used to measure cultural barriers

| | 515a | 515b | 515c | 515d | 515e |
|------|--------|--------|--------|--------|------|
| 515a | 1 | | | | |
| 515b | .634** | 1 | | | |
| 515c | .572** | .511** | 1 | | |
| 515d | .178** | .321** | .304** | 1 | |
| 515e | .377** | .478** | .361** | .517** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

The factor analysis results indicate that the items are valid, as the KMO measure is 0.740 and the Bartlett's Test of Sphericity is significant at 0.000. All the items loaded in one factor that is labelled as cul_barr as indicated in Table 5-31. The Cronbach alpha for the entire scale was found to be 0.786, which indicates high internal consistency of the items.

Table 5-31 Factor analysis of cultural barriers

| Items | Component |
|--|-----------|
| The internet cannot be domesticated into personal everyday routines, hence, not used | .826 |
| Social exclusion caused by the problem of unequal access to the internet (digital divide) | .776 |
| Previous experience with the internet affect its usage | .754 |
| There is negative incentives that results from disparities developing between electronic and non-electronic services | .733 |
| The benefits are not clear, hence, traditional means are preferred | .569 |

5.5.12 Information needs

Eight items were used to measure the information needs of the citizens (question 202). Table 5-32 shows that the correlations of these items. The correlations are significant at 0.01 level.

Table 5-32 Correlation of information needs items

| | 202a | 202b | 202c | 202d | 202e | 202f | 202g | 202h |
|------|--------|--------|--------|--------|--------|--------|--------|------|
| 202a | 1 | | | | | | | |
| 202b | .411** | 1 | | | | | | |
| 202c | .327** | .334** | 1 | | | | | |
| 202d | .287** | .447** | .226** | 1 | | | | |
| 202e | .313** | .302** | .245** | .445** | 1 | | | |
| 202f | .235** | .289** | .398** | .311** | .374** | 1 | | |
| 202g | .325** | .534** | .276** | .482** | .449** | .316** | 1 | |
| 202h | .156** | .224** | .348** | .272** | .220** | .183** | .272** | 1 |

The factor analysis results indicate that the items are valid, as the KMO measure is 0.843 and the Bartlett's Test of Sphericity is significant at 0.000. All the items loaded in one factor and the factor is labelled as inf_need as indicated in Table 5-33. The Cronbach alpha for the entire scale was found to be 0.821, which indicates high internal consistency of the items.

Table 5-33 Factor analysis of information needs

| Items | Components |
|--|------------|
| Migration information/ travelling documents | .760 |
| Medical information | .741 |
| Education information/ research | .739 |
| Business licence, driving licence | .695 |
| Sponsorship/funding | .663 |
| National examination information | .611 |
| Birth, death, and marriage certificates | .578 |
| Extraction Method: Principal Component Analysis. | |
| a. 1 components extracted. | |

5.6 Answering the research questions

The results reported in the previous sections were based on descriptive statistics, and factor analysis, which will be used in this section to answer the research questions. This section reports the statistical results based on the research model Figure 3-1 that was developed in Chapter Three. The results of the interview are also presented in this section. The results presented in this section answer the research questions and validate the research model in question.

5.6.1 Government information needs

In order to establish the information needs of Tanzanians in the selected districts, respondents were asked to indicate whether they required any information from the government. As indicated in Table 5-34, 50 (11.1%) of the respondents did not require information from the government, while 373 (88.2%) of the respondents required information from the government.

Table 5-34 Government information needs

| | No | Yes | Total |
|--------------------------------|----|-----|-------|
| Dar-urban | 4 | 43 | 47 |
| Dar-Per-urban | 3 | 43 | 46 |
| Dar-Rural | 3 | 42 | 45 |
| Morogoro Per urban | 1 | 49 | 50 |
| District Morogoro-Rural | 10 | 38 | 48 |
| Morogoro-town | 5 | 39 | 44 |
| Njombe-per-urban | 14 | 33 | 47 |
| Njombe-rural | 3 | 44 | 47 |
| Njombe-urban | 7 | 42 | 49 |
| Total | 50 | 373 | 423 |

The respondents were asked further to indicate the type of information they would like from e-government services. The information needs are indicated in Table 5-35.

Table 5-35 Information needs

| | Yes | No | Total |
|---|------------|------------|-------|
| Land information | 264(58.7%) | 178(39.6) | 442 |
| Business licence, driving licence | 207(46.0%) | 231(51.3%) | 438 |
| Birth, death, and marriage certificates | 287(68.3%) | 153(34.0%) | 440 |
| Education information/ research | 224(49.8%) | 221(49.1) | 445 |
| Sponsorship/funding | 215(47.8%) | 225(50%) | 440 |
| National examination information | 309(68.9%) | 135(30%) | 445 |
| Migration information/ travelling documents | 175(40.1%) | 261(59.8%) | 436 |
| Medical information | 235(52.2%) | 196(43.6%) | 431 |

5.6.1.1 Factors which activate a person to seek government information and services

Table 5-36 presents the results of factors that motivate a person to seek government information and services. 211 (46.9%) respondents strongly agreed or agreed that they needed research information from the government, 326 (72.5%) needed government information to update their knowledge on government issues, 350 (77.8%) needed government services for licences, passports, certificates, medical services, scholarships etc, 195 (43.3%) needed government information for political issues and 256 (56.9%) needed government information for personal interests.

Table 5-36 Factors which activates government information seeking

| Factor | Ratings (number & percentage) | | | | | Total |
|---|-------------------------------|----------|----------|-------------------|-----------|-----------|
| | Strongly Agree | Agree | Disagree | Strongly disagree | Undecided | |
| Need for research information | 130(28.9) | 81(18.0) | 26(5.8) | 164(36.4) | 40(8.9) | 441(98.0) |
| A need to update my knowledge on government issues | 242(53.8) | 84(18.7) | 23(5.1) | 55(12.2) | 36(8.0) | 440(97.8) |
| A need for government services for example licence, passport, certificates, medical services, scholarships etc. | 271(60.2) | 79(17.6) | 12(2.7) | 51(11.3) | 33(7.3) | 446(99.1) |
| A need for information on political issues | 131(29.1) | 64(14.2) | 52(11.6) | 139(30.9) | 56(12.4) | 443(98.4) |
| Personal interests | 181(40.2) | 75(16.7) | 27(6.0) | 108(24.0) | 51(11.3) | 442(98.2) |

5.6.2 The role of accessing e-government information to e-government adoption

The factor analysis in Section 5.3.1 has provided information regarding the factors which best explain net benefit. In this section, multiple linear regression was done on net_1 and net_2 as independent variables and access to internet/website as dependent variable. The result from this regression analysis is displayed in Table 5-37.

Table 5-37 Role of accessing e-government information

| Items | Coefficients | T | Sig. | Tolerance | VIF |
|----------|--------------|--------|------|-----------|-------|
| Constant | 1.455 | 5.013 | .000 | | |
| Net_1 | -.130 | -1.281 | .201 | 5.013 | 1.225 |
| Net_2 | .663 | 8.224 | .000 | 0.816 | 1.225 |

Recall from the results of factor analysis in Table 5-7, two factors net_1 and net_2 were derived. Basing on these factors, a linear multiple regression analysis was performed to investigate the relationship between using the internet/website to seek government information and the net benefit (Table 5-37). The results indicate that net_2 is positively related to access to e-government information and was very significant at 0.000. This means that an increase in net_2 increases the chances of internet/website usage by 66.3%. In other words, if people can be able to: make rational decisions and take appropriate actions; coordinate their activities easily; improve skills and improve awareness of government services, then the more the chances of consulting internet/website when seeking for government information and services hence e-government adoption.

Net_1, on the other hand, was negatively related to access to e-government information but not significant at 0.201 (See Table 5-37). This means that a decrease in net_1 decreases the chances of internet/website usage by 13%. If people are not able to: get their business improved/expanded; have access to new and better markets and improve their living standards, then the less the chances of consulting the internet/website when seeking government information and services, hence, people will not adopt e-government. Moreover, if people access the internet/website in order to get government information

and the services do not increase in their income; new and better opportunities; access to educational opportunities and medical services, they will not adopt e-government.

5.6.3 Enhancing factors

As shown in Table 5-9, the results of factor analysis yielded five factors namely fac_1, fac_2, fac_3, fac_4 and fac_5. A multiple linear regression analysis was performed to assess the relationship between using the internet/website to access government information and services and the five factors which affect e-government adoption (Table 5-38). The results indicated that fac_1, fac_3 and fac_4 were positively related to access to e-government information and are significant at 0.000, 0.009, and .059 respectively. This means that these factors enhance access to e-government information and services.

In other words, the chance of using the website for government information and services increases when people possess the necessary knowledge. Likewise, if people have necessary resources to access information from the government website, then they are more likely to increase website usage. Moreover, if people are aware of the services that are offered by the website, confident to use the website and have available and reliable internet connections, then, the chances of e-government information and service usage will go up.

Similarly, the coefficient of fac_3 is 0.37 meaning that if there is positive incentive that has resulted from using the internet to search for government information, then the more the usage of the internet when seeking for government information and services. If people get information on demand and if the website offers disability access then people are more likely to use the services from the government website.

Consistent with the preceding factor above, fac_4 has a coefficient of 0.19. This means that if guidance for effective use of the internet, possession of ICTs such as a the computer or mobile phone, and the availability of up to date information on the website are important factors for enhancing the use of e-government information and services.

Section 5.5 demonstrates the factor analysis of various factors affecting access to e-government information and services. Several factors were obtained from these results. A multiple linear regression analysis was performed to assess the relationship between these factors and access to e-government information and services (See Table 5-38). The results indicate that: *trus_1*; *trus_2*; *satis_1*; *satis_2*; and *rel_ad1* are positively related to accessing e-government information and services. Likewise, *imag_1*; *imag_2*; *comp_ty*; *pu* and *soc_inf* have a positive relationship with access to e-government information and services. However, only *soc_inf* has a significant relationship with access to e-government information and services. With these results, it can be seen that trust, satisfaction, relative advantage, image, compatibility, perceived usefulness, enhance access to e-government information. Social influence is the only significant factor that enhances access to e-government information and services.

Table 5-38 Factors affecting e-government information access

| Items | Coefficients | T | Sig. | Tolerance | VIF |
|--------------------------------------|--------------|--------|------|-----------|-------|
| Constant | .841 | 3.304 | .001 | | |
| fac_1=401f, 401a,401d,401e,401b | .420 | 3.931 | .000 | .377 | 2.652 |
| fac_2=401s,401t,401l,401i,401r,401w) | -.344 | -2.618 | .009 | .421 | 2.373 |
| fac_3=401x,401u,401q) | .373 | 3.139 | .002 | .366 | 2.731 |
| fac_4=401h,401v,401c) | .194 | 1.896 | .059 | .350 | 2.860 |
| fac_5=401n,401o) | -.059 | -.675 | .500 | .509 | 1.965 |

a. Dependent Variable: 206o internet/website

5.6.3.1 Enhancing factors: results from the interview

Five e-government policy makers were interviewed to get their opinion on the factors, which enhance e-government use. This was an open-ended questionnaire, to which different kinds of answers were given. One respondent indicated that, “in order for a person to feel like using a computer; he must have a computer and possess the ability to use

it”. Another person indicated that, “people have different needs, which drive them to use e-government information.” Other typical responses included:

“...The more the information gets available more easily and quickly the more a person would want to use the government website”.

“...If the government website can provide a wide range of information, which can enable people to manage their daily activities, then people will use it more often”.

“...In my opinion, if e-government systems are easy to use, people will be encouraged to use them”.

Necessary knowledge, information needs, convenience (obtaining information on demand) and possession of necessary resources to access information from the government website were also identified in Section 5.6.3 as enhancing factors to e-government adoption. Relative advantage was also identified as a factor that enhances e-government adoption, although not significant (see Section 5.6.3). Surprisingly, easy to use was identified as an inhibiting factor in Section 5.6.3. These results are discussed in detail in Chapter Six.

5.6.4 Inhibiting factors

The multiple linear regressions presented in Table 5-38 indicate that fac_2 and fac_5 inhibits access to e-government information and services. This is because the coefficients of fac_2 and fac_5 are negatively related to access to e-government information. However, fac_2 is significant at 1% level, while fac_5 is not significant. This implies that the factors that inhibit access and usage of e-government information and services include, worrying about security and privacy of information, and lack of support from the government. Other items that fall under the same category include; no reliable electricity, geographical locations affecting information accessibility through internet; people not getting as much information about the services as possible and the information content presented in the language which people did not understand.

As noted above, fac_5 also hinder access to e-government information and services though not significantly. The items include; that it is not possible for internet to be used for daily routine activities, that information about government services is not available.

It was further observed that, inf_q1; serv_q2; syst_q2; int_us_1 and peaou, as appeared in Table 5-39, have a negative relationship with access to e-government information and services. Syst_q2 and int_use1 showed a significant relationship with access to e-government information and services. This means that information quality, system quality, intention to use, and perceived ease of use, hinder access to e-government information and services, although they are not significant factors. However, System quality and intention to use are significant factors, which hinder access to e-government information.

Cultural barriers appear to have a positive relationship with access to e-government and services. This means that people prefer traditional means due to the fact that they are not aware of the benefits of using the internet or websites to seek government information and services. This is a hindrance to e-government adoption.

Table 5-39 Linear regression for factors affecting access of e-government information

| | Coefficients | Std. Error | T | Sig. |
|-------------------|--------------|------------|--------|------|
| (Constant) | 1.831 | .370 | | |
| inf_q1 | -.033 | .086 | -.384 | .701 |
| serv_q2 | -.028 | .065 | -.432 | .666 |
| syst_q2 | -.244 | .086 | -2.837 | .005 |
| trus_1 | .116 | .076 | 1.532 | .127 |
| trus_2 | .128 | .088 | 1.450 | .148 |
| satis_1 | .049 | .077 | .640 | .523 |
| satis_2 | .079 | .085 | .933 | .352 |
| int_us1 | -.206 | .075 | -2.748 | .006 |
| rel_ad1 | .004 | .069 | .054 | .957 |
| imag_1 | .098 | .063 | 1.561 | .120 |
| imag_2 | .083 | .055 | 1.493 | .137 |
| comp_ty | .040 | .054 | .750 | .454 |
| Peaou | -.002 | .073 | -.023 | .982 |
| Pu | .051 | .075 | .674 | .501 |
| soe_inf | .123 | .046 | 2.694 | .008 |
| cul_barr | .163 | .058 | 2.813 | .005 |

5.6.4.1 Inhibiting factors: results from the interviews

E-government policy makers were interviewed to identify factors that inhibit e-government adoption in Tanzania. The following factors were mentioned:

- Poor infrastructure;
- People are not aware of e-government benefits;
- People, especially those in the rural areas and those with little income, cannot afford the e-government information and services.
- Culture;
- Poor system quality;
- Lack of needed information; and
- Absence of bilingual local content in e-government.

The quantitative results indicate that income is positively related to e-government use. In contrast to this finding, the interviewees mentioned income as a barrier to e-government use. This could be true only for the people in rural areas, especially those with low income. For instance, one policy maker reported, “income inhibits e-government use for people with low income especially those in the rural areas”.

Poor infrastructure was another factor, which was identified during the interview. This factor is discussed in detail in Chapter Six. The rest of the factors mentioned in Section 5.6.4.1 are similar to factors, which were presented in Section 5.6.4 and are discussed in detail in Chapter Six.

5.6.5 Demographic characteristics and access to e-government information and services

A cross-tabulation was done in order to identify the number of respondents having specific characteristics as described in the Table; 5-40, 5-41, 5-42, 5-43, 5-44. The Chi-square statistics was used for testing the statistical significance of the cross-tabulation Tables. Chi-square tests whether or not the two variables are independent. If the variables are independent (have no relationship), then the results of the statistical test will be non-significant. If the variables are related, then the results of the statistical test will be statistically significant.

5.6.5.1 Gender and website access

In terms of gender differences, Table 5-40 shows that amongst the e-government information users, there were more males (40 percent) compared to females (39 percent). Contrastingly, within the non-users, the females (64 percent) exceeded the males (36 percent). These figures however suggest that gender differences between the users and non-users are not large enough to suggest the occurrence of any significance. Pearson’s Chi-square test (χ^2 test) in Table 5-45 illustrates that there were no significant differences between the gender of those who used the internet or website to access government

information and services and those who did not use the internet or website to access government information and services. A Spearman correlation test was also conducted to examine if there was any association between the gender of respondents and accessing internet or website. The findings suggest the absence of a significant correlation between the gender of respondents and access to internet or website to seek for government information and services (Table 5-46).

Table 5-40 Gender and access to e-government information

| Gender | Non-users | Users | Total |
|--------|-----------|-------|--------|
| Male | 60.2% | 39.8% | 100.0% |
| Female | 64.4% | 35.6% | 100.0% |

5.6.5.2 Age and access to e-government information

Table 5-41 shows that access to e-government information amongst Tanzanians decreases with age. The majority of e-government information users were between the category of 20-40 and 31- 40 years. The findings in Table 5-41 show that e-government information users belong to the youthful and middle-aged age groups. However, the older age groups consisted of a majority of non-e-government information users. Pearson's χ^2 -test (Table 5-45) confirmed that there was a difference between the ages of the users of e-government information and services and non-users of e-government information and services. A Spearman correlation test was also conducted to examine if there was any association between the age of respondents and access to e-government information and services. The findings suggest that there was a significant negative correlation between the age of respondents and the use of e-government information and services (Table 5-46).

Table 5-41 Age of the respondents

| Age | Non-users | Users | Total |
|---------|-----------|-------|--------|
| 20-30 | 58.6% | 41.4% | 100.0% |
| 31-40 | 59.0% | 41.0% | 100.0% |
| 41-50 | 67.1% | 32.9% | 100.0% |
| 51-60 | 75.0% | 25.0% | 100.0% |
| over 60 | 71.4% | 28.6% | 100.0% |

5.6.5.3 Education and access to e-government information

Table 5-42 shows the educational qualifications of the users of e-government information and services and non-users of e-government information and services. The findings suggest that the majority of e-government information and services users are educated to post graduate or masters degree level (60.6 per cent) followed by respondents who had advanced diploma or university degree level (49.6 per cent) education. About 46.2 per cent users of e-government information and services had A-level qualifications. A reasonable number (44.2 per cent) of e-government information and services users had O-level secondary school education. A small number of the adopters (16 per cent) had primary school education. None of those who never attended school access e-government information and services. In comparison to the users of e-government information and services, the majority of non-users were reported to have lower levels of education. The Pearson's χ^2 -test validated that there was a significant difference between the education levels of the users of e-government information and services and non-users of e-government information and services (Table 5-45). Furthermore, a correlation test was conducted to examine if there was any association between the education level of respondents and access to e-government information and services. Table 5-46 presents the results obtained from this test. The findings suggest that there was a significant positive correlation between the education level of respondents and access to e-government information and services (Table 5-46).

Table 5-42 Education

| Level of education | Non-users | Users | Total |
|---------------------------------------|-----------|-------|--------|
| Never attended school | 100.0% | | 100.0% |
| Primary school | 84.0% | 16.0% | 100.0% |
| O-level secondary school | 55.8% | 44.2% | 100.0% |
| A-level secondary school | 53.8% | 46.2% | 100.0% |
| Advanced diploma or university degree | 50.4% | 49.6% | 100.0% |
| post graduate or masters degree | 39.4% | 60.6% | 100.0% |

5.6.5.4 Occupation and access to e-government information

Table 5-43 shows the occupational categories for both the users and non-users of e-government information and services. This indicates that a total of 58.3% per cent of the respondents, who are government employees, were users of e-government information and services, and 41.7% were non-users of e-government information and services. Similar trends were observed for respondents who are working in the business sector, where there were 48.4 per cent users compared to 51.6 per cent non-users. Respondents who were self-employed consisted of more non-users (59.6 per cent) than users (40.4 percent). Similarly, academicians had more non-users (33.3 per cent) than users (66.7 per cent). Furthermore, farmers had more non-users (92.5 per cent) than users (7.5%).

Contrastingly, the student category had more users (52.1per cent) than non-users (47.9 per cent) (Table 5-43). The results also revealed that the retired or unemployed were not accessing (100 per cent) e-government information and services. The findings from Pearson's χ^2 -test also validated that there was a significant difference between the occupational categories of users and non-users of access to e-government information and services (Table 5-45). A correlation test was also conducted to examine if there was an association between occupation and access to e-government information and services. The results obtained from this test suggest that there was a significant negative correlation between the occupation of respondents and access to e-government information and services (Table 5-46).

Table 5-43 Occupation of the respondents

| Occupation | Non-users | Users | Total |
|--------------------------|-----------|-------|--------|
| Government employee | 41.7% | 58.3% | 100.0% |
| Business sector employee | 51.6% | 48.4% | 100.0% |
| Self employment | 59.6% | 40.4% | 100.0% |
| Student | 47.9% | 52.1% | 100.0% |
| Farmer | 92.5% | 7.5% | 100.0% |
| Academician | 66.7% | 33.3% | 100.0% |
| Retired/unemployed | 100.0% | | 100.0% |
| Other | 25.0% | 75.0% | 100.0% |

5.6.5.5 Household monthly income and access to e-government information

The findings shown in Table 5-44 suggest that the least number (9.7 per cent) of users belonged to the category with less than TZS 30,000 monthly household income. The second lowest income group, that is 30,000-100,000, had more non-users (72.3 per cent) than users (27.7 per cent). Moreover, other income groups, which are 101,000-400,000 and 401,000-600,000, had more users than non-users, which are 56.5% and 57.1, respectively. It was interesting to note that the group belonging to the higher income category of TZS 601,000-1,000,000 had more non-users (53.6 per cent) than users (46.4 per cent).

However, all the income categories above TZS 1,000,000 had more users (51.6 per cent) than non-users (48.4 per cent). Generally, the users exceeded the non-users in all the higher income level categories except for the income group belonging to the category of TZS 601,000-1,000,000. The respondents who belonged to the group of those who did not want to answer had equal number of users (50.0 percent) and non-users (50.0 per cent). The Pearson's χ^2 -test confirmed that there was a significant difference between the household monthly income category of users and non-users of internet or website government information and services (Table 5-45). A correlation test was also conducted to examine if there was an association between a household's monthly income and access to e-government information and services. The results obtained from this test suggest that there

was a significant positive correlation between the household monthly income of respondents and access to e-government information and services (Table 5-46).

Table 5-44 Monthly incomes and website access

| Monthly Income | Non-users | Users | Total |
|-------------------------|-----------|-------|--------|
| Less than 30,000 | 90.3% | 9.7% | 100.0% |
| 30,000-100,000 | 72.3% | 27.7% | 100.0% |
| 101,000-400,000 | 43.5% | 56.5% | 100.0% |
| 401,000-600,000 | 42.9% | 57.1% | 100.0% |
| 601,000-1000,000 | 53.6% | 46.4% | 100.0% |
| Above 1000,000 | 48.4% | 51.6% | 100.0% |
| Not applicable | 58.1% | 41.9% | 100.0% |
| I do not want to answer | 50.0% | 50.0% | 100.0% |

The conclusion from the above findings is that income and education are factors, which enhance access to e-government information and services. In addition, gender, age and occupation were found to inhibit access to e-government information and services. However, gender was not a significant factor (Table 5-46).

Table 5-45 Pearson Chi-square test

| Variable | Number of variable (NVC) | Degree of freedom (DF) | Significance |
|------------|--------------------------|------------------------|--------------|
| Gender | 448 | 1 | 0.608 |
| Age | 448 | 5 | 0.024 |
| Education | 448 | 6 | 0.000 |
| Occupation | 447 | 7 | 0.000 |
| Income | 448 | 7 | 0.000 |

Table 5-46 Spearman correlation

| Variable | NVC | Correlation coefficient | Significance |
|------------|-----|-------------------------|--------------|
| Gender | 448 | -0.024 | 0.304 |
| Age | 448 | -0.130 | 0.003 |
| Education | 448 | 0.355 | 0.000 |
| Occupation | 447 | -0.323 | 0.000 |
| Income | 448 | -0.323 | 0.000 |

5.6.7 Information needs and e-government adoption

Refer to Section 5.4, which demonstrates factor analysis of information needs. All items are loaded together into one factor. A multiple linear regression analysis was performed to assess the relationship between information needs and access to e-government information and services (See Table 5-44). The results indicate that information needs are positively related to access to e-government information and services, and this factor is very significant.

Table 5-47 Effect of information needs to access to e-government information

| Items | Coefficient | T | Significance |
|----------|-------------|-------|--------------|
| Constant | 1.296 | 3.822 | .000 |
| Inf_need | .837 | 3.928 | .000 |

A model, which explains factors that influence access to electronic government information and e-government adoption, was proposed in Section 3.9 of Chapter 3 (figure 3-1). Multiple linear regression was used in Section 5.6.3, 5.6.4 and 5.6.5 to validate the model. The validated model is presented in Chapter Six (figure 6-1). The results reveal that the following factors were found to be insignificant in explaining access to e-government information and e-government adoption in Tanzania: gender, compatibility, trust, relative advantage, PEOU, PU, satisfaction and image. A discussion of the validated model is presented in Chapter Six of this thesis.

5.6.8 Status of e-government in Tanzania

The fifth research question was about the status of e-government in Tanzania. In order to answer this research question, five e-government policy makers who work as consultants on issues related to e-government policies were interviewed. Questions on the following items were asked (see Appendix 6):

5.6.8.1 E-government strategy in Tanzania

In question 2, respondents were asked to say whether there was an e-government strategy in Tanzania. The interviewees pointed out that there was a national e-government strategy, although it had not yet been approved. The interviewees indicated that there was an e-government agency (eGA) which was established following the cabinet directives to President's Office Public Service Management (PO-PSM) in 2004. The goals of eGA were to:

- Enhance the capacity of MDAs and LGAs to implement e-government initiatives;
- Improve public access to e-services;
- Improve the sharing of ICT resources within public service;
- Enhance coordination, management and compliance for e-government initiatives in the public service;
- Improve e-government advisory, technical support and consultancy services; and
- Enhance eGA's capacity to implement e-government initiatives.

In question 3, respondents were asked if the goals of the e-government strategy were achieved. The interviewees could not evaluate the goals of eGA because eGA had developed a five-year strategic plan, 2012/2013 through 2016/2017. The plan came into effect in the 2012/2013 fiscal year, therefore, it was premature for interviewees to determine whether the objectives had been achieved or not.

5.6.8.2 Strategies focusing on widening accessibility of e-government in rural areas

In question 4a, respondents were asked to indicate policies/strategies that their organisations had put in place to ensure wider accessibility of government information to the majority in Tanzania. The focus was on people residing in rural areas. The respondents mentioned the Universal Communications Access Fund (UCAF) and the expansion of the national ICT backbone infrastructure as major strategies, which were in place to ensure wider accessibility of e-government information and services.

5.6.8.2.1 Universal communications access fund

The establishment of UCAF is a requirement stated by the government through the National Telecommunications Policy (1997), National ICT Policy (2003), and the declaration of principles of the World Summit on the Information Society (WSIS) of 2003 (Geneva) and 2005 (Tunisia). The Tanzanian Universal Communications Service Access Fund was established to enable accessibility and participation by communication operators in the provision of communication services, with a view to promoting social, educational and economic development of the rural and urban under-served areas. Furthermore, the UCAF was developed to provide availability of communication services by establishing a legal framework for universal service providers to meet the communication needs of consumers.

5.6.8.2.2 National ICT backbone infrastructure (NICTBB)

The NICTBB is part of the implementation of the Tanzania National ICT Policy (NICTP) of 2003 as acknowledged by the government in the national development vision 2025. This is because of its importance in enabling ICTs to accelerate achievements of goals and objectives of the National Development Vision 2025. Lack of ICT infrastructure in both urban and rural areas resulted in the limitation of access to ICT services, and hence necessitated the Tanzania government to build the NICTBB.

This enabling approach aimed at ensuring that ICT was diffused to the ordinary people at all levels, and enabling maximisation of benefits and welfare to Tanzanian citizens. The government of Tanzania considers NICTBB as an important strategic vehicle. The strategy intended to provide the entire Tanzanian population with reliable, efficient and cost-effective accessibility and connectivity to ICT infrastructures, facilities and services for enhanced socio-economic development as well as creating a knowledge-based society.

NICTBB would assist to fulfil the increasing demands of information services, strengthen competitive abilities of domestic data and voice operators as well as bridging the digital divide. It is necessary in developing high-speed broadband, and it would help to gain the benefits from undersea submarine cables landing in Dar es Salaam, by providing high-quality capacity fiber optic connectivity from Tanzania to within Africa and the rest of the world. NICTBB is expected to redefine everything that we know in e-government, e-learning, e-health and e-commerce.

5.6.8.3 Opinions on policies to widen accessibility of e-government

In question 4b, respondents were asked to mention organisations or departments responsible for ensuring wider accessibility of e-government information and services and implementation of policies, and evaluate if they were successful in achieving what they are meant to achieve.

The interviewees said that the Ministry of Science and Technology and other ministries, departments, private sector, and stakeholders had a role of ensuring wider accessibility of e-government information and services. The interviewees indicated that accessibility of e-government information and services had improved, but there were some concerns. These concerns included lack of electricity, financial constraints and lack of trust to e-services. Typical responses included:

“...The ICT infrastructure is built up to districts level, when the infrastructure reaches the villages, we will be able to say the policies to ensure wider accessibility of e-government information and services are successful in achieving what they are meant to achieve” .

“...UCAF is meant to enable rural or urban under-served areas to access e-government information and services. Despite the efforts, not all regions are reached with e-government services”.

“...Strategies to ensure wider accessibility of e-government information and services are not successful because the contents for local people are not online”.

5.6.8.4 Factors hindering ICT infrastructure development in rural areas

Despite government efforts to reach the rural and under-served urban areas, the interviewees pointed out factors that hindered infrastructure development in the rural areas, since the utilization of NICTBB was still at a very minimum level. This is because of little knowledge and public awareness about NICTBB. One policy maker said that, “they can have mobile phones and computers, but if they lack legal framework and security, there is still a problem”.

5.6.8.5 E-government stage in Tanzania

In question 9, respondents were asked to give their opinions basing on the Siau and Long (2005) stage model and its five stages consisting of web presence, interaction, transaction, transformation, and e-democracy. The responses indicated that Tanzania is passing through web presence, interaction stage and transaction stage. For instance, one policy maker said that, “we are between stage one and two; we have not moved from stage one”. Another policy maker pointed out that, “we cannot perform transactions online, we cannot say we are in the transaction stage”. Interestingly, one policy maker said, “in Tanzania, e-government stage is in three stages, the web presence, interaction stage and transaction stage. Many people are not aware of other services, which can be offered by e-government that is why they have not realised the transaction stage. There are few transactions, which are done by e-government systems, for example, payment of water and electricity bills. In

short, the web presence services are dominating; interaction stage services are medium and transaction stage services are least’.

5.6.9 Opportunities for adopting e-government in Tanzania

The seventh research question was about the opportunities for adopting e-government in Tanzania. Five policy makers were interviewed, and the following opportunities were mentioned:

- Mobile phones;
- ICT was taught in primary schools, universities and colleges, which means that experts and users are being trained;
- Internet access was getting cheaper;
- NICTBB;
- Government support; and
- Improvement in e-government services, several information can be provided by the e-government systems

5.6.10 Chapter summary

This chapter presented the findings on factors affecting access to e-government information and services. The results indicate the majority of Tanzanian citizens, (82%) of the respondents, require information and services from the government. It was also revealed that, a majority of the respondents needed some information or services from the government, such as, business licences, driving licences and birth, death and marriage certificates. In addition, they needed education, research, sponsorship/funding, migration, national examination, migration, travelling documents and medical information.

Furthermore, this study showed that the need for government services was one of the factors, which motivated the majority of the respondents to seek government information. This was followed by a need to update their knowledge on government issues. This study

also indicated that if people could: make rational decisions and take appropriate actions; coordinate their activities easily; and improve skills and awareness of government services; this could result in more chances to access the internet/websites in search of government information and services thus the adoption of e-government.

However, if people were neither able to get their business improved, have access to new and better markets, nor improve their living standards, then they would have less chances of consulting the internet/website when seeking government information and services. As a result, people would not adopt e-government. Moreover, if people access the internet/websites to get government information and services, but fail to get an increased income, new and better opportunities; access to educational opportunities and medical services, then they would not adopt e-government.

There were factors that were perceived as enhancing access to e-government information. These are necessary knowledge; necessary resources; awareness; confidence to use the website; and availability and reliability of internet connections. In addition, positive incentives resulted from using the internet to search for government information, getting information on demand and if the website would offer disability access. Moreover, guidance for effective use of the internet, possession of ICTs, such as a computer or mobile phone, and the availability of up to date information in the website were important factors for enhancing the use of e-government information and services.

Education was also identified as a factor, which enhanced access to e-government information. Only those people with education were categorised as users of e-government information, but those with least education and those who had never gone to school were categorised as non-users. Moreover, income was an enhancing factor to those people with higher income. The number of e-government users' increases as the income level rises. Other factors, which were established as enhancing access to e-government information were: trust, satisfaction, relative advantage, image, compatibility, and perceived usefulness. Among these factors, social influence was the only significant factor, which enhanced access to e-government information and services.

In addition, there were a number of factors that inhibited access and usage of e-government information and services. These include worrying about security and privacy of information, and lack of support from the government. Other items included: unreliable electricity, poor ICT infrastructure, and geographical locations that affected information accessibility through internet. People did not get as much information about the services as possible and the information content was in the language, which people did not understand.

In addition, information quality, system quality, intention to use, and perceived ease of use were factors perceived as hindering access to e-government information and services, although they were not significant factors. However, System quality, intention to use and cultural barriers were significant factors, which hindered access to e-government information. Age was also an inhibiting factor to e-government adoption since e-government information users belong to the youthful and middle-aged age groups.

The findings suggest that the majority of e-government users belonged to higher occupational categories, such as government employees and business sector employees. Moreover, the student category consisted of a majority of respondents who studied at various levels of education; thereby, requiring e-government information for various purposes. This chapter has, therefore, highlighted the status and the opportunities of e-government in Tanzania. The following chapter interprets and discusses the results presented in this chapter. The status of e-government in Tanzania was discussed in Section 1.2.4 of this thesis.

CHAPTER SIX: INTERPRETATION AND DISCUSSION OF RESEARCH FINDINGS

6.1 Introduction

This chapter interprets and discusses the findings presented in the previous chapter. As explained in Section 1.3.2 of Chapter One, the overall aim of the study was to assess the impact of access of e-government information on e-government adoption in selected districts of Tanzania so as to recommend how new e-government initiatives may be evaluated.

The study sought to answer the following questions:

1. What are the current government information needs?
2. What role does the access of e-government information play in the e-government adoption?
3. What are the factors that enhance access of e-government information and services?
4. What are the factors that hinder access of e-government information and services?
5. What is the current status of e-government in Tanzania?
6. What lessons can we learn from other countries leading in e-government?
7. What are the opportunities for adopting e-government in Tanzania?

The presentation in this chapter follows the order and themes of research questions as listed above. The validated model (See section 6.4) was used to answer research question numbers three and four. It should also be noted that the findings pertaining to research question number five was discussed in Chapter Two. Similarly, the findings for research questions number six were discussed in Chapter Three. The information and insights that emerged from the literature provided a basis for comparison with the emerging research findings of this study.

6.2 Government information needs

In this study, respondents were asked to indicate their information needs. The aim of this question was to identify users and non-users of government information. Spink and Wilson (1999) argue that information seekers with information needs use information systems to solve their problems. The findings of this study revealed that, a majority of the respondents required information from the government. Moreover, respondents were given a list of items to indicate the types of information and services which they would like to get electronically. A citizen centred e-government implies that governments know what citizens want from e-government, and want to meet citizen expectations and needs. As a result, governments focusing on citizen centered e-government actively need to discover what citizens want from e-government (Komba & Ngulube 2012). Thus, for e-government to succeed, there is need to take note of the specific needs of the specific target groups of citizens, such as unemployed persons, families, pensioners, architects, lawyers and students, who would be using a particular e-government service (Jansen 2005).

Cook (2000:4) considers the common responses provided in the surveys conducted by states and studies by research organizations to the question, “What government service would you want to be electronically provided?”. Generally, the respondents chose the following items: renewing a driver’s license, voter registration, state park information and reservations, voting on the internet, access to one-stop shopping (one portal for all government services), ordering birth, death, and marriage certificates, filing state taxes, hunting and fishing licenses, and accessing medical information from the National Institute of Health. Thus renewing a driver’s license was the first choice. It was followed most often by voter registration, obtaining state park information and making park reservations. Another common theme is the notion of one-stop shopping for government services, or the ability to access specific government information, such as medical or health care data.

Nevertheless, respondents in this study were asked the same question and were given a similar list. The first choice was national examination information, which was followed by birth, death and marriage certificates, land information, medical information, educational

and research information, sponsorship and funding information. Business licences and driving license, migration and travelling documents information were the last choice (See also Table 5-35).

6.3 Role of access of e-government information in e-government adoption

It was found in this study that people had greater chances of consulting the internet/website when seeking government information and services and hence adopt e-government if they make rational decisions and take appropriate actions, coordinate their activities easily, and improve their skills and awareness of government services. However, users failed to get some of the benefits from e-government in that some were not able to: get their business improved/expanded nor did they have access to new and better markets and improve their living standards. Other benefits which could not be experienced by users include increase in incomes, new and better opportunities, access to educational opportunities and medical services. An absence of these benefits may discourage the greater use of e-government (Mao & Palvia 2008; Ping, Aikman & Heshan 2008).

The ultimate touchstone of system success is the net benefits that the system generates, for instance; cost savings, expanded markets, and time savings (DeLone & McLean 2003). Citizens who felt that they are getting benefits through accessing e-government information may adopt e-government. As indicated by Wang and Liao (2008:72), a perceived benefit is an important success measure for e-government adoption. Therefore, when the net benefits are perceived to be high, the chances for e-government adoption get higher (Ahn 2011:430).

6.4 A validated model of factors that influence access to electronic government information (FAAEI) and e-government adoption

Figure 6-1 shows the results of the factors that influence access to e-government information and e-government adoption in the selected districts of Tanzania. This model was formulated from the model, which was proposed in Section 3.9 of Chapter Three

(figure 3-1). The validated model was formulated from the TAM (Davis 1989), Siau and Long (2005) model, Wilson (1999) model, DOI theory (Rogers 1995), DeLone and MacLean (1992) model, and trustworthiness (Carter & Belanger 2005) (See Section 3.9). A survey was conducted to test the research model for this study. A questionnaire was designed to gather the necessary information. Each item in the model had a corresponding question. The questionnaire consisted of unambiguous and easy questions to be completed by the respondents. Each item of the questionnaire was measured on a five-point Likert scale with end points of strongly agree and strongly disagree. The questionnaire was administered to 450 citizens in the three Tanzanian districts. After eliminating incomplete responses, 448 usable responses were selected as the sample.

The question of external validity was taken into consideration, particularly in the choice of the population and areas covered. This study assessed the internal consistency of the entire scale with the use of Cronbach's Alpha (Hair et al. 2006). Furthermore, Factor Analysis was employed for the validation of the model. A multiple linear regression analysis was performed to assess the relationship between using the internet/website to access government information and services and the factors, which affect e-government adoption. The Chi-square statistic was used to test the statistical significance of demographic characteristics to e-government adoption.

The findings suggest that social influence, information needs, education, income, knowledge, resources, awareness, confidence to use and availability of internet connections were positively related to e-government adoption. Moreover, positive incentives, getting information on demand, disability access, guidance on using the internet and availability of up to date information had a positive relationship with e-government adoption.

On the contrary, age, government support, culture, system quality and occupation were negatively related to e-government adoption. In addition, geographical location, language, electricity, lack of needed information and security and privacy had a negative relationship with e-government adoption. The model was validated in Chapter Five (see Section 5.6.3, 5.6.4 and 5.6.5) and was discussed under Section 6.4.1 and Section 6.4.2 of this chapter.

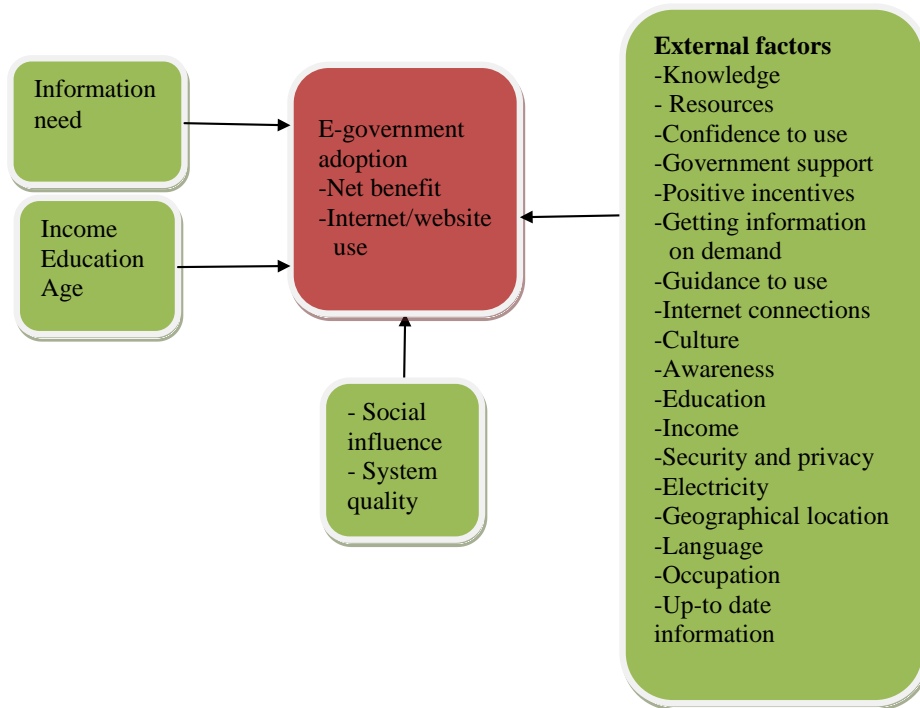


Figure 6-1 A validated model of FAAEI

6.4.1 Factors enhancing access of e-government information and services

Different factors that enhance access to e-government information and services were reported in Section 5.6.3 of Chapter Five. Therefore, these factors are the enablers of e-government usage. The following discussion focuses on the enablers of access to e-government information and e-government adoption found in this study.

6.4.1.1 Income

The results obtained from this study suggest that there was a significant positive correlation between the household monthly income of respondents and access to e-government information and services. Generally, the users exceeded the non-users in all the higher

income level categories, except for the income group belonging to the category of TZS 601,000-1,000,000. The least number of users belonged to the category with less than TZS 30,000 monthly household income. Other income groups, which are TZS 101,000-400,000 and 401,000-600,000, had more users than non-users. This finding justifies the diffusion of innovation theory, which suggests that new technologies are initially adopted by those with more resources (Rogers 1995). The previously mentioned theoretical argument supports the inclusion of income as an independent variable that explains the difference between broadband adopters and non-adopters (Carveth & Kretchmer 2002; Choudrie & Dwivedi 2005).

6.4.1.2 Education level

These findings suggest that there was a significant positive correlation between the education level of respondents and access to e-government information and services. The majority of e-government information and services users are educated to postgraduate or masters degree level, followed by respondents who had an advanced diploma or university degree level education. None of those who never attended school was accessing e-government information and services. In comparison to the users of e-government information and services, the majority of non-users had lower levels of education. In general, these findings are consistent with the findings from previous studies (Venkatesh *et al*, 2000; Choudrie & Lee 2004; Choudrie & Papazafeiropoulou 2006). These findings show that individuals and citizens that have educational qualifications are more likely to adopt e-government as indicated by other sources in the literature (Dwivedi & Lal 2007).

6.4.1.3 Social influence

This study found that social influence had a significant positive relationship with access to e-government information and services. This implies that e-government adopters were influenced by positive messages from their social networks, hence a strong behavioural intention to adopt the e-government systems. Other scholars concur with this finding as noted in their postulations that social influences are an important determinant of behaviour

(Rogers 1995; Taylor & Todd 1995; Pavlou & Fygenson 2006). These findings may also be viewed in the light of previous research. For example, Gupta, Dasgupta and Gupta (2008) and Al-Shafi and Weerakkody (2010) explored the adoption of e-government in Qatar and found that social influence determine citizens' use of e-government.

6.4.1.4 Knowledge/awareness and ICT resources

As indicated in Table 5-38, the results show that possession of e-government knowledge, awareness and ICT resources, have a positive relationship with e-government adoption. This means that knowledge, awareness of e-government and possession of ICT resources enhances the use of e-government information and services. This finding is similar to Choudrie and Dwivedi (2005) who conducted a study in the United Kingdom to examine the citizens' awareness and adoption of e-government initiatives in the UK. Their study revealed that citizens with home broadband access were more likely to be aware of and adopt e-government services. Tung and Rieck's (2005) study of e-government services adoption showed that an increased awareness of e-government services might lead to a higher adoption rate.

6.4.1.5 Confidence to use government websites

Confidence to use government websites indicated positive and significant relationship with e-government adoption. This means that if people are confident to use government websites, then the greater the chances of adopting it. This finding is in line with Be' langer and Carter (2008) who suggested that citizen confidence in the ability of an agency to provide online services is imperative for the widespread adoption of e-government initiatives. Gefen *et al* (2005) posit that trust in the agency has a strong impact on the adoption of a technology. Before endorsing e-government initiatives, citizens must believe government agencies possess the astuteness and technical resources necessary to implement and secure these systems (Be' langer & Carter 2008). Truthful and non-fraudulent interaction with e-government service providers will enhance citizen confidence and acceptance of e-government services. However, unfulfilled promises and dishonesty from

government officials and employees will decrease confidence and increase resistance to these initiatives.

6.4.1.6 Positive incentives from e-government

The findings of this study indicate that there is a positive relationship between positive incentives in using and e-government adoption. Thus, this finding provides evidence for the notion that positive incentives, which result from using e-government, enhance e-government use (Tung & Rieck 2005). Positive incentives encourage citizens to try e-government services. For example, the government can guarantee that online processing would be faster than face-to-face or telephone transactions. Once a citizen has a positive experience with these services, they will begin to develop trust in the internet and the government, which in turn, may increase their willingness to use e-government services in the future (Belanger & Carter 2008).

6.4.1.7 Internet application guidance and information on demand acquisition

This study found that there is a positive relationship between guidance given in using the internet and e-government use. This finding supports Signore, Chesi and Pallotti's (2005) assertion that users are often non-expert users, or at least, they may use applications in a sporadic way, and need guidance to find the right way to perform their transactions. Getting information demand was also found to have a positive relationship with e-government, meaning that getting information on demand increases e-government usage. Welch, Hinnant and Moon (2005:387) who assert that getting information on demand increases e-government information and services use support this finding. Individuals with greater desire to interact with government go to the government websites, however, once they use them; they are disappointed because they do not get information on demand.

6.4.1.8 Getting up-to-date information

The results of this study also indicated that getting up-to-date information had a positive significant relationship with e-government adoption. The more up to date the available

information is, the more the use of e-government information and services. This is in line with Verdegem and Verleye (2009) and Maheshwari *et al* (2007) who suggested that up to date information should be available so that users can take full advantage of the information and services provided on e-government portals. The results of this study also support a suggestion that e-government systems should provide citizens with up- to- date, real-time information, so as to influence subscribers interest to use the system (Carter & Weerakkody 2008:479).

6.4.1.9 Information needs

This study found that information needs have a significant positive relationship with e-government adoption. As indicated in Table 5-33, people seek information because they need research information and government services, such as, licences, passports, certificates, medical services. They also seek information to update their knowledge on government issues. This finding is in line with Spink and Wilson (1999) who reported that information seekers with information needs use information retrieval systems to solve their problems. Similarly, Belanche, Casalo and flavian (2010) observed that confirmation of expectations predicts citizen intention to use online public services.

6.4.2 Factors hindering access of e-government information and services

Several factors that inhibit e-government adoption were reported in Section 5.6.4 of Chapter Five. The following sections provide a discussion showing their effect on e-government adoption.

6.4.2.1 Security and privacy

The empirical results from this study confirm the previous studies suggesting that security and privacy of information is a barrier that hinders e-government adoption. This finding supports McClure (2000) who criticizes the weakness of information systems' security in public sector organizations. E-government can only succeed when all its participants, including government agencies, private businesses and citizens, feel comfortable using

electronic means to carry out private and sensitive transactions (McClure 2000). As a result, investing in the best available privacy and security applications and tools is worthwhile, as a shortage of them could lead to failure of the entire e-government project. Ebrahim and Irani (2005), showed the importance of trust in the public sector alleviating data privacy concerns and facilitating e-government diffusion.

6.4.2.2 Government officials' support

The findings of this study also suggest that there is no support from the government officials. This is consistent with previous studies by Ebrahim, Irani, and Al Shawi (2003) and Sanchez *et al* (2003) which showed that some government officials perceive e-government as a potential threat to their power and viability because it might reduce their authority in government and therefore, are reluctant to the idea of online transactions. For e-government projects to be successful, strong government leadership and responsive management processes must support an e-government initiative (Burn & Robins 2003).

6.4.2.3 Availability of electricity

This study also examined the relationship between the availability of electricity and e-government adoption. The findings suggested that lack and/or unreliable electricity had a negative relationship with e-government adoption. This implies that lack of electricity hinders e-government adoption in Tanzania. This is supported by Lin, Fofanah and Liang's (2011) finding, based on their study of the Gambian e-government situation that, there was a direct relationship between power availability and a citizen's ability to make use of available government services.

6.4.2.4 Geographical location

This study revealed a negative relationship between geographical location and e-government adoption. This implies that geographical location affect information accessibility through the internet. This is similar to Choudrie, Vishanth and Jones (2005) and Deakins and Dillon (2002), who, in their concern with digital divide, found that geographical factors

play a role in inhibiting some citizens' access to computers, the internet, and digital technology. Choudrie, Vishanth and Jones (2005) argued that the lack of internet and broadband connections in some geographical locations restricts citizens from accessing e-government services, thus inhibiting e-government adoption. Heeks (2006) also emphasized that electronic services should be seen as an additional method alongside traditional face-to-face and phone-based methods to the poor and disadvantaged so that they will not gain last and least from the new technology.

6.4.2.5 Lack of needed information

This study also identified lack of information needed as a problem, which hinders e-government adoption. The finding resembles that of Karnjanatawe (2003), who surveyed the National Electronics and Computer Technology Centre in Thailand and found that most of the Thai internet users were not satisfied with their government websites. According to Karnjanatawe (2003), the main cause of dissatisfaction is due to lack of needs orientation, which meant that users did not get the information they needed. Bertot (2003), asserts that difficulties in searching and locating the right information results from lack of prescribed methods to search for the exact information one needs, and studies demonstrate that information literacy, particularly in reference to e-government services, encompasses the ability to access and engage an information resource, use information technology or range of technologies, and use the medium (for example, the web) over which the e-government resource is provided.

6.4.2.6 Language

Language was found to have a negative relationship with e-government adoption. This finding is similar to Holms (2001), who suggests that language is the biggest barrier in using the internet, due to the reason that almost 90% of the websites are in the English language, which is not understood by more than 75% of the world's populations. According to Gloor (2000) language is important because it is a gateway of information and knowledge transfer in the digital age. English is the primary language that is used in many Western

countries where new technologies originate. English is the predominant language in the development of IT and e-commerce and it also the main language used on the web (Perry and Schneider 2001). Language was found to be a hindrance to e-government adoption in Tanzania since Tanzanians speak Swahili as their common language. Generally, the ability to communicate in English is poor for the majority of the Tanzanians (Brock-Utne 2006; Chilimo 2008; Kanigi 2002; Osaki 2005).

6.4.2.7 Cultural barriers

The empirical results from this study confirm the previous studies suggesting that cultural barriers were a significant factor in the explanation of e-government adoption. Cultural barriers appear to have a positive relationship with access to e-government and services. This means that people prefer traditional means when they are not aware of the benefits of using internet or website in seeking government information and services. In addition, this might be due to social exclusion caused by the problem of unequal access to the internet. This corresponds to Erumban and Jong (2006) who asserted that countries with high scores in uncertainty avoidance (UA) and power distance (PD), such as the Arab countries, have a lower rate of ICT adoption than countries with low UA and PD scores. These findings show the importance of culture, and how it is linked to the success of IS/IT adoption and use (Bagchi *et al*, 2003; Erumban & Jong 2006; Leidner & Kayworth 2006; Straub 1994; Twati 2006).

6.4.2.8 ICT infrastructure

The interview results indicated that ICT infrastructure was a barrier to e-government adoption. The infrastructure exists in some of the Tanzanians regions. However, the infrastructure has not reached most villages in Tanzania. The successful adoption of e-government systems will require a widespread, common and modern ICT infrastructure. This finding agrees with other studies' finding that technology itself would not guarantee success with e-government, but it is necessary that any e-government initiative must ensure

that it has sufficient resources and adequate infrastructure (Bwalya 2009; Ebrahim & Irani 2005).

6.4.2.9 Age

The results indicate that e-government information users belong to the youthful and middle-aged age groups; and the older age groups consisted of a majority of non-e-government information users. This result supports earlier findings that age can be employed as a factor or independent variable to explain a particular social grouping, social process, or piece of individual or collective behaviour (Morgan 1986). Another study in the United States of America (USA) suggests that the age group which mostly adopts computers is 15-17 years, which is then followed by the age group of 26-35 years (Anderson *et al*, 2002; Carveth & Kretchmer 2002; Venkatesh, Chuan-Fong & Stolzoff 2000). Similarly, in South Korea the group that increased adoption of broadband was the younger age group (Choudrie & Lee 2004). Therefore, there is a significant age difference in terms of the e-government users and non-users. The younger and middle-aged respondents are more apathetic to adoption, whilst the older age more relevant to the non-users.

6.4.2.10 Occupation

These findings also indicated that there was a significant correlation between the occupation of respondents and access to e-government information and services. Generally, these findings showed that only government employees and students have more users than non-users. Other categories have more non-users than users. Respondents who are working in the business sector consisted of 48.4 percent users compared to 51.6 per cent non-users. Respondents who were self-employed consisted of more non-users (59.6 per cent) than users (40.4 per cent). Likewise, academicians had more non-users (33.3 per cent) than users (66.7 per cent). Furthermore, farmers had more non-users (92.5 per cent) than users (7.5 per cent).

Contrastingly, student categories had more users (52.1 percent) than non-users (47.9 percent) (Table 5-40). This is in accordance with Freeman's (1995) view that the most intensive use of technological resources like computers comes after school hours. Therefore, students are most likely to adopt new technologies, including computers and broadband as means of facilitating their studies and improving performance (Freeman's 1995). The results of this study also revealed that the retired or unemployed were not accessing (100 per cent) e-government information and services. This is in contrast to Freeman (1995) who asserted that the unemployed respondents were engaged in re-skilling in order to achieve white-collar jobs. ICTs facilitate the process of re-skilling; therefore, it is more likely that such unemployed respondents become the adopters of broadband than non-adopters (Freeman 1995).

6.5 Non-significant results

It is often interesting to evaluate not only significant results, but also unexpected results, especially in a relatively new field, such as e-government (Carter & Belanger 2004). Gender, compatibility, trust, relative advantage, perceived ease of use, perceived usefulness, satisfaction and image were found to be insignificant in terms of explaining factors that influence access to e-government information and e-government adoption in Tanzania. An interpretation of these results is presented below.

6.5.1 Gender

The study found that there were no significant differences between the gender of those who used the internet or websites to access government information and services and those who did not use the internet or websites to access government information and services. These findings may also be viewed in the light of previous research, for example, Choudrie and Lee (2004) who highlighted the role of housewives on the purchasing decisions of broadband. Surprisingly, these findings were not in line with study by Venkatesh, Chuan-Fong and Stolzoff (2000) who illustrated that male users used a computer more than

females, and suggested the male gender to be one of the most important variables when examining personal computer (PC) adoption in the household.

6.5.2 Compatibility

This study found that compatibility had a positive relationship with access to e-government and services. This means that citizens may have higher intentions to use e-government services than those who view these services as incompatible with their lifestyles. Surprisingly, the strength of this relationship is not statistically significant, which means that compatibility does not matter in explaining e-government adoption in Tanzania. On the contrary, Karahanna, Agarwal & Angst (2006) are of the opinion that higher levels of perceived compatibility are associated with increased intentions to adopt e-government.

6.5.3 Trust

In this study, trust was positively related to e-government use, but the association with e-government adoption was not significant. These findings contradict the findings of previous studies, which argue that trust should be imperative to establish citizen trust in e-government if it is to succeed (Fukuyama 1995; Williamson 1985). In the Tanzanian context, the trust factor cannot be used to explain e-government adoption. However, these findings are consistent with the research findings by Carter and Belanger (2004) who reported that trust in e-government does not have a direct effect on the use of e-government. Trust in the government does not have a direct effect on intention to use state e-government services. Citizens frequently interact with the government agencies to seek government information and services, such as the processing of admission for universities, to seek information about national examination results, etc. These activities must be completed regardless of the level of trust an individual has in the government.

6.5.4 E-service quality

As advocated by Zhong and Ying (2008), this study measured e-government website quality using system, information, and service quality characteristics. The results of this study

showed that information quality, service quality and system quality had a negative relationship with access to e-government systems. It was further observed that only system quality was significant. This means that low system quality hinders access to e-government system. Schaupp *et al* (2006) also support that system quality is a significant predictor of website satisfaction, and, therefore, intention to use the website. In addition, Li and Jiao (2008) confirmed that there is a significant relationship between website quality and user satisfaction and that this relationship affects the actual use of online services.

6.5.5 Relative advantage

According to Rogers (2003), relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes. The use of e-government contributes to valuable promotions of the company; enhances the quality and speed of customer services; creates competitive advantages; entices shoppers and encourages customer interaction; supports core business functions that are integral to business strategy; and provides new business opportunities by increasing market presence and facilitating online purchasing (Drinjak, Altmann & Phil 2001; Polatoglu & Ekin 2001; Tan & Teo 2000). According to Polatoglu & Ekin (2001) and Tan & Teo (2000), these advantages may have an effect on individuals' adoption decisions. However, it was surprising to find in this study that relative advantage is a non-significant predictor of e-government adoption. This study is in line with Agarwal and Prasad (1997) who found that there is no significant relationship between adoptions of online services and its relative advantages. This is probably because of a desire to adopt new technologies born out of curiosity about innovation rather than benefits innovation might offer.

6.5.6 Perceived ease of use (PEOU) and perceived usefulness (PU)

Perceived usefulness was originally defined as the belief that using a particular system would enhance one's job performance (Davis 1989). Perceived ease of use refers to one's perceptions of the amount of effort required to use the system. The model predicts that higher perceptions of usefulness and ease of use will increase intention to use a system

(Davis 1989). While PU was generally found to significantly influence e-government service use (Carter 2008; Carter & Belanger 2004; Dimitrova & Chen 2006; Lee & Rao 2008; Schaupp & Carter 2005; Tan, Benbasat & Cenfetelli 2008; Wangpipatwong *et al.*, 2008); the significance of PEOU received somewhat less empirical support than did PU (Carter 2008; Carter & Belanger 2005; Phang *et al.*, 2006; Tan *et al.*, 2008; and Wangpipatwong *et al.*, 2008).

Lin, Fofana & Liang (2011) assessed citizen adoption in Gambia and their findings indicated that perceived ease of use significantly affect citizen's attitude to use the e-government systems. However, Gambias perceived usefulness was found to have a weak link intention to use e-government systems. In this study, it was found that perceived usefulness had a positive relationship with e-government adoption. This means that perceived usefulness enhances e-government adoption. In contrast, perceived ease of use, as appears in Table 5-36, has a negative relationship with access to e-government information and services. However, these factors are not significant meaning that they cannot be used to explain e-government in Tanzania.

6.5.7 User satisfaction

Previous studies suggest that e-government performance will be evaluated in relation to a set of satisfaction dimensions that indicate the strong and the weak factors affecting user satisfaction of e-government service (Conrath & Mignen 1990; DeLone & McLean 2003; Yaghoubi, Haghi & Asl 2011). Surprisingly, this study found that satisfaction is positively related to e-government adoption, but this factor is not significantly related to e-government adoption.

6.5.8 Image

The results from this study suggested that image was not significant in determining e-government adoption in Tanzania. Although the analysis carried out in Section 5.5.6 of Chapter Five showed that image is positively related to e-government; and it did not play a role in influencing the dependent variable in this study. This result is in line with Carter and

Belanger (2005), who suggested that higher levels of perceived image do not directly affect citizens' intentions to use e-government services. Image is insignificant probably because of the collectivistic culture of the country where this study is conducted (Hofstede 1993). In a collectivistic society, people might consider too much differentiation and rewards for any reason as inimical to the fundamental goal of maintaining harmony in groups (Yamaguchi 1993). There may be little incentive in trying to gain high prestige, which would make one distinctive from the rest. Thus regardless of whether the use of the service can bestow higher image, the senior citizens' perception of the service will not be significantly affected.

6.6 Opportunities for e-government adoption

The results of the interview with policy makers of e-government in Tanzania revealed that, there are opportunities for e-government in Tanzania. These include, mobile phones, improvement in e-government services, several information can be provided by the e-government systems (see also Section 2.2.1 in Chapter Two). In addition, the government of Tanzania is constructing NICTBB with a view to achieve its ICT vision.

NICTBB is expected to enhance the usage of ICT applications for sustainable socio-economic development including, implementation of e-government, e-learning, e-health, e-commerce and much more locally and globally. ICT is taught in primary schools, universities and colleges, which mean that experts and users of ICTs and e-government are expected to increase. Internet access is getting cheaper, thus, more people can afford it. Moreover, the government encourages all government institutions and departments to employ e-government. Government support is imperative for the success of e-government (AlAwadhi & Morris 2009).

Nkwe (2011; 2011), and Mutula and Mostert (2010), have revealed that there are so many opportunities for e-government in Botswana and South Africa. For example, Botswana has channelled many efforts towards e-learning. There is a national e-learning committee tasked with formulating and promotion of e-learning in Botswana. The Ministry of Education is trying to encourage its partners to look at e-learning as one of the possible

teaching modes in Botswana (Nkwe 2011). Nkwe (2012) has noted that the government is working on broadband connection to schools, refurbishment of computers then delivered to schools and training of teachers and administrators on e-learning. In 2008, the government of India and Botswana went into partnership, which resulted in Botswana receiving sophisticated e-health machines from India (Nkwe 2011). In addition, the government of Botswana has seen e-health as a way to increased quality, safety, timeliness & efficiency. Some of the projects such as telemedicine, Integrated Patient Management System and Health Workers System are already in use (Nkwe 2011). Moreover, the government of Botswana has enabled an environment conducive for e-business. Mobile banking has brought the safety and security of banks to places located far from the halls and walls of the traditional commercial bank, thus providing previously unbanked populations with the conveniences of modern-day banking. The service allows anyone who has a mobile phone to access banking facilities such as balance enquiries, statement requests, transfer of funds, payments to third parties and opportunity to purchase pre-paid airtime (Nkwe 2012).

Similar to Botswana, the government of South Africa has put in place enabling policies, poverty alleviation programmes, ICT infrastructures and regulatory frameworks, which serve as opportunities for e-government in South Africa (Mutula and Mostert 2010). Other opportunities for e-government can be seen in countries like Tunisia, Mauritius and Egypt as discussed in Section 3.9 in Chapter Three.

6.7 Chapter summary

This chapter discussed data relating to factors that influence access to electronic government information and e-government adoption in the selected three districts of Tanzania. An attempt was made to show how the findings of the present study support or differ from the previous studies on factors affecting access and adoption of e-government. This chapter discussed the findings of all specific objectives indicated in Section 1.3.3 of Chapter One, with the exception of two specific objectives, namely to provide e-government adoption model within which new initiatives might be evaluated, which is covered in Chapter Seven and the current status of e-government was covered in Chapter

Two. The following chapter provides the summary, conclusions and recommendations for this study.

CHAPTER SEVEN: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This thesis presented and discussed the findings of factors that influence access to electronic government information and e-government adoption in selected districts in Tanzania. The background to the study providing the general introduction and definition of the research problem was presented in Chapter One. Chapters Two and Three of this thesis, reviewed and discussed literature focusing on this investigation. The research methodology detailing sampling procedures, data collection methods and statistical procedures employed by the study were presented in Chapter Four of the thesis. Chapter Five focused on the presentation of research findings while Chapter Six addressed the interpretation of and discussion on the emerging study findings. The purpose of this chapter is to summarise the study as well as present the conclusions and recommendations of the study. Suggestions for further research are also presented at the end of this chapter.

7.2 Overall summary of the study

The purpose of this study was to assess the current situation and the critical factors affecting access and use of e-government information and adoption of e-government in Tanzania and to provide and evaluate an e-government adoption model. The study was motivated by the notable problems associated with access to electronic government information and e-government adoption in most developing countries, including Tanzania. To achieve the aim of the study, eight objectives and seven research questions, as outlined in Table 1 of Chapter One, were formulated in relation to the scope of this investigation. A combination of the e-government evolution life cycle model (Siau and Long 2005), the technology acceptance model (TAM) (Davis 1989), information behaviour model (Wilson 1996), diffusion of innovation theory (Rogers 2002) and information system success model (DeLone & McLean 1992), were used in formulating the research model for the study. The resulting combination was considered to cater for complementary strengths and non-overlapping weaknesses. In addition, the combination of models and theories led to a model explaining factors that influence access of e-government information in Chapter

Three (figure 3-1), which was validated in Chapter Five and discussed in Chapter Six (figure 6-1).

TAM explains the intention towards the actual use of e-government websites with perceived usefulness and perceived ease of use as e-government adoption determinants Davis (1989). The Siau and Long (2005) model was used to investigate possible factors to e-government adoption, such as information and computer technology, human development situation, economics, culture and political environment. The Wilson (1999) model was used to explore the e-government information needs, while Rogers (1995) model was used to measure relative advantage, compatibility and image, and the DeLone and MacLean model (1992) was used to measure quality aspects of government websites and user satisfaction. Other variables, such as trustworthiness, were drawn from the literature review as indicated in Table1 of Chapter 1.

The study used questionnaires and interviews for data collection. The questionnaire targeted 450 respondents. These were selected through the non-probability method known as quota sampling. Among the distributed copies of questionnaires, 448 were useful. Snowball sampling was used to obtain qualitative data from the e-government policy makers. Of 448 respondents, 246 (54%) were males and 202 (44.9%) were females. The study also carried out literature review in order to provide the researcher with a general understanding of the research problem. The review also acted as a benchmark for comparing and contrasting the research results.

The study discussed the Tunisian, Mauritian and Egyptian e-government experiences to draw good practices and challenges in e-government adoption. Data emerging from the survey were analysed using the linear regression statistics of SPSS. In summary, the following are the key results, basing on the themes from the seven of the eight research objectives of this study. It should be noted that the remaining research objective on e-government adoption model is addressed under the recommendations section.

7.2.1 Government information needs

The study established, with regard to the information needs that, 373 (88.2%) of the respondents required information from the government. More specifically, the findings showed that 264 (58.7%) indicated that they needed land information, 207 (46.0) needed business and driving licenses, and 287 (68.3%) needed birth, death, and marriage certificates. In addition, the findings showed that 224 (49.8%) needed education information and research information, 215 (47.8%) needed sponsorship and funding information, 309 (68.9%) needed national examination information. The results also indicated that 175 (40.1%) needed migration information and travelling documents, and 235 (52.2%) needed medical information from the government.

7.2.2 Role of access of e-government information and services to e-government adoption

With respect to the role of accessing e-government information and services to e-government, this study found that if people can make rational decisions and take appropriate actions; coordinate their activities easily; and improve skills and awareness of government services, then they could have more chances of consulting internet/website when seeking government information. However, if people can access e-government systems and cannot: get their business improved; have access to new and better markets and improve their living standards, then they would have lesser chances of consulting the internet/websites when seeking government information and services. As a result, they cannot adopt e-government. Moreover, if people access the internet/websites to get government information and services, but fail to get an increase in their income; new and better opportunities; access to educational opportunities and medical services, then they cannot adopt e-government.

7.2.3 Factors enhancing access of e-government information and services

- Necessary knowledge;
- Necessary resources;
- Awareness;
- Confidence to use the website;
- Availability and reliability of internet connections;
- Positive incentive that has resulted from using the internet to search for government information;
- Getting information on demand ;
- Guidance for effective use of the internet;
- Possession of ICTs such as a computer or mobile phone;
- Availability of up to date information on the website;
- Education;
- Income;
- Social influence; and
- Occupation.

7.2.4 Factors that hinder access to e-government information and services

- Worrying about security and privacy of information;
- Lack of support from the government;
- No reliable electricity;
- Geographical location affects information accessibility through internet;
- People not getting as much information about the services as possible;
- Information content in the language which people do not understand;
- System quality;
- Cultural barriers; and
- Age.

7.2.5 Status of e-government in Tanzania

The e-government agency was established in Tanzania in order to facilitate e-government adoption in Tanzania. The agency is still new; its performance could not be evaluated in this study. UCAF and NICTBB are strategies used in Tanzania to ensure wider accessibility of e-government information and services. The built ICT infrastructure does not reach all regions and villages and there is still a problem of poor infrastructure in Tanzania. Factors hindering ICT infrastructure development included: poor utilization of NICTBB, which is caused by lack of awareness and little knowledge by the users. Lack of legal framework and security are also hinder infrastructure development in the rural areas of Tanzania. Furthermore, Tanzania is passing through three e-government stages, the web presence services, which is dominant, followed by medium interaction stage services and very little transaction services, which are not known by the majority.

7.2.6 Tunisia, Mauritius and Egypt's experience with e-government

Tunisia has shown significant progress in e-government development. For instance; Tunisia has an ICT based national strategy for modernizing telecommunication infrastructure, has formulated a regulatory framework of digital economy, enhanced international cooperation in ICT and has developed human resource management in ICT (Jebali 2008; Netshitenzhe 2011). In addition, Tunisia has created a national digital culture that assists in overcoming the problem of low individual usage and adoption of ICT. For example, Tunisia initiated a family PC program and internet access program to enhance e-government usage (Jebali 2008; Netshitenzhe 2011). However, despite the efforts Tunisia had embarked to facilitate e-government adoption, infrastructure and e-readiness were not sufficient for the objectives of their declared e-government strategy to be reached. The internet is expensive and beyond the reach of many. The online presence is still limited. Moreover, e-government services are not accepted and used by the citizen due to bureaucratic cultures. In addition, there is diminutive support from the local government authorities of Tunisia (Jebali 2008; Sadok & Djemaiel 2007).

Meanwhile, Mauritius has high infrastructure score and has developed various e-government initiatives (Rorissa & Demissie 2010; Board of Investment Mauritius n. d; Waema & Adera 2011). The establishment of an information infrastructure to connect the various local government authorities is the key enabler of the e-government initiatives in Mauritius (Waema & Adera 2011). In addition, the government of Mauritius has a strong vision for ICT, thus, providing a base for e-government (Information and Communication Technologies Authority n. d.). Moreover, the government has taken various measures to address the regulatory and legal framework for ICT (National Computer Board 2003), and has implemented security standards in order to address threats (Waema & Adera 2011). All ministries and departments have been wired, and all buildings interconnected into an integrated and secure network to facilitate collaboration, information sharing and coordination of activities within the civil service (Waema & Adera 2011).

Finally, Egypt has also invested heavily in ICT infrastructure and in providing affordable access to ICT services (Abdelsalm, Elkadi & Gamal 2010; Liebenau 2011). Like in Tunisia, the Egyptian government has reduced the cost of online services in order to influence citizens to use online services (Salem & Jarrar 2008). Despite those efforts, citizens continue to use manual processes, which is a hindrance to e-government success (Salem & Jarrar 2008). In addition, lack of a comprehensive e-government strategy and physical infrastructure is another hindrance to e-government success in Egypt (Liebenau 2010). Other obstacles are poor legal framework, digital divide and resistance to change (Salem & Jarrar 2008).

7.2.7 Opportunities for e-government in Tanzania

There are some opportunities for e-government in Tanzania, including an increase in mobile phones, improved e-government services, which can be offered through various e-government systems. Another opportunity for e-government in Tanzania is the construction of NICTBB that aims at enabling all Tanzanians to access e-government information and services. Moreover, the internet costs are lower, and the government supports all government ministries and departments on the use of e-government.

7.3 Conclusions

The above section summarised key findings from this study, while this section provides key conclusions as guided by the themes drawn from the research objectives of the study.

The first objective of this study was to establish the current government information needs of the respondents in the Dar es Salaam, Morogoro and Njombe districts. The study findings lead to the conclusion that a majority of the respondents, 373 (88.2%), needed information from the government. National examination information was the first choice followed by birth, death and marriage certificates, land information, medical information, educational and research information, sponsorship and funding information. Business licences and driving licences, and migration and travelling documents information were the last choice.

The second objective of this study was to investigate the role that access to e-government information may play in the successful e-government adoption process. The study concludes that access to e-government information can play both positive and negative roles to e-government adoption, as indicated in Section 7.2.2.

The third objective of this study was to determine factors that enhance access to e-government information and services. The study concludes that the following factors enhance access to e-government information and services: necessary knowledge, necessary resources, and awareness. Other factors include confidence to use the website, availability and reliability of internet connections, positive incentives resulting from using the internet to search for government information, and getting information on demand. In addition, factors enhancing access to e-government information and e-government adoption include guidance for effective use of the internet, possession of ICTs such as a computer or mobile phone, availability of up to date information in the website, education, income and social influence.

The fourth objective was to investigate factors that might hinder the access of government information and services. The study concludes that the following factors hinder access to e-government information and services: worrying about security and privacy of information, lack of support from the government, lack of reliable electricity, geographical location affects information accessibility through internet, and people not getting as much information about the services as possible. Other barriers include system quality, cultural barriers, age and information content is in a language that people do not understand.

The fifth objective was to assess the status of e-government in Tanzania. The study concludes that the government of Tanzania recognises the importance of ICT in the public sector. It has therefore prepared various strategies to enhance access and use of e-government. However, e-government in Tanzania is still in its nascent stages; the transaction stage is not fully realised.

The sixth objective of this study was to review other countries' experiences with e-government with the intention of using the lessons learnt for the adoption of e-government in Tanzania. Although it was observed that these countries still face some challenges, the countries have shown good progress in e-government implementation. It is therefore, important to look at these countries in order to find a good practice in implementation of e-government in Tanzania and to examine their strategies and solutions to identify what is working and what is not. In summary, those good practices to be learnt from are:

- Formulating ICT based national strategy for modernizing telecommunication infrastructure;
- Developing a regulatory framework for a digital economy;
- International cooperation in ICT;
- Developing human resource management in ICT;
- Developing a national digital culture in order to overcome the problem of low individual usage and adoption of ICT;

- Establishing an information infrastructure to connect the various local government authorities; and
- Establishing security standards in order to address threats.

The seventh objective was to determine opportunities for adopting e-government in Tanzania. The conclusion is that the government of Tanzania is committed to implementing e-government across the country. Accordingly, various efforts have been made to deploy e-government initiatives in Tanzania. They range from the reform of internal government processes, provision of simple government information, to offering transactional services for the public. However, more efforts and innovations are needed to provide advanced and value-added e-government services across the country.

7.4 Recommendations

This section addresses the eighth research objectives by recommending an e-government adoption model within which new initiatives might be evaluated.

The proposed model (see Chapter Three Section 3.9) was validated in Chapter Five. The validated model was discussed in Section 6.4 and Section 6.5 of this thesis. Figure 6-1 presents the validated research model of factors affecting access of e-government information (FAAEI) and e-government adoption in Tanzania. This study, therefore, recommends the FAAEI model to be used in the implementation and evaluation of e-government in Tanzania.

The success of e-government can be assured by taking note of the specific needs of the target groups of citizens using a particular e-government service. The results of this study indicated that information needs are positively and significantly related to access of e-government information and services. Furthermore, in assessing factors, which enhance access of e-government information and e-government adoption, necessary knowledge, necessary resources, awareness, confidence to use the website, availability and reliability of internet connections, positive incentives resulting from using the internet to search for

government information, and getting information on demand, were found to have a significant positive relationship with e-government adoption. In addition, guidance for effective use of the internet, possession of ICTs, such as a computer or mobile phone, availability of up to date information on the website, education, income and social influence, also had a positive and significant relationship with access to e-government information and e-government adoption.

These results are very encouraging. However, there is greater need to raise awareness of e-government in Tanzania. This can be achieved by advertising and promoting the national e-government websites and setting up citizen service centres to assist those who are less-computer-savvy to adapt e-government services. Moreover, factors identified as enhancing ones require attention in order to encourage further adoption and usage of internet within the country.

Although the survey results are very encouraging, e-government is yet to mature in Tanzania. As the results of this study have shown this can be attributed to several factors, including people worrying about security and privacy of information, lack of support from the government, unreliable electricity, geographical location, and people not getting as much information about the services as possible. Other barriers for e-government adoption are: information content provided in the language, which people do not understand, system quality, cultural barriers, and age. The government should consider these barriers when formulating an e-government policies. Moreover, e-government project teams need to consider these barriers in order to overcome them before implementing e-government systems.

7.5 Suggestions for further research

Further research should focus on extending this study to other developing countries and draw comparative analysis of e-government efforts in different countries in Africa from a citizens' perspective.

E-government can be viewed in different perspectives, for instance, government to government (G2G), government to citizen (G2C), and government to business (G2B). This study viewed factors affecting access to e-government information on G2C perspective; further studies should use the FAAEI model to study factors affecting access of e-government information from other perspectives.

In addition, the specific needs of citizens should be examine further in order to promote additional use of e-government information and services. Further research projects should use focus group discussions and interviews to find out the information needs of citizens in all the regions of Tanzania. The research should also focus on the services that are preferred most and those not included in the e-government systems. This study indicated that obtaining business and driving licences, migration and travelling documents information on the government websites were the least favoured services. This might be because these services are not online, or people are not aware of them. Further research should be conducted to establish why the above-mentioned e-government services and others not identified in this study are not preferred.

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| | | |
|---------|-----|---|
| ANCE | see | Agence Nationale de Certification Electronique |
| ANSI | see | Agence Nationale de Sécurité Informatique |
| ASPA | see | American Society for Public Administration |
| CIA | see | Central Intelligence Agency |
| COSTECH | see | Tanzania Commission for Science and Technology |
| EACS | see | East African Community Secretariat |
| ESRF | see | Economic and Social Research Foundation |
| IICD | see | International Institute for Communication and Development |
| MES | see | Ministère de l'Enseignement Supérieur |
| MTC | see | Ministère des Technologies de la Communication |
| TCRA | see | Tanzania Communications Regulatory Authority |
| UN | see | United Nations |
| UNHSP | see | United Nations Human Settlements Programme |
| UNISA | see | University of South Africa |
| URT | see | United Republic of Tanzania |

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APPENDICES

Appendix 1 A questionnaire cover letter for Tanzania citizens (English version)

Dear Sir / Madam

My name is Mercy Mlay Komba. I am a PhD candidate in the Information Studies Programme at the University of South Africa. I am conducting a study titled **“Access to electronic government information and e-government adoption in Tanzania”**. The study seeks to examine the current situation and the critical factors affecting access and use of e-government information and adoption of e-government in Tanzania.

The study includes Tanzanian citizens as you, who are most likely or least likely to use e-government initiatives. The respondents are selected using cluster sampling technique. Participation is voluntary. The questionnaire is going to take 30 minutes of your time. Therefore, I would like to invite you to be part of this study. Your participation in this study is very important because it will enable the researcher to assess the current situation and the critical factors affecting access and use of e-government information and adoption of e-government in Tanzania. The study also has major significance to the Tanzanian government in general and Tanzanian people in particular. The information you give will assist Tanzanian officials in the uptake and planning for e-government. I would like to assure you that you will not be required to incur any expenses should you be involved in this study.

The information provided will be processed in electronic form. Security features such as passwords and encryptions will be utilized to safeguard the confidentiality of the provided information. . The information will be preserved in electronic devices such as flash disks, CDROM and computer in order to provide backups for the data collected. The printed versions of the data will be filed properly and stored in a safe place for a period of five years. The notes and recordings will be transcribed using a word processor. The notebooks and the tape recordings will be destroyed after transcription.

The information you provide will be strictly kept confidential and will only be used for this study. Your credentials will not be included in the final report. Failure to participate in the research will not prejudice you in any way. Return of the survey form will constitute your consent to participate in the study. Thank you in anticipation of your involvement.

Any queries about your participation in this project may be directed to the researcher Mrs. Mercy Mlay Komba (mercymlay@yahoo.com) or the researcher's supervisor Prof. Patrick Ngulube (Ngulup@unisa.ac.za). If you have any queries or complaints about the way you have been treated, you may contact Prof. Patrick Ngulube (Ngulup@unisa.ac.za)

Yours sincerely

Mrs. Mercy Mlay Komba

Appendix 2: A survey questionnaire for Tanzanian citizens (English version)

| Section 1: Demographic Information (100) | | | | | | | | | | | | | | | |
|--|---|---|--------|--------------------|-------|---|-------|--|-------|----|-------------------------|---|------|------------|--|
| 00 | Region..... | | 01 | District..... | | | 02 | Division..... | | 03 | Ward..... | | | | |
| 04 | Village..... | | | | | | 05 | Date..... | | | | | | | |
| 101 | Gender | | 102 | Age (Years) | | | | | | | | | | | |
| 1 | Male | 2 | Female | 1 | 20-30 | 2 | 31-40 | 3 | 41-50 | 4 | 51-60 | 5 | Over | | |
| 103 | Education (tick the appropriate answer below) | | | | | | 104 | Occupation (tick the appropriate answer below) | | | | | | | |
| 1 | Never attended school | | | | | | 1 | Government employee | | | | | | | |
| 2 | Primary school | | | | | | 2 | Business sector employee | | | | | | | |
| 3 | O level secondary school | | | | | | 3 | Self-employment | | | | | | | |
| 4 | A level secondary school | | | | | | 4 | Student | | | | | | | |
| 5 | Advanced diploma or University degree | | | | | | 5 | Farmer | | | | | | | |
| 6 | Post-graduate/Masters degree | | | | | | 6 | Academician | | | | | | | |
| | | | | | | | 7 | Retiree/house wife | | | | | | | |
| 7 | Other | | | | | | 8 | Other | | | | | | | |
| 105 | Monthly income in TZS. Per month (Please tick the appropriate answer) | | | | | | | | | | | | | | |
| 1 | Less than 30,000 | | 2 | 30,000-100,000 | | | 3 | 101,000-400,000 | | 4 | 401,000-600,000 | | | | |
| 5 | 600,000-1,000,000 | | 6 | Above 1,000,000 | | | 7 | Not applicable | | 8 | I do not want to answer | | | | |
| 106 | Are you the head of the house hold? | | 2 | Yes | | | 1 | No | | | | | | | |
| 107 | If not, what is your relationship to the head of the household? | | | | | | | | | | | | | | |
| 1 | Spouse | | 2 | Child | | | 3 | Other | | | | | | | |
| 108 | In which category is your house of residence? Please tick the appropriate answer | | | | | | | | | | | | | | |
| 1 | Renting | | 2 | Personal ownership | | | 3 | Other | | | | | | | |
| 109 | Does the house have electricity? | | | | | | | | | | | | | | |
| 2 | Yes | | 1 | No | | | | | | | | | | | |
| 110 | Does the house have a fixed line phone? | | | | | | | | | | | | | | |
| 2 | Yes | | 1 | No | | | | | | | | | | | |
| 111 | Which of the following items do you own? Tick the appropriate one(s) | | | | | | | | | | | | | | |
| 1a | Laptop | | 2b | Desktop computer | | | 3c | Mobile | | 4d | Radio | | 5e | Television | |
| Section 2: Public Services Information (200) | | | | | | | | | | | | | | | |
| 201: | Do you require any information from the government? | | | | | | | | | | | | | | |
| 2 | Yes | | 1 | No | | | | | | | | | | | |
| 202 | If yes to question 201, please circle one number for each statement, to show on which extent you require the mentioned type of information: 2-Yes; 1-No | | | | | | | | | | | | | | |
| 202a | Land information | | | | | | 2 | 1 | | | | | | | |
| 202b | Business licence, driving licence | | | | | | 2 | 1 | | | | | | | |
| 202c | Birth death, and marriage certificates | | | | | | 2 | 1 | | | | | | | |
| 202d | Education information/ research | | | | | | 2 | 1 | | | | | | | |
| 202e | Sponsorship/funding | | | | | | 2 | 1 | | | | | | | |
| 202f | National examination information | | | | | | 2 | 1 | | | | | | | |
| 202g | Migration information/ travelling documents | | | | | | 2 | 1 | | | | | | | |
| 202h | Medical information | | | | | | 2 | 1 | | | | | | | |
| 202i | Other | | | | | | | | | | | | | | |
| 203 | Have you tried to find this information? | | 2 | Yes | | | 1 | No | | | | | | | |
| 204 | If "YES", were you successful in finding the needed information? | | 2 | Yes | | | 1 | No | | | | | | | |

| | | | | | | | |
|------|--|----|-----------|----|--------------------|----|-------|
| 205 | If "NO" to question 203, why have you not tried to find it? Tick the appropriate answer following the criteria below: 1-strongly disagree; 2-disagree; 3-undecided; 4-agree; 5-strongly agree | | | | | | |
| 205a | I do not want to know the risk | 5 | 4 | 3 | 2 | 1 | |
| 205b | I do not want information that will conflict what I believe | 5 | 4 | 3 | 2 | 1 | |
| 205c | I do not know how to seek the information | 5 | 4 | 3 | 2 | 1 | |
| 205d | I do not have access to the source | 5 | 4 | 3 | 2 | 1 | |
| 205e | The role I have in the society will be jeopardized | 5 | 4 | 3 | 2 | 1 | |
| 205f | Other barriers | | | | | | |
| 206 | Who do you consult when you need government information? Please tick the appropriate using the following scale; 1-Very unlikely; 2-unlikely; 3- Not sure 4-likely; 5-Very likely | | | | | | |
| 206a | Personal experience | 5 | 4 | 3 | 2 | 1 | |
| 206b | Parent/ guardian/family | 5 | 4 | 3 | 2 | 1 | |
| 206c | Neighbour/friends | 5 | 4 | 3 | 2 | 1 | |
| 206d | Church/Mosque | 5 | 4 | 3 | 2 | 1 | |
| 206e | Social group gathering | 5 | 4 | 3 | 2 | 1 | |
| 206f | Newspapers | 5 | 4 | 3 | 2 | 1 | |
| 206g | Magazines | 5 | 4 | 3 | 2 | 1 | |
| 206h | Newsletters | 5 | 4 | 3 | 2 | 1 | |
| 206i | Posters | 5 | 4 | 3 | 2 | 1 | |
| 206j | Books | 5 | 4 | 3 | 2 | 1 | |
| 206k | Conference/workshop/ Seminars | 5 | 4 | 3 | 2 | 1 | |
| 206l | Library | 5 | 4 | 3 | 2 | 1 | |
| 206m | Visit government agency/office | 5 | 4 | 3 | 2 | 1 | |
| 206n | Email | 5 | 4 | 3 | 2 | 1 | |
| 206o | Internet/website | 5 | 4 | 3 | 2 | 1 | |
| 206p | Telephone/Mobile phone | 5 | 4 | 3 | 2 | 1 | |
| 206q | Other | | | | | | |
| 207 | Do you use a mobile phone to seek government information? | 2 | Yes | 1 | No | | |
| 208 | If you use a mobile phone, whom do you consult? (Tick the appropriate box(es)) | | | | | | |
| 1a | Friend | 2b | Colleague | 3c | Government officer | 4d | Other |
| 209 | Do you use email when you are seeking government information? Tick the appropriate | 2 | Yes | 1 | No | | |
| 210 | If you use email, whom do you consult? (Tick the appropriate box(es)) | | | | | | |
| 1a | Friend | 2b | Colleague | 3c | Government Officer | 4d | Other |
| 211 | What motivates you to seek government information? Please use the following criteria 1-strongly disagree; 2-disagree; 3-undecided; 4-agree; 5-strongly agree | | | | | | |
| 211a | A need for research information | 5 | 4 | 3 | 2 | 1 | |
| 211b | To update my knowledge on government issues | 5 | 4 | 3 | 2 | 1 | |
| 211c | A need for government services, for example licences, passports, certificates, medical services, scholarships etc. | 5 | 4 | 3 | 2 | 1 | |
| 211d | Political issues | 5 | 4 | 3 | 2 | 1 | |
| 211e | Personal interests | 5 | 4 | 3 | 2 | 1 | |
| 211f | Others | 5 | 4 | 3 | 2 | 1 | |
| 212 | What problems do you encounter when you try to access this information? Tick the appropriate answer following the criteria below:1-strongly disagree; 2-disagree; 3-undecided; 4-agree; 5-strongly agree | | | | | | |
| 212a | Poor infrastructure making the access difficult | 5 | 4 | 3 | 2 | 1 | |
| 212b | The information was too difficult to find | 5 | 4 | 3 | 2 | 1 | |
| 212c | I do not have search skills | 5 | 4 | 3 | 2 | 1 | |
| 212d | The information is complicated | 5 | 4 | 3 | 2 | 1 | |
| 212e | The information source is expensive | 5 | 4 | 3 | 2 | 1 | |
| 212f | The information is located far | 5 | 4 | 3 | 2 | 1 | |
| 212g | Language is a problem | 5 | 4 | 3 | 2 | 1 | |
| 212h | Policy and regulation do not support access of the information | 5 | 4 | 3 | 2 | 1 | |
| 212i | Other barriers | | | | | | |
| 213 | How frequently are you in contact with the following sources of government information? 1- Never used; 2- once in a while/only | | | | | | |

| when needed; 3- once a month 4- once a week 5- once a day | | | | | | | |
|---|---|---|------------------------|---|-------------------------|---|--------------------|
| 213a | Personal experience | 5 | 4 | 3 | 2 | 1 | |
| 213b | Parent/guardian/family | 5 | 4 | 3 | 2 | 1 | |
| 213c | Neighbour/friends | 5 | 4 | 3 | 2 | 1 | |
| 213d | Church/mosque | 5 | 4 | 3 | 2 | 1 | |
| 213e | Social group gathering | 5 | 4 | 3 | 2 | 1 | |
| 213f | Newspapers | 5 | 4 | 3 | 2 | 1 | |
| 213g | Magazines | 5 | 4 | 3 | 2 | 1 | |
| 213h | Newsletters | 5 | 4 | 3 | 2 | 1 | |
| 213i | Posters | 5 | 4 | 3 | 2 | 1 | |
| 213j | Books | 5 | 4 | 3 | 2 | 1 | |
| 213k | Conference/workshop/seminars | 5 | 4 | 3 | 2 | 1 | |
| 213l | Email | 5 | 4 | 3 | 2 | 1 | |
| 213m | Internet/website | 5 | 4 | 3 | 2 | 1 | |
| 213n | Library | 5 | 4 | 3 | 2 | 1 | |
| 213o | Government agency | 5 | 4 | 3 | 2 | 1 | |
| 213p | Other | 5 | 4 | 3 | 2 | 1 | |
| 214 | How likely is it for you to get government information or conduct transactions with the public service using the sources below? 1-Very unlikely; 2-unlikely; 3- undecided; 4-likely; 5-Very likely | | | | | | |
| 214a | Face to face | 5 | 4 | 3 | 2 | 1 | |
| 214b | Using an agent/government office | 5 | 4 | 3 | 2 | 1 | |
| 214c | Websites | 5 | 4 | 3 | 2 | 1 | |
| 214d | Email | 5 | 4 | 3 | 2 | 1 | |
| 215 | Does the information you get from any of the sources that you use to obtain government information satisfy your needs? 1-Not at all satisfied; 2-Not satisfied 3-Undecided; 4-Somewhat satisfied; 5- Very satisfied | | | | | | |
| 215a | Personal experience | 5 | 4 | 3 | 2 | 1 | |
| 215b | Parent/guardian/family | 5 | 4 | 3 | 2 | 1 | |
| 215c | Neighbour/friends | 5 | 4 | 3 | 2 | 1 | |
| 215d | Church/mosque | 5 | 4 | 3 | 2 | 1 | |
| 215e | Social group gathering | 5 | 4 | 3 | 2 | 1 | |
| 215f | Newspapers | 5 | 4 | 3 | 2 | 1 | |
| 215g | Magazines | 5 | 4 | 3 | 2 | 1 | |
| 215h | Newsletters | 5 | 4 | 3 | 2 | 1 | |
| 215i | Posters | 5 | 4 | 3 | 2 | 1 | |
| 215j | Books | 5 | 4 | 3 | 2 | 1 | |
| 215k | Conference/workshop/seminars | 5 | 4 | 3 | 2 | 1 | |
| 215l | Internet | 5 | 4 | 3 | 2 | 1 | |
| 215m | Library | 5 | 4 | 3 | 2 | 1 | |
| 215n | Government agency | 5 | 4 | 3 | 2 | 1 | |
| 215o | Other | 5 | 4 | 3 | 2 | 1 | |
| 216 | How many times annually do you conduct transactions with the public sector? (tick the appropriate) | | | | | | |
| 1 | Less than 5 times | 2 | Between 5 and 10 times | 3 | Between 10 and 20 times | 4 | More than 20 times |
| 217 | When you use internet to access e-government information, what type of government information do you access? Please tick the appropriate answer; 2-Yes; 1-No | | | | | | |
| 217a | Renewing driver's license | | | 1 | 2 | | |
| 217b | Voter registration | | | 1 | 2 | | |
| 217c | National park information and reservations | | | 1 | 2 | | |
| 217d | Voting on the internet | | | 1 | 2 | | |
| 217e | Information on value added tax (VAT), public pension fund etc. | | | 1 | 2 | | |
| 217f | Online payments | | | 1 | 2 | | |
| 217g | Online forms (downloading and submission) | | | 1 | 2 | | |
| 217h | Licenses for example driving, death and marriage certificates (information and services) | | | 1 | 2 | | |
| 217i | Medical information and services | | | 1 | 2 | | |
| 217j | Vacancies information | | | 1 | 2 | | |

| | | | |
|------|--|---|---|
| 217k | Sponsorship information and services | 1 | 2 |
| 217l | Contacts of various government offices | 1 | 2 |
| 217m | Educational information, for example national examination results, university admissions | 1 | 2 |

Section 3: Use of government websites to obtain information and services (300)

| | | | | | | | | | | | | |
|------|--|------------------|----|---|----|--|----|--|----|------------|----|------------|
| 301 | Have you heard of the internet before? Tick the appropriate answer 2-Yes; 1-No | | | | | | | | | | | |
| | 2 | Yes | 1 | No | | | | | | | | |
| 302 | If yes, where did you hear about it? | | | | | | | | | | | |
| | 1a | School | 2b | University | 3c | College | 4d | Friends | 5e | Newspapers | 6f | Television |
| | 7g | Radio | 8h | Family | 9i | Other | | | | | | |
| 303 | Have you ever used the internet? | | | | | | | | | | | |
| | 2 | Yes | 1 | No | | | | | | | | |
| 304 | How do you access services at the internet? Please tick the appropriate answer in the appropriate boxes | | | | | | | | | | | |
| | 1 | I use it my self | 2 | I ask an attendant to email/browse for me | 3 | Other | | | | | | |
| 305 | How frequently do you use the internet? | | | | | | | | | | | |
| | 1 | Never used | 2 | Once in a while/only when needed | 3 | Once a month | 4 | Once a week | | | | |
| | 5 | Once a day | 6 | More than once a day | | | | | | | | |
| 306 | What means do you use to connect to the internet? | | | | | | | | | | | |
| | 1a | At home | 2b | In the office | 3c | In a cybercafé or commercial computer centre | 4d | In the house of a friend/neighbour/colleague | | | | |
| | 5e | Cell phone | 6f | Internet at the workplace | 7g | Modem | 8h | Other - | | | | |
| 307 | To which extent do you agree or disagree with regard to the type of website you use more often? Tick the boxes below using the following criteria: 1 = Strongly disagree; 2 = disagree; 3 = undecided 4=agree; 5= Strongly agree | | | | | | | | | | | |
| 307a | News | 5 | 4 | 3 | 2 | 1 | | | | | | |
| 307b | Education related | 5 | 4 | 3 | 2 | 1 | | | | | | |
| 307c | Entertainment | 5 | 4 | 3 | 2 | 1 | | | | | | |
| 307d | Social (email, chat messengers, skype, twitter, face book etc.) | 5 | 4 | 3 | 2 | 1 | | | | | | |
| 307e | Religious affairs | 5 | 4 | 3 | 2 | 1 | | | | | | |
| 307f | Business/work | 5 | 4 | 3 | 2 | 1 | | | | | | |
| 307g | Government information | 5 | 4 | 3 | 2 | 1 | | | | | | |
| 307h | Health information | 5 | 4 | 3 | 2 | 1 | | | | | | |
| 307i | Other | | | | | | | | | | | |
| 308 | Do you use government websites to do the following? Please tick the appropriate answer following the criteria, 1 = Strongly disagree; 2 = disagree; 3 = undecided 4=agree; 5= Strongly agree | | | | | | | | | | | |
| 308a | Gather information (Informative) | 5 | 4 | 3 | 2 | 1 | | | | | | |
| 308b | Send an e-mail for a query (Interactive) | | | | | | | | | | | |
| 308c | Submit personal information if needed (Transactional) | | | | | | | | | | | |
| 308d | Pay services charges online (Integrative) | | | | | | | | | | | |
| 309 | What happened when you searched for information on the government website? Tick the appropriate following the criteria 1 = Strongly disagree; 2 = disagree; 3 = undecided 4=agree; 5= Strongly agree | | | | | | | | | | | |
| 309a | I did not find the information I needed | 5 | 4 | 3 | 2 | 1 | | | | | | |
| 309b | Found some information that helped | 5 | 4 | 3 | 2 | 1 | | | | | | |
| 309c | I found enough information to deal with the situation to my satisfaction. | 5 | 4 | 3 | 2 | 1 | | | | | | |

Section 4: Factors affecting access of electronic government information (400)

| | | | | | | | | | | | |
|------|---|---|---|---|---|---|--|--|--|--|--|
| 401 | To what extent do you agree or disagree with the following facilitating conditions for you to access government information (Tick one box against each statement -1 = Strongly disagree; 2 = disagree; 3 = undecided 4=agree; 5= Strongly agree | | | | | | | | | | |
| 401a | I have the necessary knowledge to access government information through the government website | 5 | 4 | 3 | 2 | 1 | | | | | |
| 401b | I have the necessary resources to access information from the government website (For example IT infrastructure, internet access) | 5 | 4 | 3 | 2 | 1 | | | | | |
| 401c | Guidance is available for me to use the internet effectively for information access | 5 | 4 | 3 | 2 | 1 | | | | | |
| 401d | My government conducts marketing campaigns for people to use the internet when seeking information (awareness programs) | 5 | 4 | 3 | 2 | 1 | | | | | |

| | | | | | | |
|------|--|---|---|---|---|---|
| 401e | I am confident to use government websites | 5 | 4 | 3 | 2 | 1 |
| 401f | Internet connections are available and reliable | 5 | 4 | 3 | 2 | 1 |
| 401g | I can afford internet costs | 5 | 4 | 3 | 2 | 1 |
| 401h | I have a computer/mobile phone | 5 | 4 | 3 | 2 | 1 |
| 401i | I am not worried about security and privacy of information in government websites | 5 | 4 | 3 | 2 | 1 |
| 401j | Our government motivates citizens to use the internet to seek for government information for example by giving free computers/laptops/mobile phones and provision of free public internet access points. | 5 | 4 | 3 | 2 | 1 |
| 401k | There is national policy and regulation for usage, data protection and copyrights | 5 | 4 | 3 | 2 | 1 |
| 401l | The government sector devotes funds to support provision of government information through internet | 5 | 4 | 3 | 2 | 1 |
| 401m | There is a search criteria making easy access of information | 5 | 4 | 3 | 2 | 1 |
| 401n | I get the information I need | 5 | 4 | 3 | 2 | 1 |
| 401o | The internet can be easily domesticated into personal everyday routines and hence, used more often | 5 | 4 | 3 | 2 | 1 |
| 401p | My previous experience with the internet has enhanced my continuous usage | 5 | 4 | 3 | 2 | 1 |
| 401q | There is a positive incentive that has resulted from using the internet to search for government information | 5 | 4 | 3 | 2 | 1 |
| 401r | There is constant electricity | 5 | 4 | 3 | 2 | 1 |
| 401s | Geographical location does not affect information accessibility through the internet | 5 | 4 | 3 | 2 | 1 |
| 401t | I get as much information about the services as possible | 5 | 4 | 3 | 2 | 1 |
| 401u | I get information on demand | 5 | 4 | 3 | 2 | 1 |
| 401v | There is up to date information | 5 | 4 | 3 | 2 | 1 |
| 401w | The information content is in the language which I understand | 5 | 4 | 3 | 2 | 1 |
| 401x | The website offers disability access | 5 | 4 | 3 | 2 | 1 |
| 401y | Information and services are accessible conveniently using devices such as cell phones | 5 | 4 | 3 | 2 | 1 |
| 401z | Other factors | | | | | |

Section 5: Factors affecting the use of electronic government information (500) To what extent do you agree or disagree about the following facilitating conditions for you to use government information from the internet/web site? (Tick one box against each statement - Key: 1 = Strongly disagree; 2 = disagree; 3 = undecided 4=agree; 5= Strongly agree

| | | | | | | |
|------|--|---|---|---|---|---|
| 501 | System quality | | | | | |
| 501a | The government website is easy to use | 5 | 4 | 3 | 2 | 1 |
| 501b | The government website is easy to learn | 5 | 4 | 3 | 2 | 1 |
| 501c | I find it easy to get this web site to do what I want it to do | 5 | 4 | 3 | 2 | 1 |
| 501d | Using the government website does not require a lot of efforts | 5 | 4 | 3 | 2 | 1 |
| 501e | Using the government website is not often frustrating | 5 | 4 | 3 | 2 | 1 |
| 502 | Information quality | | | | | |
| 502a | Accuracy : The website provides accurate information | 5 | 4 | 3 | 2 | 1 |
| 502b | Reliability :The website provides reliable information | 5 | 4 | 3 | 2 | 1 |
| 502c | Relevancy : The website provides relevant information | 5 | 4 | 3 | 2 | 1 |
| 502d | Easiness: The website provides easy-to-understand information | 5 | 4 | 3 | 2 | 1 |
| 502e | The information provided by this website is in useful format | 5 | 4 | 3 | 2 | 1 |
| 502f | Information provided by this website meets my needs | 5 | 4 | 3 | 2 | 1 |
| 503 | Service quality | | | | | |
| 503a | The government website provides reliable services | 5 | 4 | 3 | 2 | 1 |
| 503b | The government website provides services at the times it promises | 5 | 4 | 3 | 2 | 1 |
| 503c | The government website gives prompt services to citizens | 5 | 4 | 3 | 2 | 1 |
| 503d | The government website is designed with citizens' best interest at heart | 5 | 4 | 3 | 2 | 1 |
| 503e | The government website is designed to satisfy the needs of citizens | 5 | 4 | 3 | 2 | 1 |
| 504 | Trust in government | | | | | |
| 504a | I feel that government acts in citizens' best interest | 5 | 4 | 3 | 2 | 1 |
| 504b | I feel fine interacting with the government since government generally fulfills its duties efficiently | 5 | 4 | 3 | 2 | 1 |
| 504c | I always feel confident that I can rely on government to do their part when I interact with them | 5 | 4 | 3 | 2 | 1 |

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|------|--|---|---|---|---|---|
| 504d | I am comfortable relying on the government to meet its obligations | 5 | 4 | 3 | 2 | 1 |
| 505 | Trust in the government website | | | | | |
| 505a | E-government providers are trustworthy | 5 | 4 | 3 | 2 | 1 |
| 505b | The website can be trusted | 5 | 4 | 3 | 2 | 1 |
| 505c | This website seems to be honest and truthful to me | 5 | 4 | 3 | 2 | 1 |
| 506 | Satisfaction | | | | | |
| 506a | Using the internet to obtain government information is adequate to accomplish my purpose | 5 | 4 | 3 | 2 | 1 |
| 506b | Using the internet to obtain government information is effective to accomplish my purpose | 5 | 4 | 3 | 2 | 1 |
| 506c | My overall satisfaction level with regard to the internet is better than I expected | 5 | 4 | 3 | 2 | 1 |
| 506d | The overall quality of the internet is better than I thought it would be | 5 | 4 | 3 | 2 | 1 |
| 506e | I will recommend the website that provides government information to friends/colleagues/family | 5 | 4 | 3 | 2 | 1 |
| 506f | I will continue accessing government information on the internet even if others in my community do not | 5 | 4 | 3 | 2 | 1 |
| 506g | I prefer accessing government information from the internet when I need government services | 5 | 4 | 3 | 2 | 1 |
| 507 | Intention to use | | | | | |
| 507a | I intend to continue using the internet to access government information in the future | 5 | 4 | 3 | 2 | 1 |
| 507b | I will regularly use the internet to access government information in the future | 5 | 4 | 3 | 2 | 1 |
| 507c | I intend to increase my use of the internet to access government information in the future | 5 | 4 | 3 | 2 | 1 |
| 507d | I will continue using the internet to access government information in the future | 5 | 4 | 3 | 2 | 1 |
| 508 | Relative advantage | | | | | |
| 508a | Using the internet to access government information enabled me to better manage my daily activities | 5 | 4 | 3 | 2 | 1 |
| 508b | The internet enables me to meet my government information needs | 5 | 4 | 3 | 2 | 1 |
| 508c | The internet offers me personalized government services | 5 | 4 | 3 | 2 | 1 |
| 508d | Using the internet enables me to have access to timely government information and services | 5 | 4 | 3 | 2 | 1 |
| 509 | Image | | | | | |
| 509a | Using the internet to obtain government information improves my image | 5 | 4 | 3 | 2 | 1 |
| 509b | People who use the internet to obtain government information are IT savvy | 5 | 4 | 3 | 2 | 1 |
| 509c | People who use the internet to obtain government information are trendy | 5 | 4 | 3 | 2 | 1 |
| 509d | Only young people use the internet to obtain government information | 5 | 4 | 3 | 2 | 1 |
| 509e | People who use the internet to obtain government information have more prestige | 5 | 4 | 3 | 2 | 1 |
| 510 | Compatibility | | | | | |
| 510a | Using the internet fits well with my lifestyle | 5 | 4 | 3 | 2 | 1 |
| 510b | I think that using the internet to obtain government information fits well with the way I live my life | 5 | 4 | 3 | 2 | 1 |
| 510c | Using the internet to access government information is completely compatible with my current situation | 5 | 4 | 3 | 2 | 1 |
| 510d | Using the internet is compatible with all aspects of my lifestyle | 5 | 4 | 3 | 2 | 1 |
| 511 | Perceived ease of use | | | | | |
| 511a | Usability: It is easy to use the internet to obtain government information and services | 5 | 4 | 3 | 2 | 1 |
| 511b | Accessibility: The government websites provides access for persons with disabilities | 5 | 4 | 3 | 2 | 1 |
| 511c | Navigation: It is easy to navigate around the government website | 5 | 4 | 3 | 2 | 1 |
| 512 | Perceived Usefulness (PU) | | | | | |
| 512a | Content : The website provides the precise government information I need | 5 | 4 | 3 | 2 | 1 |
| 512b | Timeliness: Usually the government information from the government website is up-to-date | 5 | 4 | 3 | 2 | 1 |

| | | | | | | |
|------|--|---|---|---|---|---|
| 512c | Transparency: The government websites enable me to actively give my opinion to the government | 5 | 4 | 3 | 2 | 1 |
| 512d | Accountability: I am able to communicate with government officials through the government website/email/ internet | 5 | 4 | 3 | 2 | 1 |
| 512e | Pricing : I save money and time when using information from the government website | 5 | 4 | 3 | 2 | 1 |
| 513 | Social influence | | | | | |
| | How important are the following factors or conditions in influencing your decision to access government information on the internet in the future? (Tick one box against each statement - Key: 1 = least important; 2 = less important; 3 =probably; 4= important; 5 = very important | | | | | |
| 513a | If your close friend accesses government information on the internet | 5 | 4 | 3 | 2 | 1 |
| 513b | If your leader from local government accesses government information on the internet | 5 | 4 | 3 | 2 | 1 |
| 513c | If your family would look favourably on you for accessing information on the internet | 5 | 4 | 3 | 2 | 1 |
| 513d | If your friends would look favourably on you for accessing government information on the internet | 5 | 4 | 3 | 2 | 1 |
| 513e | If it is a culture in my community to access government information on the internet | 5 | 4 | 3 | 2 | 1 |
| 513f | My decision to access, (or not to access) government information on the internet is influenced by my family/friends | 5 | 4 | 3 | 2 | 1 |
| 514 | Information use/ Net benefit To what extent do you agree or disagree with the following statements about the anticipated benefits of accessing government information on the internet? (Tick one box against each statement - Key:1 = Strongly disagree; 2 = disagree; 3 = Undecided 4= agree; 5 = Strongly agree | | | | | |
| 514a | It has helped me in making rational decisions and take appropriate actions | 5 | 4 | 3 | 2 | 1 |
| 514b | It has improved/expanded my business | 5 | 4 | 3 | 2 | 1 |
| 514c | It has enabled me to coordinate activities easily | 5 | 4 | 3 | 2 | 1 |
| 514d | It has improved my skills | 5 | 4 | 3 | 2 | 1 |
| 514e | It has improved my awareness of government services | 5 | 4 | 3 | 2 | 1 |
| 514f | It has enabled me to access new and better markets | 5 | 4 | 3 | 2 | 1 |
| 514g | It has improved my living standards | 5 | 4 | 3 | 2 | 1 |
| 514h | It has increased my income | 5 | 4 | 3 | 2 | 1 |
| 514i | It has given me new and better opportunities | 5 | 4 | 3 | 2 | 1 |
| 514j | It has opened job opportunities for me | 5 | 4 | 3 | 2 | 1 |
| 514k | It has given me access to educational opportunities | 5 | 4 | 3 | 2 | 1 |
| 514l | It has given me access to medical services | 5 | 4 | 3 | 2 | 1 |
| 515 | Cultural barriers | | | | | |
| 515a | Social exclusion caused by the problem of unequal access to the internet (digital divide) | 5 | 4 | 3 | 2 | 1 |
| 515b | The internet cannot be domesticated into personal everyday routines hence not it is not used | 5 | 4 | 3 | 2 | 1 |
| 515c | Previous experience with the internet affects its usage | 5 | 4 | 3 | 2 | 1 |
| 515d | The benefits are not clear, hence traditional means are preferred | 5 | 4 | 3 | 2 | 1 |
| 515e | There is a negative incentive that results from disparities developing between electronic and non-electronic services | 5 | 4 | 3 | 2 | 1 |

Thank you so much for your time and assistance

Appendix 3 MASWALI YA UTAFITI KWA WANANCHI WA TANZANIA (TOLEO LA KISWAHILI)- Kiswahili version

| | | | | | | | | | | | | | |
|---|--|----|-------------|---------------------------|--------------|----|----------------------------|------------------------------|-------|----------------------------|-------|----|--------------|
| Sehemu 1: Taarifa za Takwimu (100) | | | | | | | | | | | | | |
| 00 | Mkoa..... | 01 | Wilaya..... | 02 | Tarafa | 03 | Kata..... | | | | | | |
| 04 | Kijiji..... | | | 05 | Tarehe | | | | | | | | |
| 101 | Jinsia | | 102 | Umri (Miaka) | | | | | | | | | |
| 1 | Kiume | 2 | Kike | 1 | 20-30 | 2 | 31-40 | 3 | 41-50 | 4 | 51-60 | 5 | Zaidi |
| 103 | Elimu (Chagua jibu sahihi) | | | | | | 104 | Kazi (Chagua jibu sahihi) | | | | | |
| 1 | Sijahudhuria Shule kabisa | | | | | | 1 | Mwajiriwa wa shirika binafsi | | | | | |
| 2 | Elimu ya Msingi | | | | | | 2 | Mfanyi Biashara | | | | | |
| 3 | Kidato cha IV | | | | | | 3 | Nimejajiri | | | | | |
| 4 | Kidato cha Sita | | | | | | 4 | Mwanafunzi | | | | | |
| 5 | Elimu ya Diploma au Stashahada | | | | | | 5 | Mkulima | | | | | |
| 6 | Diploma ya uzamili/shahada ya uzamili— (Postgraduate/masters) | | | | | | 6 | Mwanazuoni/ academician | | | | | |
| | | | | | | | 7 | Mstaafu/Mama wa nyumbani | | | | | |
| 7 | Nyingine | | | | | | 8 | Nyingine | | | | | |
| 105 | Kipato cha mwezi kwa fedha za TZs (tafadhali chagua jibu sahihi) | | | | | | | | | | | | |
| 1 | Chini ya 30,000 | | 2 | Kati ya 30,000 na 100,000 | | 3 | Kati ya 101,000 na 400,000 | | 4 | Kati ya 401,000 na 600,000 | | | |
| 5 | Kati ya 600,000 na 1,000,000 | | 6 | Zaidi 1,000,000 | | 7 | Sina kipato | | 8 | Sitaki kujibu | | | |
| 106 | Je wewe ni mmiliki wa kaya? | | 2 | Ndiyo | | 1 | Hapana | | | | | | |
| 107 | Kama siyo, unamahusiano gani na mmiliki wa kaya? | | | | | | | | | | | | |
| 1 | Mke | | 2 | Mtoto | | 3 | Eleza uhusiano | | | | | | |
| 108 | Kaya yenu ipo katika kundi lipi? Tafadhali chagua jibu sahihi | | | | | | | | | | | | |
| 1 | Wapangaji | | 2 | Wamiliki | | 3 | Maelezo mengineyo | | | | | | |
| 109 | Je nyumba yenu ina umeme? | | | | | | | | | | | | |
| 2 | Ndiyo | | 1 | Hapana | | | | | | | | | |
| 110 | Je nyumba yenu imeunganishwa na simu ya mezani? | | | | | | | | | | | | |
| 2 | Ndiyo | | 1 | Hapana | | | | | | | | | |
| 111 | Unamiliki nini kati ya vifuatavyo? Chagua jibu sahihi (hata kama ni zaidi ya moja tiki panapo stahili) | | | | | | | | | | | | |
| 1a | Laptop Kompyuta | | 2b | Kompyuta ya mezani | | 3c | Simu ya kiganjani | | 4d | Redio | | 5e | Televishe ni |

Section 2: Huduma za kijamii (200)

| | | | | | | | | | | | | |
|---|---|--|---|--------|--|---|--------|--|--|--|--|--|
| 201: Una mahitaji yoyote ya taarifa au huduma toka serikalini? | | | | | | | | | | | | |
| 2 | Ndiyo | | 1 | Hapana | | | | | | | | |
| 202 | Kama ndiyo kwa swali namba 201 tafadhali zungushia sentensi mojawapo, ili kuonyesha ni aina gani ya taarifa unahitaji 2-Ndiyo; 1-Hapana | | | | | | | | | | | |
| 202a | Taarifa za Ardhi | | 2 | 1 | | | | | | | | |
| 202b | Leseni ya Biashara, Leseni ya Udereva | | 2 | 1 | | | | | | | | |
| 202c | Vizazi/vifo na Vyeti vya Ndoa | | 2 | 1 | | | | | | | | |
| 202d | Taarifa za kitaaluma/ Tafiti | | 2 | 1 | | | | | | | | |
| 202e | Ufadhili/Hisani | | 2 | 1 | | | | | | | | |
| 202f | Taarifa za milihani ya kitaifa | | 2 | 1 | | | | | | | | |
| 202g | Taarifa za Uhamiaji/ Nyaraka za kusafiria | | 2 | 1 | | | | | | | | |
| 202h | Taarifa za mambo yahasuyo afya | | 2 | 1 | | | | | | | | |
| 202i | Mengineyo | | | | | | | | | | | |
| 203 | Umeshawahi kujaribu kutafuta taarifa hizi? | | 2 | Ndiyo | | 1 | Hapana | | | | | |

| | | | | | | | |
|------|--|----|-------------------|----|-------------------|----|---------|
| 204 | Kama "NDIYO", ulifanikiwa kupata taarifa husika? | 2 | Ndiyo | 1 | Hapana | | |
| 205 | Kama "HAPANA" kwa swali namba 203 kwa nini hukuwahi kutafuta? Jibu kulingana na makundi yafuatayo 1-Sikubaliani kabisa; 2-Sikubaliani; 3-Sina uhakika; 4-Nakubaliana; 5-Nakubaliana kabisa | | | | | | |
| 205a | Sihitaji kufahamu hatari ntakazofahamishwa na hiyo habari | 5 | 4 | 3 | 2 | 1 | |
| 205b | Sihitaji taarifa ambazo zitapingana na ninachoamini | 5 | 4 | 3 | 2 | 1 | |
| 205c | Sijui namna ya kupata taarifa | 5 | 4 | 3 | 2 | 1 | |
| 205d | Sina uwezo wa kufikia chanzo cha taarifa husika | 5 | 4 | 3 | 2 | 1 | |
| 205e | Nafasi niliyonayo katika jamii itakuwa hatarini | 5 | 4 | 3 | 2 | 1 | |
| 205f | Vizuizi vinginevyo | | | | | | |
| 206 | Unawasiliana na nani unapohitaji taarifa za serikali? Tafadhali chagua kwa kufuata muundo; 1-Sivyo kabisa; 2-Sivyo; 3- sina uhakika 4-sawa; 5- Sawa kabisa | | | | | | |
| 206a | Uzoefu binafsi | 5 | 4 | 3 | 2 | 1 | |
| 206b | Mlezi/ Mshauri/familia | 5 | 4 | 3 | 2 | 1 | |
| 206c | Majirani/Marafiki | 5 | 4 | 3 | 2 | 1 | |
| 206d | kanisa/Msikiti | 5 | 4 | 3 | 2 | 1 | |
| 206e | Mikusanyiko ya kijamii | 5 | 4 | 3 | 2 | 1 | |
| 206f | Magazeti | 5 | 4 | 3 | 2 | 1 | |
| 206g | Vijarida | 5 | 4 | 3 | 2 | 1 | |
| 206h | Makala | 5 | 4 | 3 | 2 | 1 | |
| 206i | Vipeperushi | 5 | 4 | 3 | 2 | 1 | |
| 206j | Vitabu | 5 | 4 | 3 | 2 | 1 | |
| 206k | Kongamano/mjadala/ Semina | 5 | 4 | 3 | 2 | 1 | |
| 206l | Maktaba | 5 | 4 | 3 | 2 | 1 | |
| 206m | Kutembelea wakala wa serikali/ofisi | 5 | 4 | 3 | 2 | 1 | |
| 206n | Barua pepe | 5 | 4 | 3 | 2 | 1 | |
| 206o | Mitandao | 5 | 4 | 3 | 2 | 1 | |
| 206p | Simu ya mezani/simu ya kiganjani | 5 | 4 | 3 | 2 | 1 | |
| 206q | Mengineyo | | | | | | |
| 207 | Je unatumia simu yako ya mkononi kupata taarifa za serikali? | 2 | Ndiyo | 1 | Hapana | | |
| 208 | Kama unatumia simu ya mkononi kutafuta taarifa za serikali, unawasiliana na nani? (chagua kisanduku sahihi | | | | | | |
| 1a | Rafiki | 2b | Mfanyakazi mwenzi | 3c | Afisa wa serikali | 4d | Wengine |
| 209 | Je, unatumia barua pepe kutafuta taarifa za serikali? Chagua jibu sahihi | | | | | | |
| 210 | Kama unatumia barua pepe kutafuta taarifa za serikali, unawasiliana na nani? Chagua kisanduku sahihi | | | | | | |
| 1a | Rafiki | 2b | mfanyakazi mwenzi | 3c | Afisa wa serikali | 4d | Wengine |
| 211 | Nini kinakushawishi utafute taarifa za serikali? Tafadhali tumia muundo huu 1-Sivyo kabisa; 2-Sivyo 3-Sina uhakika; 4-sawa; 5-Sawa kabisa | | | | | | |
| 211a | Nahitaji taarifa kwa ajili ya utafiti | 5 | 4 | 3 | 2 | 1 | |
| 211b | Kupanua ufahamu wangu wa mambo yahusianayo na serikali | 5 | 4 | 3 | 2 | 1 | |
| 211c | Nahitaji huduma kutoka serikalini mfano leseni, shahada ya kusafiria, huduma za afya, ufadhili nk. | 5 | 4 | 3 | 2 | 1 | |
| 211d | Masuala ya kisiasa | 5 | 4 | 3 | 2 | 1 | |
| 211e | Manufaa binafsi | 5 | 4 | 3 | 2 | 1 | |
| 211f | Mengineyo | 5 | 4 | 3 | 2 | 1 | |
| 212 | Ni matatizo gani unapambana nayo unapo jaribu kutafuta hizi taarifa? Chagua kutumia vigezo vifuatavyo:1-Sivyo kabisa; 2-Sivyo 3-Sina hakika; 4- Sawa; 5- sawa kabisa | | | | | | |
| 212a | Miundombinu mibovu hukwamisha upatikanaji wa taarifa | 5 | 4 | 3 | 2 | 1 | |
| 212b | Taarifa zilikuwa ngumu mno kupata | 5 | 4 | 3 | 2 | 1 | |
| 212c | Sina mbinu za kutafuta taarifa husika | 5 | 4 | 3 | 2 | 1 | |
| 212d | Taarifa za zinanichanganya | 5 | 4 | 3 | 2 | 1 | |
| 212e | Chanzo cha taarifa ni gharama | 5 | 4 | 3 | 2 | 1 | |
| 212f | Taarifa ziko mbali | 5 | 4 | 3 | 2 | 1 | |
| 212g | Tatizo la lugha | 5 | 4 | 3 | 2 | 1 | |
| 212h | Sera na taratibu haziruhusu kupata taarifa | 5 | 4 | 3 | 2 | 1 | |
| 212i | Matatizo mengineyo | | | | | | |
| 213 | Ni mara ngapi umekutana na vyanzo vifuatavyo vya taarifa za serikali 1- Hata mara moja; 2- Wakati wa uhitaji; 3- Mara moja kwa mwezi 4- Mara moja kwa wiki 5- Mara moja kwa siku | | | | | | |

| | | | | | | | |
|------|---|---|----------------------|---|-----------------------|---|------------------|
| 213a | Uzoefu binafsi | 5 | 4 | 3 | 2 | 1 | |
| 213b | Mzazi/ Mezi/familia | 5 | 4 | 3 | 2 | 1 | |
| 213c | Majirani/Marafiki | 5 | 4 | 3 | 2 | 1 | |
| 213d | kanisa/Msikiti | 5 | 4 | 3 | 2 | 1 | |
| 213e | Mikusanyiko ya kijamii | 5 | 4 | 3 | 2 | 1 | |
| 213f | Magazeti | 5 | 4 | 3 | 2 | 1 | |
| 213g | Vijarida | 5 | 4 | 3 | 2 | 1 | |
| 213h | Makala | 5 | 4 | 3 | 2 | 1 | |
| 213i | Vipeperushi | 5 | 4 | 3 | 2 | 1 | |
| 213j | Vitabu | 5 | 4 | 3 | 2 | 1 | |
| 213k | Kongamano/mjadala/ Semina | 5 | 4 | 3 | 2 | 1 | |
| 213l | Barua pepe | 5 | 4 | 3 | 2 | 1 | |
| 213m | Mtandao/ Tovuti | 5 | 4 | 3 | 2 | 1 | |
| 213n | Maktaba | 5 | 4 | 3 | 2 | 1 | |
| 213o | Kutembelea wakala wa serikali/ofisi | 5 | 4 | 3 | 2 | 1 | |
| 213p | Mengineyo | 5 | 4 | 3 | 2 | 1 | |
| 214 | Kuna uwezekano wa wewe kupata huduma/taarifa za kiserikali kwa njia zifuatazo? Chagua jibu sahihi 1-Sivyo kabisa; 2-Sivyo; 3-Sina uhakika; 4-Ndivyo; 5-Ndivyo kabisa | | | | | | |
| 214a | Uso kwa uso | 5 | 4 | 3 | 2 | 1 | |
| 214b | Kutumia wakala/ ofisi ya serikali | 5 | 4 | 3 | 2 | 1 | |
| 214c | Tovuti | 5 | 4 | 3 | 2 | 1 | |
| 214d | Barua pepe | 5 | 4 | 3 | 2 | 1 | |
| 215 | Je taarifa unazopata kupitia vyanzo mbali mbali unavyotumia zinakuridhisha? 1-Siridhishwi kabisa; 2-Siridhishwi 3-Sina uhakika; 4-Zinaridhisha kwa kiasi fulani; 5- Naridhishwa nazo sana | | | | | | |
| 215a | Uzoefu binafsi | 5 | 4 | 3 | 2 | 1 | |
| 215b | Mzazi/ Mezi/familia | 5 | 4 | 3 | 2 | 1 | |
| 215c | Majirani/Marafiki | 5 | 4 | 3 | 2 | 1 | |
| 215d | kanisa/Msikiti | 5 | 4 | 3 | 2 | 1 | |
| 215e | Mikusanyiko ya kijamii | 5 | 4 | 3 | 2 | 1 | |
| 215f | Magazeti | 5 | 4 | 3 | 2 | 1 | |
| 215g | Vijarida | 5 | 4 | 3 | 2 | 1 | |
| 215h | Makala | 5 | 4 | 3 | 2 | 1 | |
| 215i | Vipeperushi | 5 | 4 | 3 | 2 | 1 | |
| 215j | Vitabu | 5 | 4 | 3 | 2 | 1 | |
| 215k | Kongamano/mjadala/ Semina | 5 | 4 | 3 | 2 | 1 | |
| 215l | Mtandao | 5 | 4 | 3 | 2 | 1 | |
| 215m | Maktaba | 5 | 4 | 3 | 2 | 1 | |
| 215n | Ofisi za serikali | 5 | 4 | 3 | 2 | 1 | |
| 215o | Mengineyo | 5 | 4 | 3 | 2 | 1 | |
| 216 | Ni mara ngapi kwa mwaka unatafuta taarifa /huduma za serikalini? (Chagua jibu sahihi) | | | | | | |
| 1 | Chini ya mara 5 | 2 | Kati ya mara 5 na 10 | 3 | Kati ya mara 10 na 20 | 4 | Zaidi ya mara 20 |
| 217 | Unapotumia tovuti kutafuta tarifa za serikali, ni aina gani ya taarifa huwa unatafuta? Tafadhali chagua jibu sahihi 2-Ndiyo; 1-Hapana | | | | | | |
| 217a | Kutafuta leseni za udereva | | | 1 | 2 | | |
| 217b | Usajili wa daftari la wapiga kura | | | 1 | 2 | | |
| 217c | Taarifa na hifadhi za mbuga za wanyama | | | 1 | 2 | | |
| 217d | Kupiga kura kwa mtandao | | | 1 | 2 | | |
| 217e | Taarifa za kodi ya ongezeko la thamani (VAT), mfuko wa mafao wa umma nk.. | | | 1 | 2 | | |
| 217f | Kulipa kupitia mtandao/tovuti | | | 1 | 2 | | |
| 217g | Kupata na kutuma fomu mbalimbali kupitia mtandao (downloading and submission) | | | 1 | 2 | | |
| 217h | Leseni kama vile udereva, Vyeti vya vifo na shahada za ndoa (Taarifa na huduma) | | | 1 | 2 | | |
| 217i | Taarifa za afya na huduma | | | 1 | 2 | | |
| 217j | Taarifa za nafasi za kazi | | | 1 | 2 | | |
| 217k | Taarifa za ufadhili na huduma za ufadhili (sponsorship) | | | 1 | 2 | | |
| 217l | Mawasiliano mbalimbali ya ofisi za serikali | | | 1 | 2 | | |

| | | | |
|------|--|---|---|
| 217m | Taarifa za elimu: kwa mfano matokeo ya kitaifa ya mihani, kupata usajili kwenye vyuo vikuu nakadhalika | 1 | 2 |
|------|--|---|---|

Section 3: Matumizi ya tovuti kupata taarifa na huduma za serikali (300)

| | | | | | | | | | | | | |
|------|--|-----------------------------|----|------------|---------------------------|--------------------|--|----------|--------------------|----------------|--------------------------|---------------------|
| 301 | Umeshasikia habari za mtandao kabla? Chagua jibu sahihi 2-Ndiyo; 1-Hapana | | | | | | | | | | | |
| | 2 | Ndiyo | | | 1 | Hapana | | | | | | |
| 302 | Kama ndio, ulisikia wapi? | | | | | | | | | | | |
| | 1a | Shule | 2b | Chuo kikuu | 3c | Chuo | 4d | Marafiki | 5e | Magazeti | 6f | Televisheni |
| | 7g | Redio | 8h | Familia | 9i | Nyingine | | | | | | |
| 303 | Umeshawahi kutumia mtandao? | | | | | | | | | | | |
| | 2 | Ndiyo | | | 1 | Hapana | | | | | | |
| 304 | Kwa jinsi gani unapata huduma za mtandao? Tafadhali tia vema katika kisanduku sahihi | | | | | | | | | | | |
| | 1 | Ninaweza kutumia mwenyewe | | | 2 | Ninaomba msaada | | | 3 | Jinsi nyingine | | |
| 305 | Ni mara ngapi unatumia mtandao? | | | | | | | | | | | |
| | 1 | Zaidi ya mara moja kwa siku | | | 2 | Mara moja kwa siku | | 3 | Mara moja kwa wiki | | 4 | Mara moja kwa mwezi |
| | 5 | Ninapohitaji tu | | | 6 | Situmii kabisa | | | | | | |
| 306 | Kwa jinsi gani unapata mtandao? | | | | | | | | | | | |
| | 1a | Nyumbani | | 2b | Ofisini | 3c | Katika vituo vya huduma za mtandao (internet cafe) | | | 4d | Kwa rafiki/jirani/chuoni | |
| | 5e | Simu ya Mkononi | | 6f | Mtandao wa mahali pa kazi | | 7g | Modemu | 8h | Nyingine - | | |
| 307 | Ni kwa kiwango gani unakubaliana au kutokubaliana kuhusu aina ya tovuti unazolumia mara kwa mara? Tumia vigezo vifuatavyo kutia alama katika visanduku hapa chini: 1 = Sikubaliani Kabisa; 2 = Sikubaliani; 3 = Sina uhakika 4= Nakubaliana; 5= Nakubaliana kabisa | | | | | | | | | | | |
| 307a | Tovuti za habari | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 307b | Kuhusiana na taaluma/elimu | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 307c | Burudani | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 307d | Mawasiliano ya kijamii (barua pepe, ujumbe mfuupi kama vile skype, twitter, face book nakadhalika.) | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 307e | Masuala ya kidini | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 307f | Biashara/kazi | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 307g | Taarifa za serikali | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 307h | Taarifa za afya | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 307i | Mengineyo | | | | | | | | | | | |
| 308 | Je unatumia mtandao kufanya mambo yafuatayo? Chagua jibu sahihi katika kisanduku, 1 = Sikubaliani Kabisa; 2 = Sikubaliani; 3 = Sina uhakika 4=Nakubaliana; 5= Nakubaliana kabisa | | | | | | | | | | | |
| 308a | Kukusanya taarifa mbalimbali | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 308b | Kutuma barua pepe ili kupata habari ya huduma mbali mbali | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 308c | Kuwasilisha na kupokea taarifa zinahohitajika serikalini | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 308d | Kulipia gharama kupitia mitandao | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 309 | Kilitokea nini ulipojaribu kutafuta habari za serikali katika mtandao? Tia vema vigezo vifuatavyo 1 = Sikubaliani Kabisa; 2 = Sikubaliani; 3 = Sina jibu 4=Nakubaliani; 5= Nakubaliana kabisa | | | | | | | | | | | |
| 309a | Sikupata habari nilizo hitaji | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 309b | Nilipata taarifa chache zilizo nisaidea | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 309c | Nilipata taarifa sahihi kulingana na mahitaji yangu | | | | | | | 5 | 4 | 3 | 2 | 1 |

Section 4: Sababu zinazoathiri upatikanaji wa taarifa za serikali katika mtandao (400)

| | | | | | | | | | | | | |
|------|---|--|--|--|--|--|--|---|---|---|---|---|
| 401 | Kwa kiwango gani unakubaliana au kutokubaliana na mambo yafuatayo kuhusu matumizi ya mtandao katika kupata taarifa za serikali? Tafadhali jibu kwa kutumia vigezo vifuatavyo: 1 = Sikubaliani Kabisa; 2 = Sikubaliani; 3 = Sina jibu 4=Nakubaliani; 5= Nakubaliana kabisa | | | | | | | | | | | |
| 401a | Ninauwezo na maarifa ya kutosha kupata taarifa za serikali mtandaoni | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 401b | Ninarasilimali za kutosha kupata taarifa za serikali kama vile kompyuta, simu, modern na mtandao | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 401c | Muongozo na maelekezo jinsi ya kutumia mitandao vinapatikana | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 401d | Serikali yangu huhamasisha matumizi ya mtandao kwa umma ili kupata taarifa (kampani za uhamasishaji) | | | | | | | 5 | 4 | 3 | 2 | 1 |
| 401e | Ninajiamini kwamba ninaweza kutumia mtandao kutafuta, kutuma taarifa na kupata huduma | | | | | | | 5 | 4 | 3 | 2 | 1 |

| | | | | | | |
|------|--|---|---|---|---|---|
| | nyinginezo | | | | | |
| 401f | Unganishwaji wa mtandao ni wa kuridhisha (mtandao unapatikana kila unapohitajika) | 5 | 4 | 3 | 2 | 1 |
| 401g | Ninamudu gharama za mtandao (gharama si tazio) | 5 | 4 | 3 | 2 | 1 |
| 401h | Ninamiliki kompyuta na simu yenye uwezo wa kupata internet | 5 | 4 | 3 | 2 | 1 |
| 401i | Nina hakika na utunzwaji wa siri wa taarifa kwenye tovuti za serikali (sina wasi wasi) | 5 | 4 | 3 | 2 | 1 |
| 401j | Serikali inawahamasisha wananchi kutumia mitandao kwa mfano imeanzisha vituo vya bure vya kupata huduma za mtandao, kuqawa kompyuta na simu bure n.k | 5 | 4 | 3 | 2 | 1 |
| 401k | Kuna sera ya taifa juu ya matumizi, uhifadhi wa kumbukumbu, taarifa, ulinzi na hali miliki. | 5 | 4 | 3 | 2 | 1 |
| 401l | Serikali inatenga fedha kuwezesha upatikanaji wa huduma zake kupitia tovuti | 5 | 4 | 3 | 2 | 1 |
| 401m | Kwenye tovuti za serikali kuna kigezo ambacho nikikutumia huniwezesha kupata taarifa ninazo hitaji | 5 | 4 | 3 | 2 | 1 |
| 401n | Mara nyingi napata taarifa ninazo hitaji | 5 | 4 | 3 | 2 | 1 |
| 401o | Mtandao unaweza kurasimishwa kirahisi majumbani kwa ajili ya shughuli za kilasiku hivyo hutumika mara nyingi | 5 | 4 | 3 | 2 | 1 |
| 401p | Uzoefu wangu wa nyuma unanifanya nitumie mtandao zaidi | 5 | 4 | 3 | 2 | 1 |
| 401q | Kuna faida nikitumia mtandao kutafuta, taarifa za serikali | 5 | 4 | 3 | 2 | 1 |
| 401r | Kuna upatikanaji wa umeme kwa kiasi kukidhi matakwa yangu | 5 | 4 | 3 | 2 | 1 |
| 401s | Eneo langu kijiografia haliathiri upatikanaji wa mtandao | 5 | 4 | 3 | 2 | 1 |
| 401t | Ninapata taarifa nyingi za serikali kwa kiasi cha kutosha kupitia mitandao | 5 | 4 | 3 | 2 | 1 |
| 401u | Napata taarifa ninapohitaji | 5 | 4 | 3 | 2 | 1 |
| 401v | Napata taarifa zinazoendana na wakati | 5 | 4 | 3 | 2 | 1 |
| 401w | Taarifa nyingi zipo katika lugha ninayohitaji | 5 | 4 | 3 | 2 | 1 |
| 401x | Mtandao unawezesha hata walemavu kupata huduma (hata walemavu wanaweza kuutumia) | 5 | 4 | 3 | 2 | 1 |
| 401y | Taarifa na huduma zinapatikana kirahisi kwa kutumia simu na kompyuta | 5 | 4 | 3 | 2 | 1 |
| 401z | Sababu nyinginezo | | | | | |

Section 5: Sababu zinazo athiri matumizi ya tovuti kupata taarifa za serikali (500)

Kwa kiwango gani unakubaliana au kutokubaliana na mambo yafuatayo kuhusu matumizi ya mtandao katika kupata taarifa za serikali

(Chagua moja katika kila kisanduku cha maelezo - Ufunguo: 1 = Sikubaliani kabisa; 2 = Sikubaliani; 3 = Sina uhakika 4 = Nakubaliana; 5= Nakubaliana kabisa)

| | | | | | | |
|------|---|---|---|---|---|---|
| 501 | Ubora wa mfumo | | | | | |
| 501a | Tovuti ya serikali ni rahisi kutumia | 5 | 4 | 3 | 2 | 1 |
| 501b | Ni rahisi kujifunza tovuti ya serikali | 5 | 4 | 3 | 2 | 1 |
| 501c | Ni rahisi kutumia tovuti hii kupata taarifa ninazo hitaji | 5 | 4 | 3 | 2 | 1 |
| 501d | Kutumia tovuti ya serikali hakuhitaji jithada kubwa | 5 | 4 | 3 | 2 | 1 |
| 501e | Kutumia tovuti ya serikali hakuchoshi akili | 5 | 4 | 3 | 2 | 1 |
| 502 | Ubora wa taarifa | | | | | |
| 502a | Usahihi : tovuti huleta taarifa sahihi | 5 | 4 | 3 | 2 | 1 |
| 502b | ukweli : Tovuti ya serikali ni ya kuaminika | 5 | 4 | 3 | 2 | 1 |
| 502c | Husika : Tovuti ya serikali huleta taarifa sahihi, husika, muhimu, zinazoendana na mazingira/matukio na mahitaji | 5 | 4 | 3 | 2 | 1 |
| 502d | Urahisi: Tovuti ya serikali huleta taarifa mabazo ni rahisi kuzielewa | 5 | 4 | 3 | 2 | 1 |
| 502e | Taarifa katika tovuti ya serikali zipo katika muundo mzuri unaoweza kutumika | 5 | 4 | 3 | 2 | 1 |
| 502f | Taarifa za tovuti hutosheleza mahitaji ya mtumiaji | 5 | 4 | 3 | 2 | 1 |
| 503 | Ubora wa huduma | | | | | |
| 503a | Tovuti ya serikali hutoa taarifa za kuaminika | 5 | 4 | 3 | 2 | 1 |
| 503b | Tovuti ya serikali huwasilisha taarifa muhimu wakati zinapotakiwa kutoa | 5 | 4 | 3 | 2 | 1 |
| 503c | Tovuti ya serikali hutoa taarifa haraka zinapohitajika | 5 | 4 | 3 | 2 | 1 |
| 503d | Tovuti ya serikali zimetengenezwa kwa kuzingatia mahitaji muhimu ya wananchi | 5 | 4 | 3 | 2 | 1 |
| 503e | Tovuti ya serikali zimetengenezwa ili kutosheleza mahitaji ya wananchi | 5 | 4 | 3 | 2 | 1 |
| 504 | Kuamini serikali | | | | | |
| 504a | Naamini serikali inafanya shughuli zake ili kukidhi mahitaji ya wananchi | 5 | 4 | 3 | 2 | 1 |
| 504b | Najisikia vizuri kufanya shughuli zangu za kila siku nikihusiana na serikali kwani serikali hutenda shughuli zake kwa ufanisi | 5 | 4 | 3 | 2 | 1 |
| 504c | Sikuzote nina uhakika serikali itafanya sehemu yake kila ninapohusiana nayo kufanya jambo lolote | 5 | 4 | 3 | 2 | 1 |

| | | | | | | |
|------|--|---|---|---|---|---|
| 504d | Ninaridhika kwa jinsi serikali inavyo wajibika katika kutimiza majukumu yake | 5 | 4 | 3 | 2 | 1 |
| 505 | Kuamini tovuti za serikali | | | | | |
| 505a | Watoa taarifa za serikali mtandaoni ni waaminifu | 5 | 4 | 3 | 2 | 1 |
| 505b | Tovuti za serikali ni za kuaminika | 5 | 4 | 3 | 2 | 1 |
| 505c | Tovuti hizi ni sahihi na zakuaminika kwangu | 5 | 4 | 3 | 2 | 1 |
| 506 | Kuridhisha | | | | | |
| 506a | Kutumia mtandao kupata taarifa za serikali inantoshesheza kutumiza malengo yangu | 5 | 4 | 3 | 2 | 1 |
| 506b | Kutumia mtandao kupata taarifa za serikali ni madhubuti katika kutimiza malengo yangu | 5 | 4 | 3 | 2 | 1 |
| 506c | Kwa ujumla naridhishwa na mitandao na tovuti za serikali kuliko matarajio yangu | 5 | 4 | 3 | 2 | 1 |
| 506d | Uboru wa taarifa za mitandao ni zaidi ya matarajio yangu | 5 | 4 | 3 | 2 | 1 |
| 506e | Nitahamasisha matumizi ya tovuti za serikali kwa marafiki/ wenzangu/familia | 5 | 4 | 3 | 2 | 1 |
| 506f | Nitaendelea kutumia mitandao na tovuti kupata taarifa za serikali hata kama jaimii yangu itaacha kutumia | 5 | 4 | 3 | 2 | 1 |
| 506g | Ninapendelea zaidi kutumia tovuti kupata taarifa za serikali kila ninapo hitaji | 5 | 4 | 3 | 2 | 1 |
| 507 | Dhamira/nia ya kutumia | | | | | |
| 507a | Nategemea kuendelea kutumia tovuti na mitandao kupata taarifa za kiserikali kwa siku za usoni | 5 | 4 | 3 | 2 | 1 |
| 507b | Mara kwa mara nitatumia mitandao na tovuti kupata taarifa za serikali hata kwa siku za mbele | 5 | 4 | 3 | 2 | 1 |
| 507c | Nategemea kuongeza matumizi ya tovuti za serikali kutafuta taarifa za serikali hata kwa siku za usoni | 5 | 4 | 3 | 2 | 1 |
| 507d | Nitaendelea kutumia mitandao kupata taarifa za serikali kwa siku zijazo | 5 | 4 | 3 | 2 | 1 |
| 508 | Faida | | | | | |
| 508a | Kutumia mtandao kupata huduma na taarifa za serikali unanisaidia kumudu shughuli zangu za kilasiku | 5 | 4 | 3 | 2 | 1 |
| 508b | Mtandao unanisaidia kukidhi mahitaji yangu ya huduma na taarifa kutoka serikalini | 5 | 4 | 3 | 2 | 1 |
| 508c | Mtandao unanisaidia kupata mahitaji yangu binafsi yanayohusiana na serikali | 5 | 4 | 3 | 2 | 1 |
| 508d | Kutumia mtandao kuanisaidia kupata huduma na taarifa za serikali kwa wakati | 5 | 4 | 3 | 2 | 1 |
| 509 | Taswira | | | | | |
| 509a | Utafutaji wa taarifa za mitandao na tovuti za serikali huboresha taswira yangu | 5 | 4 | 3 | 2 | 1 |
| 509b | Wanao tumia mitandao kutafuta habari za serikali ni wajuzi wa elimu ya technohama (IT) | 5 | 4 | 3 | 2 | 1 |
| 509c | Wanaotafuta taarifa na huduma za serikali kupitia mtandao wanaenda na wakati | 5 | 4 | 3 | 2 | 1 |
| 509d | Ni vijana tu ndiyo hutafuta habari kwa kutumia mtandao | 5 | 4 | 3 | 2 | 1 |
| 509e | Watu wanaotumia mtandao kutafuta habari wana hadhi kubwa. | 5 | 4 | 3 | 2 | 1 |
| 510 | Kuendana | | | | | |
| 510a | Kutumia mtandao kunaendana na jinsi ninavyoishi (staili ya maisha) | 5 | 4 | 3 | 2 | 1 |
| 510b | Ninanafikiri kutafuta taarifa za serikali kupitia tovuti ni kunaendana na jinsi ninavyoishi | 5 | 4 | 3 | 2 | 1 |
| 510c | Kutumia mtandao kupata taarifa za serikali kunaendana kabisa na hali yangu ya sasa | 5 | 4 | 3 | 2 | 1 |
| 510d | Kutumia mtandao kupata taarifa na huduma za serikali kunaendana na hali halisi ya maisha yangu | 5 | 4 | 3 | 2 | 1 |
| 511 | Urahisi wa kutumia | | | | | |
| 511a | Utumikaji: Ni rahisi kutumia mtandao kupata taarifa za serikali na huduma | 5 | 4 | 3 | 2 | 1 |
| 511b | Upatikanaji: Taarifa za serikali hupatikana kirahisi kwa watu wote hata walemavu | 5 | 4 | 3 | 2 | 1 |
| 511c | Ni rahisi kufungua kurasa mbali mbali za kwenye tovuti ili kupata taarifa na huduma ninazo zihitaji | 5 | 4 | 3 | 2 | 1 |
| 512 | Manufaa ya tovuti za serikali | | | | | |

| | | | | | | |
|------|--|---|---|---|---|---|
| 512a | Yaliyomo : Mlandao wa serikali hunipa taarifa sahihi ninazohitaji | 5 | 4 | 3 | 2 | 1 |
| 512b | Muda: Taarifa zinazopatikana kutoka kwenye tovuti ni za wakati | 5 | 4 | 3 | 2 | 1 |
| 512c | Uwazi: Tovuti za serikali zinaniwezesha kutoa mawazo yangu kwa serikali | 5 | 4 | 3 | 2 | 1 |
| 512d | Ninaweza kuwasiliana na maafisa wa serikali kwa kupitia tovuti za serikali | 5 | 4 | 3 | 2 | 1 |
| 512e | Unafuu wa gharama: Naokoa fedha na muda kwa kupata taarifa za serikali mtandaoni | 5 | 4 | 3 | 2 | 1 |
| 513 | Ushawishi wa kijamii | | | | | |
| | Je sababu au vigezo vilivyowekwa hapo chini ni sahihi katika kufanya uamue kutumia au kutotumia mtandao/tovuti kutafuta taarifa na huduma za serikali kwa siku za baadae? (Chagua jibu moja kwa kila maelezo - Ufunguo: 1 = Hakuna umuhimu kabisa; 2 = hakuna umuhimu; 3 =Sina uhakika; 4= Muhimu 5 = Muhimu sana | | | | | |
| 513a | Kama rafiki zako wa karibu wanatafuta taarifa na huduma kutoka serikalini kwa kutumia tovuti | 5 | 4 | 3 | 2 | 1 |
| 513b | Kama kiongozi wako wa serikali za mitaa anatomia mtandao kutafuta huduma au taarifa za serikali | 5 | 4 | 3 | 2 | 1 |
| 513c | Kama ikiwa ni sifa katika mwanafamilia kujua jinsi ya kupata taarifa na huduma toka kwenye tovuti | 5 | 4 | 3 | 2 | 1 |
| 513d | Kama ikiwa ni sifa kwa marafiki zako kujua jinsi ya kupata taarifa na huduma toka kwenye tovuti | 5 | 4 | 3 | 2 | 1 |
| 513e | Kama ni utamaduni katika jumua yako kupata taarifa na huduma toka kwenye tovuti | 5 | 4 | 3 | 2 | 1 |
| 513f | Maamuzi yangu ya kutumia au kutotumia tovuti/mtandao kutafuta huduma na taarifa za serikali yanatokana na familia/marafiki | 5 | 4 | 3 | 2 | 1 |
| 514 | Taarifa za matumizi/ Faida ya Tovuti/mtandao Kwa kiwango gani unakubaliana au kukataa maelezo yafuatayo kuhusiana na faida za kupata taarifa za serikali kwa mitandao (Chagua kisanjira kimoja dhidi ya kila maelezo - Ufunguo:1 = Sikubaliani kabisa; 2 = Sikubaliani; 3 = sina uhakika 4= Nakubaliana; 5 = Nakubaliana kabisa | | | | | |
| 514a | Imenisaidia kufanya maamuzi ya busara na kuchukua hatua sahihi | 5 | 4 | 3 | 2 | 1 |
| 514b | Imeboresha na kupanua biashara yangu | 5 | 4 | 3 | 2 | 1 |
| 514c | Imenisaidia kuratibu shughuli zangu kwa urahisi | 5 | 4 | 3 | 2 | 1 |
| 514d | Imeniboreshea ujuzi | 5 | 4 | 3 | 2 | 1 |
| 514e | Imenisaidia kutambua huduma mbali mbali zinazotolewa na serikali | 5 | 4 | 3 | 2 | 1 |
| 514f | Imeniwezesha kupata masoko mapya na masoko bora zaidi | 5 | 4 | 3 | 2 | 1 |
| 514g | Imeboresha maisha yangu | 5 | 4 | 3 | 2 | 1 |
| 514h | Imeongeza kipato change | 5 | 4 | 3 | 2 | 1 |
| 514i | Imenipa fursa mpya na bora zaidi | 5 | 4 | 3 | 2 | 1 |
| 514j | Imenifungulia nafasi za kazi | 5 | 4 | 3 | 2 | 1 |
| 514k | Imenifungulia nafasi za kimasomo | 5 | 4 | 3 | 2 | 1 |
| 514l | Imeniwezesha kupata huduma za matibabu | 5 | 4 | 3 | 2 | 1 |
| 515 | Vizuzi vya kiutamaduni | | | | | |
| 515a | Kunatabaka kubwa kutokana na tatizo la upatikanaji wa huduma za mtandao kuna wanaopata na wasiopata mtandao (Mgawanyo wa kidigitali) | 5 | 4 | 3 | 2 | 1 |
| 515b | Mtandao hauwezi kubinafsishwa majumbani kwa ajili ya matumizi binafsi, upatikanaji hauwezi kuendana na mahitaji ya mtu au watu. Hivyo watu hawautumii. | 5 | 4 | 3 | 2 | 1 |
| 515c | Uzoefu wa mtu unaadhiri kutumia au kutotumia mtandao | 5 | 4 | 3 | 2 | 1 |
| 515d | Sifahamu faida zitokanazo na kutumia mtandao kwahiyo natumia njia za kawaida | 5 | 4 | 3 | 2 | 1 |
| 515e | Kuna matokeo mabaya yatokanayo na tofauti iliyopo katika huduma zitokazo kwenye tovuti na zile za kawaida | 5 | 4 | 3 | 2 | 1 |

Nakushukuru Sana Kwa kutenga Muda kujibu maswali haya Na msaada wako

Appendix 4: Cover letter for e-government policy makers

Dear Participant

My name is Mercy Mlay Komba. I am a PhD candidate in the Information Studies Programme at the University of South Africa. I am conducting a study titled **“Access to electronic government information and e-government adoption in Tanzania”**. The study seeks to examine the current situation and the critical factors affecting access and use of e-government information and adoption of e-government in Tanzania.

The study includes policy makers like you, who can give views, plans, achievements, and problems facing the development of e-government initiatives in Tanzania. The respondents are purposively selected. Participation is voluntary. You can withdraw from participating in the interview at any time during the process. The interview is going to take 30 minutes of your time. Therefore, I would like to invite you to be part of this study. Your participation in this study is very important because it will enable the researcher to assess the current situation and the critical factors affecting access and use of e-government information and adoption of e-government in Tanzania. The study also has major significance to the Tanzanian government in general and Tanzanian people in particular. The information you give will assist Tanzanian officials in the uptake and planning for e-government. I would like to assure you that you will not be required to incur any expenses should you be involved in this study.

The information provided will be processed in electronic form. Security features, such as passwords and encryptions, will be utilized to safeguard the confidentiality of the provided information. The information will be preserved in electronic devices such as flash disks, CDROM and computer in order to provide backups for the data collected. The printed versions of the data will be filed properly and stored in a safe place for a period of five years. The notes and recordings will be transcribed using a word processor. The notebooks and the tape recordings will be destroyed after transcription.

The information you provide will be strictly kept confidential and will only be used for this study. Your credentials will not be included in the final report. Failure to participate in the research will not prejudice you in any way.

I request you to please complete the attached Consent Form prior to our interview.

Thank you in anticipation of your involvement

Yours sincerely

Mrs. Mercy Mlay Komba

Appendix 5: Consent form for interview participants

CERTIFICATION BY PARTICIPANT

I,
of

certify that I am at least 18 years old and that I am voluntarily giving my consent to provide information for the above described project entitled: Access to electronic government information and e-government adoption in Tanzania, being conducted at University of South Africa (UNISA) by: Mrs. Mercy Mlay Komba. I certify that the objectives of the research, together with the procedures to be carried out in the project, have been fully explained to me and that I freely consent to participate in this project.

I certify that I will have the opportunity to have any questions answered. Also I understand that I can withdraw my participation in this research at any time and that this withdrawal will not jeopardize me in any way.

I have been informed that the information I provide will be kept confidential.

Signed:

Date:

.....

Any queries about your participation in this project may be directed to the researcher Mrs. Mercy Mlay Komba (mercymlay@yahoo.com) or the researcher's supervisor Prof. Patrick Ngulube (Ngulup@unisa.ac.za). If you have any queries or complaints about the way you have been treated, you may contact Prof Kuzvinetsa Peter Dzvimbo, the Deputy Executive Dean: College of Human Sciences (Tel: 012 429 4067; E-mail: dzvimkp@unisa.ac.za).

Appendix 6: Interview protocol for e-government policy makers

Interviewee

Demographics.....

Title and Name.....

Position

Organisation.....

Phone/e-mail.....

Date of interview

Age.....

1. How would you describe your role in respect of the e-government project?
2. Is there a strategy for e-government in Tanzania?
3. If yes to the above question, what are the key goals of the e-government strategy? Are the goals being achieved? If no why?
- 4 (a) What policies/strategies are there to ensure wider accessibility of government information for the majority of Tanzanians, especially those living in rural areas?
(b) Who are responsible of ensuring wide accessibility and that these policies are being implemented? Do you think they have been successful in achieving what they are meant to achieve?
(c) What problems/challenges hinder ICT infrastructure development in rural areas of Tanzania?
5. How would you summarize the extent of e-government adoption in Tanzania?
- What is the status of e-government adoption in Tanzania?
6. What do you think are the major barriers for e-government adoption in Tanzania?
7. From your experience, what are the factors that will encourage citizens to adopt e-government?
8. In your opinion, does access to e-government information affect the adoption of e-government? How?
9. At what stage is Tanzania in e-government?

1= information delivery (initial stage)

At this stage there is presence of websites to provide information about functions and services of a government

2= one way service interaction (interaction stage)

At this stage the websites include downloadable forms that can be submitted offline and there can be a two-way interaction between government officials and users via e-mail

3= two way service delivery interaction (transaction stage)

The website supports some formal online transactions. These can be payments or creating and submitting information, such as renewing driving license and filing tax returns.

4= government integration (integration stage)

This stage exhibits availability of comprehensive government portals that can provide a wide range of information to users and supports one-stop transactions without the need for dealing directly with different agencies. The sophistication of the web design includes improved gateway points coupled with security/privacy/ confidentiality features.

5= other

6= I do not know

10. In your opinion what are the opportunities for developing e-government projects in Tanzania?

Appendix 7 Introductory letter from the office of the vice-chancellor, Mzumbe University



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MZUMBE
MOROGORO, TANZANIA

Ref.No. MU/DPGS/PGS/PhD/41/VOL.2/3

Date: 4th June, 2012

TO WHOM IT MAY CONCERN

RE: INTRODUCTION OF MS. MERCY MLAY KOMBA

The bearer of this letter is a Staff of Mzumbe University pursuing PhD Studies at the University of South Africa, SA. As a part of requirements for completion of her studies, she is collecting information on "*Access to Electronic Government Information and e-Government Adoption in Tanzania*".

This letter serves to achieve three purposes. Firstly, to verify that she is granted permission to undertake the research, secondly, to introduce her to you and thirdly to request you to facilitate any form of assistance she might need. We can assure you that this activity is entirely for academic purposes.

We trust that you will accord our student with necessary assistance.

Sincerely yours,

Dr. Fred Alfred
For: VICE CHANCELLOR