UNDERSTANDING E-GOVERNMENT OPPORTUNITIES AND CHALLENGES IN DEVELOPING COUNTRIES. A CASE OF ZAMBIA

By

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A dissertation submitted to the University of Zambia in partial fulfilment of the requirements for the degree of Master of Engineering in Information and Communication Technology Regulation, Policy and Management

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DECLARATION

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APPROVAL

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ABSTRACT

The adoption of e-government in developing countries has the potential to promote Open Government Data (OGD). OGD is a very critical component for good governance. This is because it encourages transparency, accountability, openness, trust, efficiency and participation. E-government is more than having a government website on the internet; it is an integrated approach that places citizens at the center of government business. The objectives of this research were to investigate e-government development in developing countries specifically in ministries and local authorities in Zambia and to analyze their readiness to sustain e-services. Also to critically review different e-government development frameworks and models as proposed by different researchers and based on literature review and conceptual analysis, evaluate the challenges and opportunities. To achieve the objectives, the study adopted the United Nation E-government Development Index (EGDI) to benchmark e-government adoption in development countries particularly in Zambia. The EGDI is used to measure e-government trends in the world using three key indicators: Telecommunication Infrastructure, Online Services and Human Capital. However, from the summary of the research findings, it was established that there are 29% opportunities and 71% challenges for ministries and local authorities to deploy e-services. Very little research has been undertaken on e-government in Zambia, the available information is too general and does not address specific areas as highlighted by the EGDI. These existing gaps are what have made this study very unique and relevant, it will provide basic guidelines and models to guides the deployment of e-government and it will act as a reference point for policy makers and managers of ICT for planning and evidence based decisions.

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First of all, I would like to thank my God for the grace and sustenance in every aspect of my life more especially for allowing me to complete this research. My supervisor, Dr. Luka Ngoi without whom I would have not made this endeavor a success. Dr. S. Tembo, Dr. E.M. Mwanaumo, Dr. E. Banda and the list is endless. Your dedication to guide me through different stages of dissertation writing was invaluable. I was so privileged to have surrounded myself with great people like yourselves some of whom I have not mentioned here. To you all, I say thank you. To mom and my late father (James Chipeta), thank you so much for the encouragements.

Lastly but not the least, my wife and children, thank you so much for being patient with me when I needed more time to concentrate on the research paper. You will go far and beyond where I have reached.

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ABBREVIATIONS AND ACRONYMS

EGDI	Electronic Government Development Index
ICT	Information and Communication Technology
7NDP	Seventh National Development Plan
OECD	Organization for Economic Co-operation and Development
G2G	Government to Government
G2C	Government to Citizen
G2E	Government to Employee
UNDESA	United Nation Development Economic and Social Affairs
GMAL	Government Ministries, Agencies and Local Authorities
RFID	Radio Frequency Identity
ITU	International Telecommunication Union
PMA	President Management Agenda
PPP	Private Public Partnership
BOOT	Build Operate Own and Transfer
BOT	Build Operate and Transfer
EP	Electronic Participation

NPM	New Public Management
ICT4D	Information and Communication for Development
NC	National Coordinator
UAS	Universal Access and Service
ZRA	Zambia Revenue Authority
OGD	Open Government Data

CHAPTER ONE – INTRODUCTION

Introduction

This chapter brings out a brief overview of the study, the research design, and problem statement, significance of the research study, objectives, and research ethics. The chapter also gives an outline of the research approach and brief explanation of the research methodology.

1.1 Background

The emergence of the Internet and adoption of Information and Communication Technology by the private sector has increased society's expectations on how government should deliver public services (Chatfield, 2008; Heeks & Bhatnagar, 1999). Business initiatives such as service on demand have empowered consumers to immediately access services anytime and anywhere. This has been made possible by taking service centers to client's door steps. This is not usually the case with many government institutions. Generally, governments all over the world are perceived to be bureaucratic, unstructured, wasteful and unresponsive in service provisioning for citizens (Attohoun et al., 2002; Bhatnagar, 2004; Nkohkwo & Islam, 2013). This type of government is referred to as a traditional government (Fang, 2002). This is because it slow, conservative, and full of red tape and paper based (Bwalya, 2009). However, because of the above reasons, civil service reforms were introduced to address challenges faced in the civil service and the use of information technology in government was prioritized. As a result of the reforms, many developing countries including Zambia adopted the use of information technology to reduce the costs of doing business in government, improve service delivery, save time and increase on the efficiency and effectiveness of internal and external government operations (Fang, 2002; OECD, 2003). However, governments that have adopted ICT, have fostered social economic development and revived the hope that ICT delivers improved service quality for citizens as key government customer (Abdalla, 2012; Sarrayrih & Sriram, 2015). That is referred to as e-government. According to the United Nations report (2001),

of the 190 UN member countries, 169 (88.9%), used the internet or some form of e-government platform in some capacity to deliver information and services to the people.

The objective of this study is to define e-government environment in government ministries and local authorities in Zambia and investigate their capacity to sustain online services distribution. To achieve this, the researcher adopted the United Nations e-government development index as benchmark to assess e-government development in government ministries and local authority (Layne & Lee, 2001). The EGDI is used by the United Nations to measure the adoption of ICT by its member countries globally in service delivery (United Nations, 2002). A country is evaluated based on its online presence, telecommunications infrastructure and human development capacity (ITU, 2009; Liton & Habib, 2015). E-government implementation heavily depends on the availability of telecommunication infrastructure and institution capacity to absorb and manage change (Bhatnagar, 2004).

The researcher also assessed the availability and quality of web sites in government ministries and local authorities as guided by Gartner e-government web development stages and features using the internet(Seifert, 2003). A good web site should be citizen centered, have a searchable feature, enable users to download forms, official government email, access to updated information, capacity to transact online (Layne & Lee, 2001). To measure the above feature on government official website, the study adopted a four-staged e-government development model as proposed by Gartner (2001). (Figure 2.10). The stages assesses a country's web site they facilitates easy access of information and services by citizens. However, the presence, or absence of these specific key features, are used as indicators to determine the level of progress made by governments towards the development of e-government. The sites were examined based on the content published and services availability accessed by an average citizen.

1.2 Problem Statement

However, despite the overwhelming adoption and potential benefits of ICT in government, many developing countries including Zambia have been faced with implementation challenges (Heeks, 2003; OECD, 2015). This is very evident in the international and regional e-government rankings. Developing countries have continued to underperform and lag behind their European counterparts (UNDESA, 2016). This could have been due to competing developmental needs and priorities such as Health and Food Security (United Nations, 2002). Other factors may include digital divide, inadequate telecommunication infrastructure, and limited local skills to derive e-government agenda (Heeks and Bhatnagar, 1999; ITU, 2009). Heeks discovered that 35% of e-government projects are total failures while 55% are partial failures and only 15% are successful (Heeks & Bhatnagar, 1999). These could be the reasons developing countries have not been able to reap sustainable gains in e-government.

This investigates the readiness of ministries and local authorities in Zambia to adopt e-government. Very little research has been undertaken to investigate the readiness of e-government in ministries and local authorities in Zambia. The literature available is too general and does not address key specific areas on readiness as highlighted by the EGDI. This is what makes this study very unique and significant. It provides basic guidelines and models that guides e-government development in developing countries and Zambia and it will also act as a reference point for policy makers and managers of ICT in government and local authorities for planning and evidence based decisions. The study will also inspire further studies in areas not adequately tackled.

1.3 Research Objectives

1.2.1 Analyze the development of e-government in developing countries.

1.2.2 Review e-government implementation models and frameworks.

1.2.3 Determine factors affecting the adoption of e-government.

1.2.4 Make recommendations on e-government adoption in developing countries.

1.4 Research Questions

RQ1 What is e-government development and trends?

RQ2 What are the opportunities and challenges of e-government adoption in developing countries?

RQ3 What are the indicators, models and frameworks used to benchmark e-government development?

RQ4 How ready is the public sector for e-government

1.5 Significance/Justifications of the Study

There is very little research done on the readiness of e-government development in developing countries with more focus in ministries and local authorities in Zambia. The available literature is too general and does not address specific areas of e-readiness using the United Nation E-government Development Index. This is what makes this study very unique and significant, it will be used as a reference point by policy makers and managers of ICT in government ministries and local authorities. It will equally be used for planning and evidence based decisions in the development of e-government in Zambia.

1.6 Research Methodology

The research methodology will be covered further in (Chapter Four). However, the researcher adopted both qualitative and quantitative (positivism and interpretive) approach for the study. Survey questionnaire (with both closed and open ended questions) and Interviews were used to collect data for the study. The data was analyzed using multivariate analysis. The questionnaire was tested to review the reliability and consistence of data the collected and some questions were rephrased. The researcher systematically reviewed different literature, theories, concepts and models relating e-government development in

developing countries. 25 ministries and 6 local authorities in Lusaka, Chilanga, Mumbwa, Kabwe, Kafue and Chongwe were targeted for the research because of their likelihood for e-government deployment and due to financial limitation they were picked for easy reach. Out of the 110 questionnaires distributed, 85 respondents successfully participated in the research. These were Managers and ICT officers in government ministries and local authorities. These were purposively selected because of their involvement in driving the deployment of e-government on behalf of government. Others were randomly selected for interviews.

1.7 The Scope of the Study

The study was more focused on critically investigating and review e-government development in government ministries and local authorities in Zambia and their capacity to sustain online services. These included 25 Government Ministries and 6 Local Authorities along the line of rail. To measure e-government, the researcher adopted the United Nations e-government developing index (EGDI) to benchmark e-government development in Zambia. These were based on key indicator which included: Online Services, Telecommunication Infrastructure, Human Capital and E-participation.

1.8 Chapter Summary

The chapter has presented the introduction to the study giving background, problem statement, and purpose of the study, research objectives and questions. The next chapter will discuss the literature that informed this study.

CHAPTER TWO – LITERATURE REVIEW

Introduction

This chapter presents relevant literature about e-government development in developing and developed countries. Key fundamental concepts, development models and frameworks have been presented in this chapter about e-government together with its origin and opportunities and challenges affecting its adoption in developing countries including Zambia. This chapter also brings out the details of Zambia's e-government development index.

2.1 The Origin of E-government

Governments world over are perceived to be bureaucratic, wasteful and unresponsive in public service provisioning (Attohoun et al., 2002; Bhatnagar, 2004; Nkohkwo & Islam, 2013). This is because of traditional management style of pen and paper and hard rigid rules and regulations adopted by most of governments (Bashar, et al., 2011). In a typical government set up, most transactions between the businesses or citizens happen right in government offices. However, this is the electronic century and the use of ICT in government has transformed and modernized civil service administration processes (Layne & Lee 2001). E-government is beyond just a government website on the internet but processes that support and satisfy citizens, businesses and other arms of government (Basu, 2004). E-government was started in the late 1970s by the federal government in the United States of America during the New Public Management (NPM) reforms (Joseph, 2017; Alford & Hughes, 2008). The main objectives of the reforms were to transform government by being result oriented, efficient and customer or citizen centered (Breul, 2007; Saxena, 2005). This meant adopting private sector professional management practices of doing business rather than simply administration (Saxena, 2005, Mary & Meine, 2013). In 2001 President Bush reinforced the reforms in what was called the President's Management Agenda (PMA). These reforms adopted the use of information technology to eliminate wasteful spending in government, introduce a paperless public service for citizens and

businesses, and improve government's response time to service provisioning (Attohoun et al., 2002). According Ndou and Fang, e-Government has the potential to promotes open government which is a part of modern government system (Ndou, 2004; Fang, 2002).

2.2 Brief background of E-government in Zambia

The telecommunication sector in Zambia has made tremendous development and it has remained competitive over the past decades (Habeenzu, 2010). Political stability and good policies which were built during the liberalization of the sector from being government led to private sector led in 1964 have a huge impact in the success of the sector (RSNDP, 2015). The opening up of the telecommunication sector brought competition and ushered in new players in the market. This gave consumers a wider choice of services selection and reduced the cost of ICT related services such as access to fixed telephone line. This resulted in more adoption of information technology services by the both private and public sectors in the country. The Ministry of Transport and Communication together with its implementing agencies: Smart Zambia Institute (SZI), Zambia Information and Communication Technology Authority (ZICTA) and the Zambia Telecommunication Company (ZAMTEL) are mandated to drive the development of ICT in Zambia (National ICT Policy, 2006). The ZICTA statistical report (2017) and the Revised Sixth National Development Plan Annual Progress report (2015), the telecommunication sector contributed 1,338 permanent jobs and 1.9 percent contribution to GDP in the year under review.

E-government in Zambia can be traced way back in 1993 during the Public Service Reforms Program (PSRP) (Mulikita, 1996). The objectives of the PSRP was to bring efficiency, transparency and reduce the cost of business in government (Joseph, 2017; Litula, 2011). Notable early project from the reforms were the automation of the government payroll through the Payroll Management and Establishment Control (PMEC) system, the Activity Based Budgeting (ABB) and the Financial Management System (FMS). All these automation were aimed at improving information management in

government (Joseph, 2017 & Spriano, 2013). E-government was officially launched by the President of the Republic of Zambia H.E, Mr. Edgar Chagwa Lungu in 2010 under the Center of Excellence for E-government now Smart Zambia Institute (SZI).

However, since the launch of the SZI, the Zambian government has made tremendous developmental programmes to support the achievement of the Revised Sixth National Development Plan (2011-2015) and Seventh National Development Plan (2017-2021). Both plans have prioritized the adoption of ICT in government as one of its key developmental agenda. That is to say bridging the digital divide existing among the people and regions within the country. According to the progress report of the Revised Sixth National Development Plan (R-SNDP) 2015, major investments made focused on the expansion of the Telecommunication Network Infrastructure and Zambia recorded 85 percent mobile network penetration, 75 percent subscriber penetration and 39 percent mobile data penetration in the year 2015 respectively (R-SNDP, 2015). The country has automated Key public services and these have been implemented in the following Institutions through Smart Zambia Institute: Patent Companies and Registration Authority (PACRA), Zambia Revenue Authority (ZRA), Road Transport and Safety Agency (RTSA) and Department of Immigration (Annual Progress Report, 2015).

The PACRA implemented an online system which allows name search, name clearance, registration, filling of returns and management of queries. The Zambia Revenue Authority also embarked on the enhancement of the online tax filling and payment system aimed at improving service provisioning and making tax compliance easier for the citizens and business. The features of the ZRA online system included e-tax registration, e-tax returns, e-payment and e-track status. The immigration department under the Ministry of Home Affairs deployed the online visa which allows tourist or individuals wishing to visit or work in Zambia apply for visa online within a few click.

Another major innovation was the electronic payslip system for the public service. Major savings have been made through the digitization of civil service pay slips by cutting spending on the paper, printing and distribution of pay slips for the civils service in Zambia. However, now pay slips are distributed using government electronic mail services to a unique government mail address. In the long run, all civils servants will be receiving their pay slips monthly and manage their use. The Government Wide Area Network (GWAN) is another government successful project which has resulted in huge savings on internet services and infrastructure in government. Government, through the Smart Zambia, has connected major government Ministries and Institutions to the GWAN offering fast and secure internet services and telecommunication infrastructure management as a service for most government institutions. This has reduced spending on infrastructure and technical costs as all technical requirement are managed in one place (RSNDP, 2015).

2.3 Definition of E-government

Electronic government or digital government can be defined as the use of application of technological solutions by government to deliver services to citizens. The United Nations defined e-government as a government that applies ICT to transform its internal and external business relationships. Alternatively, OECD (2003) defined e-government as the use of information communication and technologies as a tool to achieve better government (OECD, 2003). According to Joseph (2017), e-government is defined as the use of information technologies in the public service to improve service delivery for citizens and enhance collaboration in decision making processes. The International Telecommunication Union (ITU, 2014) defined e-government as a regulatory framework that facilitates information intensive initiatives and foster a knowledge society. E-government has also been defined as electronic government, the digital government and as government online in different countries (Azab, Kamel and Dafoulas, 2009; GITR, 2016). The National Information and Communication Policy of 2005, e-government in Zambia is focused to

improve public sector management, efficient and effective delivery of public goods and services.

2.4 The E-government Development Index (EGDI)

The e-government development index (EGDI) is based on an expert survey used by the United Nations to measure the adoption of ICT in government for the delivery of essential public services (United Nations, 2002). Mathematically, the EGDI is a weighted average of normalized scores on the three most important dimensions of e-government, namely: Telecommunication Infrastructure, Online Services, Human Capital and E-participation as sub indicator (UNDESA, 2016). (Figure 2.1). Based on the assessment from the EGDI, policy makers use the information provided by the survey to compare their e-government performance according to the key indicators. E-government is more than just a government website, but according to Gartner (2000), government should be able to provide services using the websites and the websites should be able to efficiently provide the services and features in stages.

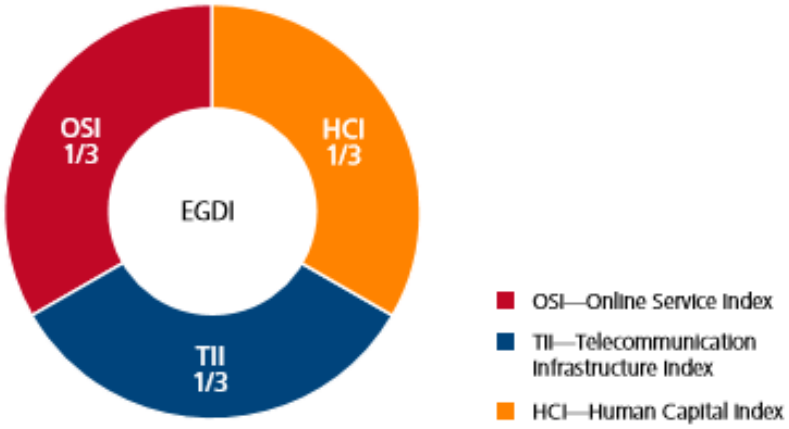


Figure 2.1: The EGDI. Source: UNDESA, 2016

2.4.1 Zambia's e-government Ranking

According to the United Nations E-government Development Index report (2017), Zambia has been ranked number 132 in the world at 0.3507 index. This is far below the world average index of 0.4922. However, compared to the 2016 report, the 2017 report shows that Zambia has improved by moving 21 steps from 163 (UN, 2016). However, despite the improvements made, Zambia is not near the top ten African countries. The top five leading countries are: Mauritius ranked at 58 in the world; Tunisia at 72, South Africa at 76; Morocco at 85 and Seychelles at 86. (Figure 2.2).

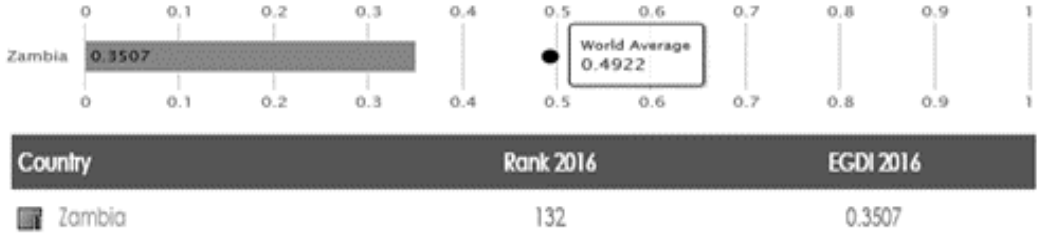


Figure 2.2: Zambia's e-government Ranking. Source: UNDESA, 2016

2.4.2 Online Service Index Trends: Africa vs World

The Online Service Index (OSI) of E-Government implementation measures the use of ICT by governments to deliver public services electronically to citizen (UN, 2016). The survey assesses the technical features of government websites as well as policies and strategies that support the delivery of e-services. The online service index (OSI) is driven from the e-government web development stages of Gartner, Layne and Lee (Al-Hashmi & Darem, 2008). Zambia's online index is above the sub and regional average at 0.3693 index. The regional leader is Morocco with 0.7391 online index and followed by Mauritius at 0.729. The world leader is United Kingdom of the Great Britain and Northern Ireland sharing 1.0000 indexes. (Figure 2.3).

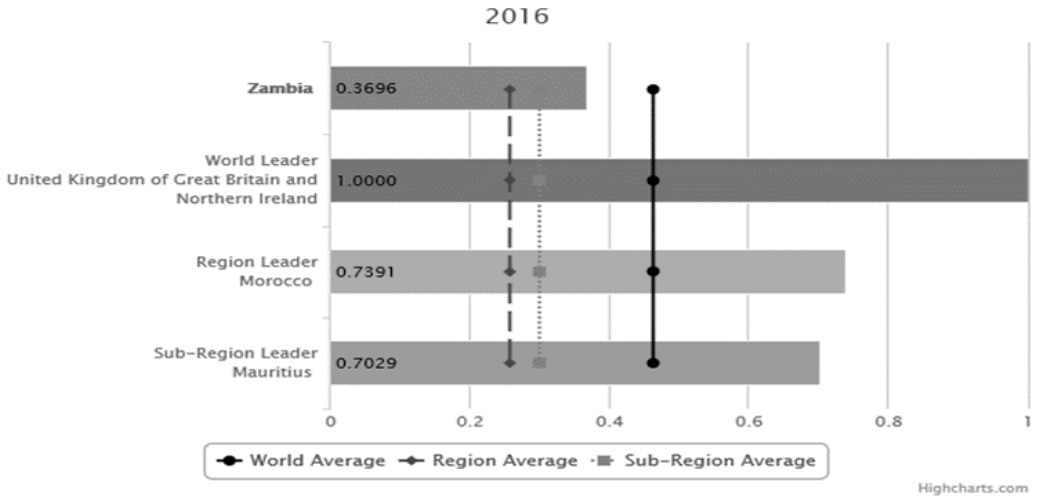


Figure 2.3: Online Service Index (OSI). Source, UNDESA, 2016

2.4.3 Telecommunication Infrastructure Index: Africa vs World

The Telecommunication Infrastructure Index (TII) is made up of the five key indicators which measures a country's ICT infrastructure capacity and these include the following as highlighted in the (Figure 2.4) below: Internet per 100 users, Fixed Telephone Lines per 100 users, Mobile Subscribers per 100 users, Wireless Broadband Subscriptions and Fixed Broadband Subscriptions per 100 users (UN, 2016 & UNPAN, 2012). According to the Waseda (2017) report, ICT Infrastructure is key in the development of e-government processes because it acts as a vehicle for government to communicate and transact with citizens and the business. Infrastructure preparedness integrates central government and local government through a government network backbone system connecting all key government departments. It also facilitates data exchange and connectivity for G2C, G2B, G2G and G2E (Shahnewaz & Ahsan, 2015).

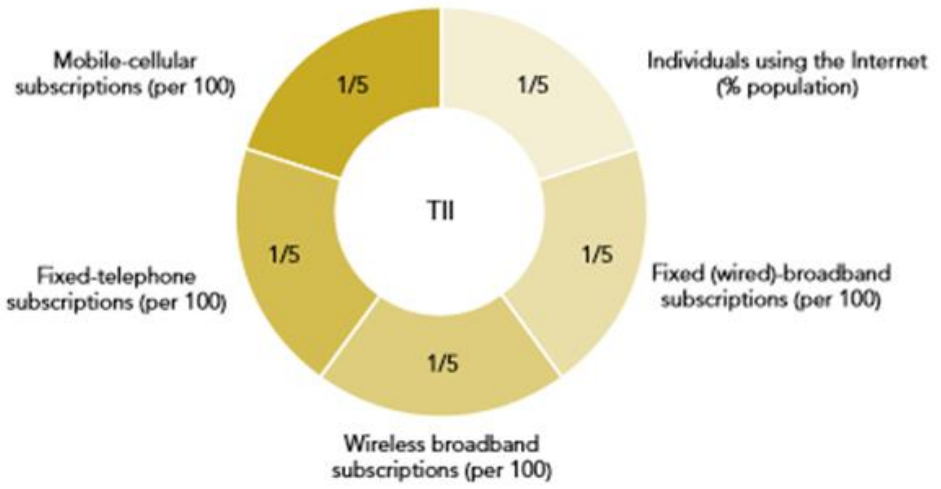


Figure 2.4: Telecommunication Infrastructure. Source, UNDESA, 2016

According to the (Figure 2.5), Zambia's Telecommunication Index (TII) is below the world average index of 0.3711 and at 0.1182. The world leader in the TII is Monaco at 1.000 and followed by Seychelles at 0.4624.

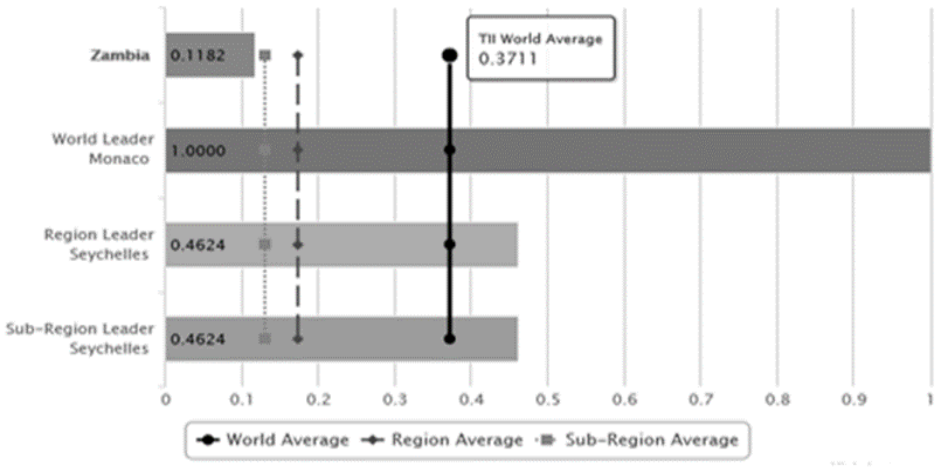


Figure 2.5: Telecommunication Infrastructure Index. Source UNDESA, 2016

However, according to the ICT Development Index (IDI) report (ITU, 2017), Zambia is ranked number 146 in the world ICT development Index. Its mobile phone subscription

per 100 inhabitants is as at 74.95 against the regional average index of 96.2. Internet subscription is at 25.51%, fixed wired broadband subscription 0.2 per 100 inhabitant, fixed telephone subscription 0.63 and households with computers is at 8%. (Table 2.1).

The ICT gap analysis report of 2017, suggests that Zambia's poor ranking in the region could be as a result of high corporate taxes and regulatory levies which discourages investment and quality of service (Research ICT Solutions, 2017)

Table 2.1: ICT Development Index (IDI). ITU, 2017

ICT DEVELOPMENT INDEX (IDI)	DEVELOPING COUNTRIES	ZAMBIA
IDI 2017 Rank	-	146
IDI 2017 Value	4.26	2.54
Fixed-telephone subscriptions per 100 inhabitants	8.54	0.63
Mobile-cellular telephone subscriptions per 100 inhabitants	96.25	74.95
Percentage of households with computer	34.35	8.14
Percentage of households with Internet access	40.43	14.33
Percentage of individuals using the Internet	38.98	25.51
Fixed (wired)-broadband subscriptions per 100 inhabitants	8.71	0.2
Active mobile-broadband subscriptions per 100 inhabitants	43.58	32.16

2.4.4 Human Capital Index Indicator: Africa vs World

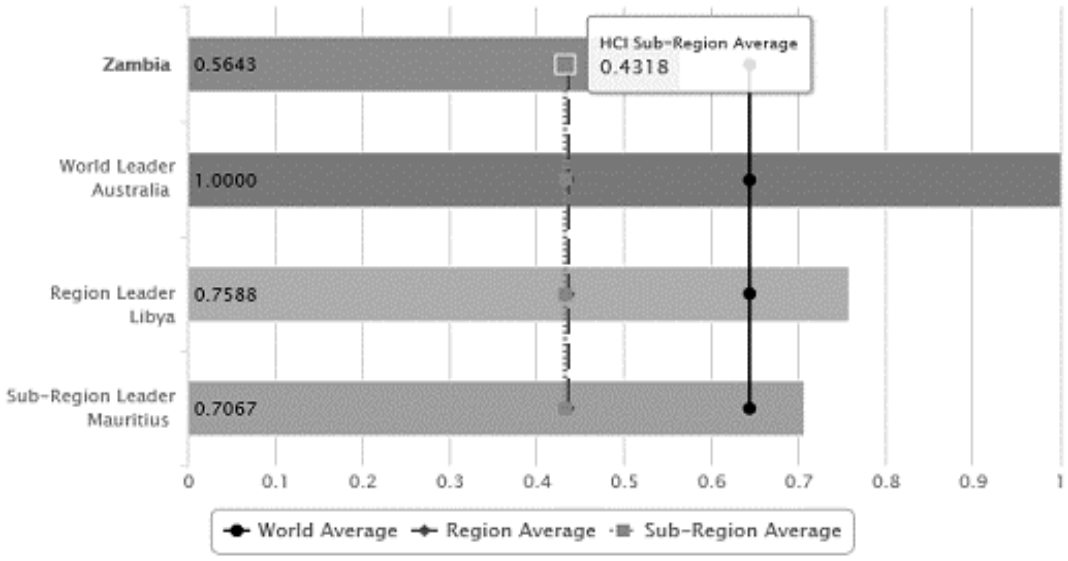


Figure 2.6: Human Capacity Index. Source UNDESA, 2016.

High quality education development such as early childhood to post primary learning, vocational education and on the job training is key for the successful e-Government implementation. Human capital is one of the critical success factors of an e-government

initiative. Having a skillful and motivation workforce is significant when planning to adopt e-government (UNESCO, 2012). The human capital index is made up of three key indicators, namely: Adult literacy rate, the combined primary and secondary education and tertiary enrolment ratio. Zambia's human capital index has increased above the regional average index of 0.4318 to 0.5643 but still slightly below the world Human Capital Averaged Index of 0.645. Australia is the world leader in HCI at 1.0000 and the region leader is Libya with 0.7588 followed by Mauritius at 0.7067. (Figure 2.6).

According to the ITU ICT Skills Development Index (2017), the skill index for Zambia is at 3.13 against the regional average of 5.05 as shown in (Figure 2.7).

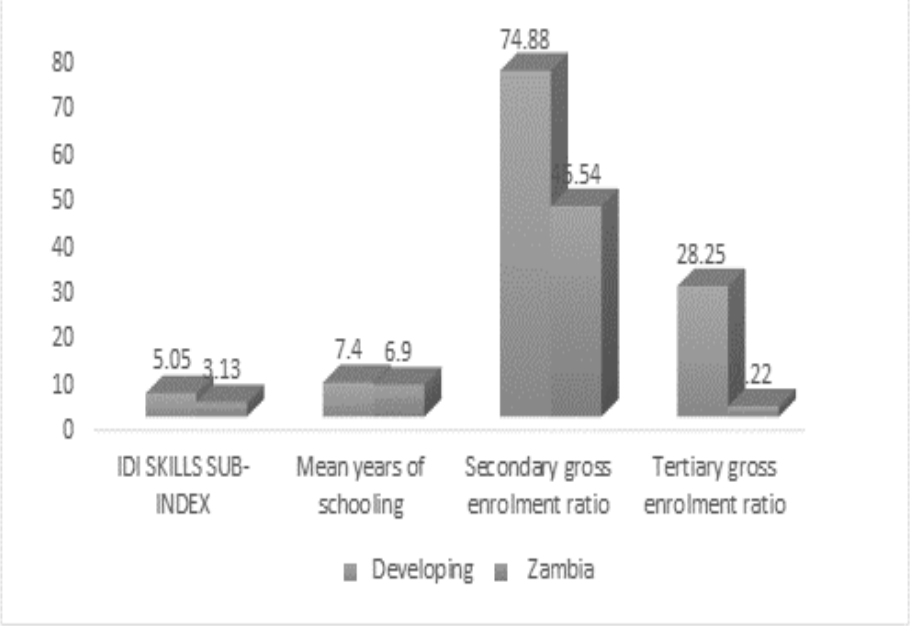
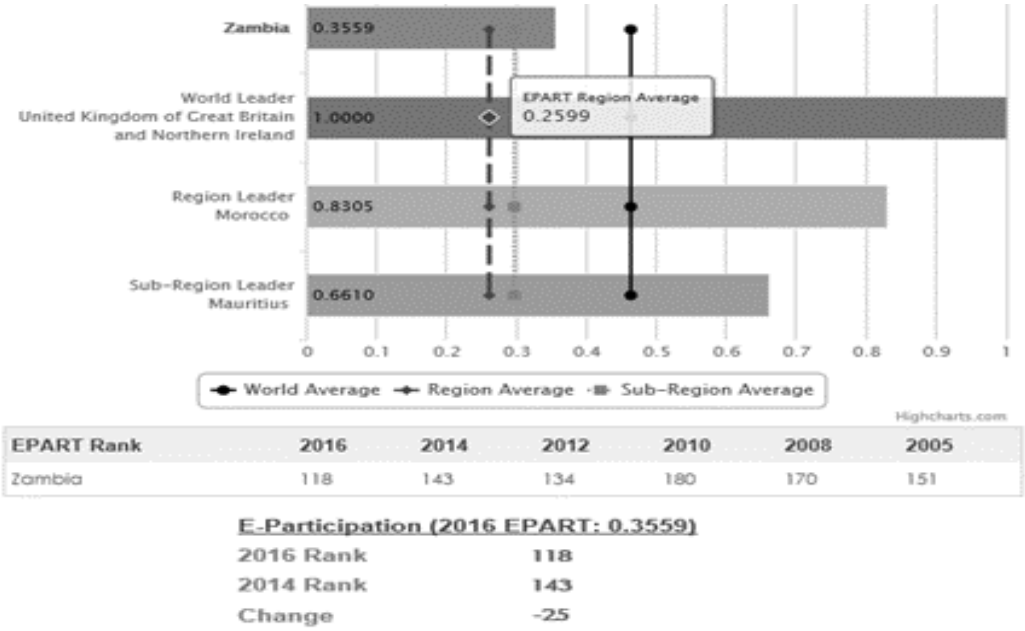


Figure 2.7: Zambia's ICT Skills Development Index (IDI). Source, ITU, 2017.

2.4.5 E-participation Index: Africa vs World



EPART Rank	2016	2014	2012	2010	2008	2005
Zambia	118	143	134	180	170	151

E-Participation (2016 EPART: 0.3559)

2016 Rank	118
2014 Rank	143
Change	-25

Figure 2.8: E-Participation Index. Source UNDESA, 2016.

The UN, (2010) defines e-participation as the process of engaging citizens through ICTs in policy and decision-making in order to make it participatory, inclusive, and deliberative. From the definition, it is clearly highlighted that e-participation is pro-citizen centered aimed at encouraging e-democracy and grass root citizen participation in governance. The technologies used in this process are to expand opportunities for civic engagement, including increased possibilities for people to participate in decision-making processes and service delivery to make societies more inclusive (UN, 2016). E-participation index (EPI) is derived as a supplementary index to the United Nations E-Government Survey. They are three main level model of e-participation and these include E information, E-Consultation and E-decision (Shahnewaz & Ahsan, 2015). It has transformed people from being just passive receivers of services to being co-creators of public value and contributors to community resilience.

Zambia's e-participation has improved having moved 25 steps downwards from 143 in 2014 to number 118 in the 2016 in world EPI rankings with 0.3559 index. In the region Morocco is leading with 0.8305 EPI and in the global rankings, the United Kingdom of Great Britain and Netherland are the global leaders with 1.0000 EPI. (Figure 2.8).

2.4.6 Global E-government Trends

However, e-government trends in Africa have remained largely unchanged over the past 15 years in comparison to the world trends. In 2016, there was a huge gap between African countries, with a low EGDI average of 0.2882, compared to European countries with an average index of 0.7241 EGDI. Oceania countries, with an average EGDI of 0.4154, are also below the global average of 0.4922 with Africa. Asia and the Americas are very close, with average EGDI values of 0.5132 and 0.5245 respectively. (Figure 2.9).

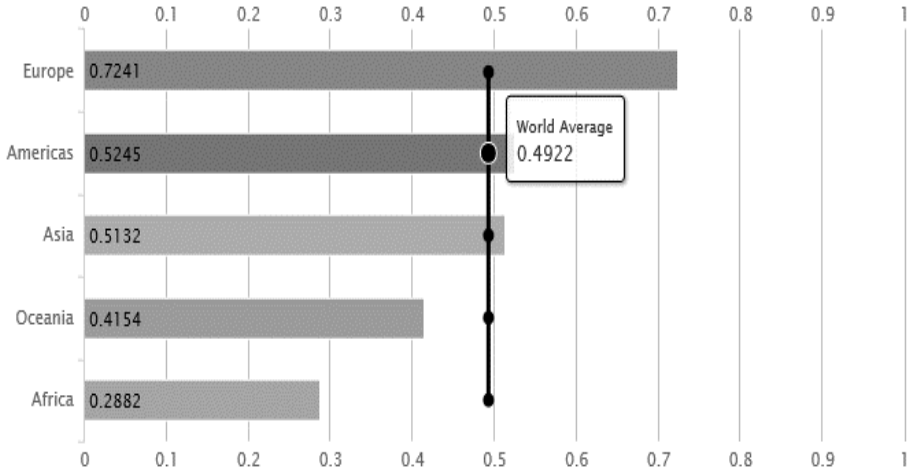


Figure 2.9: Global E-government Trends. Source: UN, 2016

2.4.7 E-government Top 20 Performing Countries: 2014 to 2016

From (Figure 2.2), we can see that a number of countries grouped by the E-Government Development Index (EGDI) in 2016 as compared to 2014. The United Kingdom of Great Britain together with Northern Ireland are the global leaders in the e-government

development index ranked number one at 0.9193. Australia is ranked number second at 0.9143 and at number three is South Korea which dropped two places from being at number one in 2014 survey and now (2016) at 0.8915.

Table 2.2: Top e-government Countries. Source UNDESA, 2016.

Country	Rank 2014	Rank 2016	EGDI 2016	Rank Change
United Kingdom of Great Britain and Northern Ireland	8	1	0.9193	+7
Australia	2	2	0.9143	
Republic of Korea	1	3	0.8915	-2
Singapore	3	4	0.8828	-1
Finland	10	5	0.8817	+5
Sweden	14	6	0.8704	+8
Netherlands	5	7	0.8659	-2
New Zealand	9	8	0.8653	+1
Denmark	16	9	0.8510	+7
France	4	10	0.8456	-6
Japan	6	11	0.8440	-5
United States of America	7	12	0.8420	-5
Estonia	15	13	0.8334	+2
Canada	11	14	0.8285	-3
Germany	21	15	0.8210	+6
Austria	20	16	0.8208	+4

2.4.8 E-government Top Performing Countries in Africa: 2014 to 2016

From (Table 2.3), we can see that Mauritius is the regional leader in Africa ranked number 58 in the world with the EGDI of 0.6231. Tunisia is second in Africa and is ranked number 72 in the world ranking at 0.5582 and on third and fourth position is South Africa and Morocco ranked at 76 and 85 in the global ranking and at 0.5546 and 0.5186 index respectively. Zambia is at 132 in the world ranking and is number 16 in Africa at 0.3507 index moving 31 places downwards in the space of two years from the year 2014.

Table 2.3: E-government Top Performing Countries in Africa. Source: UNDESA, 2016.

Rank	Country	Sub-region	EGDI	Online Service Component	Telecomm. Infrastructure Component	Human Capital Component
58	Mauritius	Eastern Africa	0.6231	0.7029	0.4596	0.7067
72	Tunisia	Northern Africa	0.5682	0.7174	0.3476	0.6397
76	South Africa	Southern Africa	0.5546	0.5580	0.3807	0.7253
85	Morocco	Northern Africa	0.5186	0.7391	0.3429	0.4737
86	Seychelles	Eastern Africa	0.5181	0.4058	0.4624	0.6861
103	Cape Verde	West Africa	0.4742	0.4565	0.3629	0.6031
108	Egypt	Northern Africa	0.4594	0.4710	0.3025	0.6048
113	Botswana	Southern Africa	0.4531	0.2826	0.4215	0.6553
118	Libya	Northern Africa	0.4322	0.1087	0.4291	0.7588
119	Kenya	Eastern Africa	0.4186	0.5580	0.1808	0.5169
120	Ghana	West Africa	0.4181	0.4493	0.2594	0.5458
125	Namibia	Southern Africa	0.3682	0.2826	0.2669	0.5551
128	Uganda	Eastern Africa	0.3599	0.5000	0.1129	0.4668
129	Gabon	Central Africa	0.3584	0.1522	0.3068	0.6162
130	United Republic of Tanzania	Eastern Africa	0.3533	0.5725	0.0900	0.3974
132	Zambia	Eastern Africa	0.3507	0.3696	0.1182	0.5643
134	Zimbabwe	Eastern Africa	0.3472	0.2609	0.2167	0.5641

2.5 E-government Concepts

The United States introduced a number of reforms during the President Management Agenda PMA for e-government (OBI, 2015). The reforms were aimed at making government more results oriented, efficient and citizen-centered. E-government concepts are widely recognized and used by countries as highlighted in (Table 2.4).

Table 2.4: E-government Concepts. Source: NTT DATA 2009

1	INTRODUCTION OF OUTCOME- BASED APPROACHES
2	UTILISATION OF MARKET MECHANISMS
3	FULFILMENT OF CUSTOMER CENTERED ENVIRONMENT

2.5.1 Outcome-Based Approaches

A performing government is one that observes the principles of good governance that is zero tolerance to corruption and observation of the rule of law (ITU, 2009). The public service reforms in the United States helped transform the civil service from being government focus to a more citizen centered government. E-government encourages open government data which is a very important aspect of good governance (UNDESA, 2016). Open government promotes efficiency, accountability, transparence, participation, openness, consultancy and trust. Through these engagements, government can build on trust with people and reduce on resource waste through (Ebrahim & Irani, 2005). Reforms such as adequate audit and evaluation processes of activities through the use of technology in the public service. This was achieved in the United States when access to government information was made open to the public through government web portal (FirstGov.gov) connecting more than 180 million web pages across government (Seifert & Chung, 2008). These portals have enabled citizens to access government information and services without queuing and visiting different government offices but just a few clicks on the internet. According to the World Bank (2004), introduction of results-based reforms have the potential to keep track of government progress. In Zambia, International organizations like Transparency International (TI) and Zambia Institute for Policy Analysis and Research – ZIPAR, play a watchdog role by ensuring governments delivers socioeconomic equity to its citizens as reflected in the national budget. They review the performance of governments in every fiscal year and holds them accountable for all activities not achieved (Ashaye, 2014). This in the end prompts governments to be transparent in service delivery (ITU, 2011).

2.5.2 Market Mechanism

According to Jeffrey (2004) and George (1994), Market Mechanism is referred to as creation and retention of a satisfied citizen (customer) by improving public service quality, accessibility and delivery. Market Mechanism is more citizen focused rather than

government centered (Chen et al., 2006). It is very important for a government to realize functions that it can perform and functions that the public sector can do. It is the duty of government to formulate policies that creates an enabling telecommunication business environment to supports public service delivery by removing trade barriers (Naftel, Spiwak, 2000). The Federal Communication Commission (FCC) of 1996 in the United States of America restructured their telecommunication market from a monopolistic market to an open market encouraging new entrepreneurship and infrastructure entry in the sector (FCC Act, 1996). Joseph Bwalya (2017) adds that e-government is not a tool for service improvement but as development strategy that goes beyond local development.

The Chinese government together with the private sector standardized procurement procedures to reduce the costs of doing business (Chen, 2009). Public service reforms are aimed not only at providing better public services, but also creation of a conducive trade environment for private sector to compliment government efforts in public service distribution (Schuppan, 2009). This means that Government has an obligation to develop policies that promote private sector participation in service provision by widening the supply chain and break down on monopolistic markets and encourage competition. The private sector participation is key in driving economic development agenda. That is the reason governments need to open up the market environment and reduce bureaucracies and barriers that hinders private sector growth. This is the only way to allows private sector to offer alternative choices of services to citizens and encourage competition in sector (OECD, 2003).

2.5.3 Fulfilment of Customer-Centered

The objective of this concept is to breakdown the bureaucracy in public service by ensuring that citizens who are government customers are satisfied by reaching out to them in delivering services (Azab et al., 2009; Zall & Rist, 2004, UN, 2014). In Ghana, the government introduced Community Information Centers stocked with PCs, Internet, Printers and Telephones (M.o.C. Ghana, 2004). This was aimed at giving the citizens in

the community a platform that can be used to access public services at their convenient time and save on cost using the internet. In India, the government introduced kiosks with voice recognition systems to deliver improved public services and increase reach to the less literate community in rural areas (Schuppan, 2009). Kiosks are meant to offer a one stop government services to the public in one dedicated location without the burden of visiting referral government offices. E-government promotes decentralization through the use of new forms of networked collaboration between different bureaucracies and authorities (Ndou, 2004; Lootah & Geray, 2006). The communities have an option of using the government call center to enquire and lodge their related public service queries using a telephone.

2.6 E-government Development Stages

To measure and guide the adoption processes of e-government development, a number of researchers have proposed different e-government models (Seifert, 2003). The e-government development stages are also referred to by others researchers as the e-government maturity stages (Siau, 2017). They are a number of researchers who have proposed different e-government development models (Al-Hashmi and Darem, 2008). This research reviewed five different models from: Layne & Lee, (2001); Gartner, (2000); Moon, (2002); UNASAP, (2001) and World Bank 2001. (Table 2.5). E-government should not be perceived as a one-step process or implemented as a single project; it is evolutionary in nature involving multiple stages or phases of development (Jayashree & Marthandan 2010).

Table 2.5: E-government Development Stages. Source Al-Hashmi & Darem, 2008

UNASPA	Layne and Lee	Gartner	Moon	World Bank
1. Emerging Presence 2. Enhanced Presence 3. Interactive Presence 4.Transactional Presence and 5. Seamless	1.cataloguing 2.transaction, 3. vertical integration, 4. horizontal integration	1. Web presence 2. Interaction; 3. Transaction; 4.Transformation	1. Simple information dissemination 2. Two-way communication 3. Service & financial transaction 4. Political Participation 5. Political participation.	1. Publish 2. Interact 3. Transact

2.6.1 Gartner (2000)

To measure the progress for e-government development and create a road map to deliver the objectives of the project, Gartner proposed a four-phase e-government development framework. (Figure 2.10). These phases included the following:

(i) Web Presence

In this phase, it is expected that simple information is published on the web site providing a one-way communication to citizens and the business in a brochure or passive way just for the information of the people.

(ii) Interaction

At this stage of e-government development basic interaction between the people and the business and government is expected where simple or basic form of interaction through email contact or indeed interactive platforms such as Facebook or WhatsApp and feedback or response is given.

(iii) Transaction

This is the third stage of e-government development as proposed by Gartner. At this stage the project is expected to provide transactional services for the business and citizens such as online tax payment, application form submission, procurement bidding and license renewal.

(iv) Transformation

According to Gartner, it is the advanced stage of e-government development. The project at this stage is mature and is expected to bring transformation or change in the government operates such as operation efficiency.

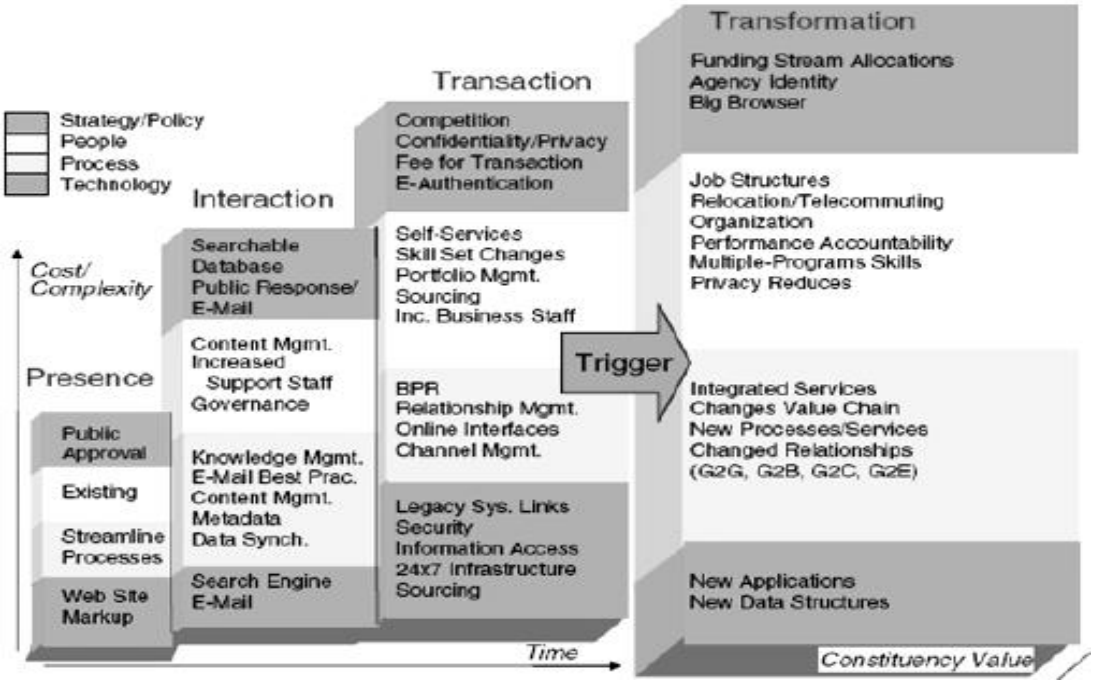


Figure 2.10: Four Stage E-government Model. Source Gartner, 2000.

2.6.2 UNaspa (2001)

The United Nations Division for Public Economics and Public Administration (2001) study "Benchmarking E-government: assessing the adoption e-government by its member

countries. To monitor progress in the development of e-government they identify the five stages for quantifying progress of e- Government. (Figure 2.11).

(i) Emerging

At this stage government website only provides very basic information about government policy or business regulation for the people and the business through links. These links may include information about ministries and departments of central government, regional/local government and this may be or may not be available as a single or a few independent government web sites provide formal but limited and static information.

(ii) Enhanced

At this stage government web sites provide dynamic, specialized and regularly updated information to keep people informed such as policies of the Government, laws, regulations, reports, newsletters. Additional features maybe be added to the web page such as search and site map to help with directions. This information is also downloadable for users.

(iii) Interactive

At this stage government web sites offers interactive services for people and business such as payment of bill, submission of tax returns, renewal of licenses and download and uploads of application forms act as a portal to connect users and service providers and the interaction takes place at a more sophisticated level. At this stage audio and video features may be part of the site.

(iv) Transactional Presence

Users have the capability to conduct complete and secure transactions, such as renewing visas, obtaining passports and updating birth and death records through a single government web site.

(v) Seamless or Networked Presence

This is the most sophisticated stage according to the United Nations, at this stage governments utilize a single and universal web site to provide one-stop Window or portal for government services in which users can immediately and conveniently access all kinds of available services online without travelling. This brings together government, citizens and the business G2C, G2B and G2G.

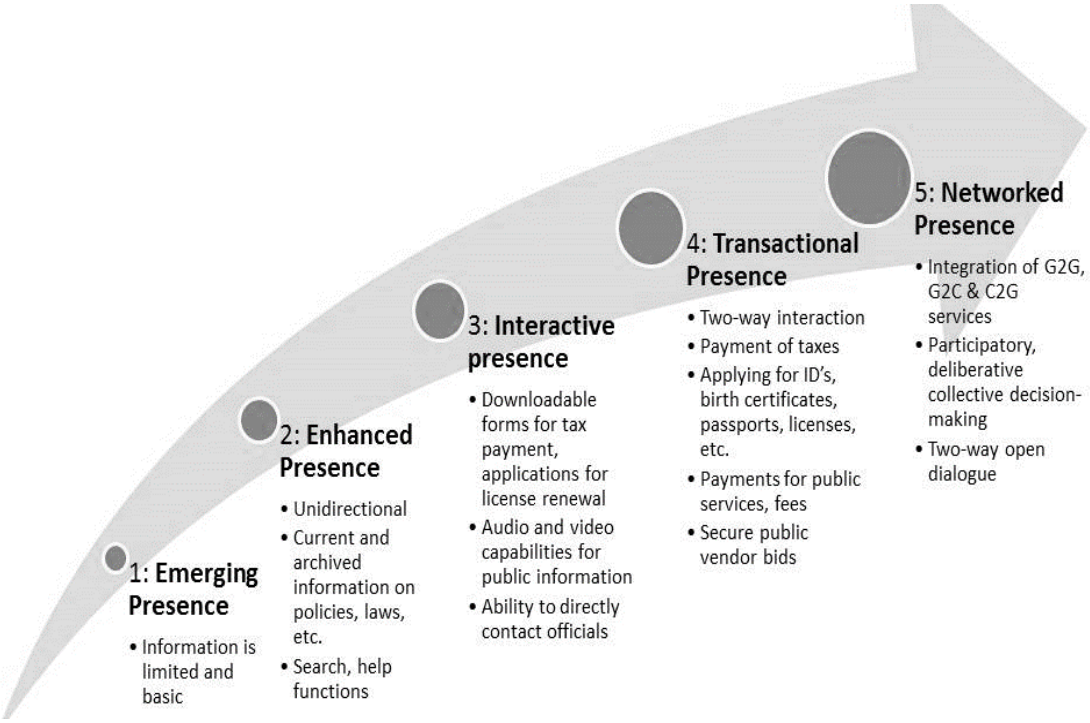


Figure 2.11: Five Stage E-government Model. Source, UNASPA (2001)

2.6.3 Layne and Lee (2001)

To help understand e-government development, Layne and Lee also developed a four stages e-government development model. (Figure 2.12). The following are the stages.

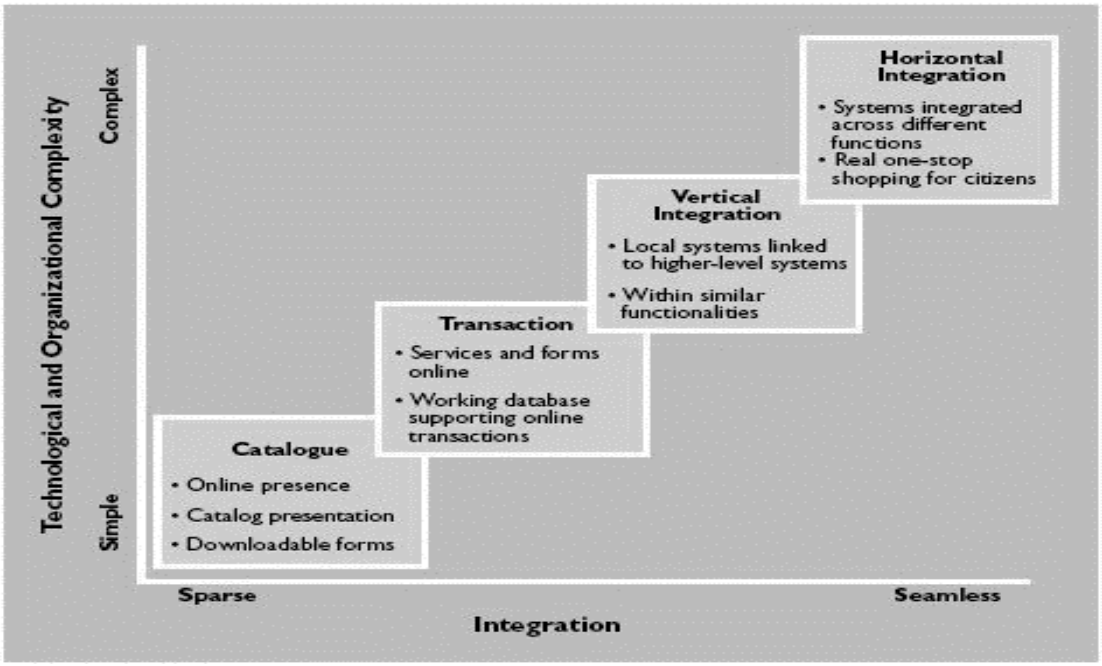


Figure 2.12: Four Stage E-government Model. Source, Layne and Lee, 2001.

(i) Catalogue

At this stage government is expected to have an online presence in a very simple way by providing contact details, addresses and information pertaining to services they offer to the business and citizens.

(ii) Transaction

At this stage government is expected to interact with its internal processes by sharing common database and enhance internal information sharing using an intranet.

(iii) Vertical integration

At this stage, it is expected that all government systems are integrated across government institutions, local authorities and agencies. Any changes made to the main file on one

particular government organization, the system updates the file on other systems. This is an advanced stage of e-government development according to Layne and lee (2001).

(iv) Horizontal integration

Unlike Vertical Integration, Horizontal Integration stage integrates independent systems with very different function. This is the maturity stage of e-government development according to Layne and lee.

2.6.4 Moon (2001)

The model by moon is an upgraded version from Layne and Lee model. In this modified version from Layne and Lee, model political participation was added to measure e-government development. The five stages proposed are as follows:

(i) One way communication

This is the elementary stage of e-government project were government disseminate information to the citizens and the business by simply publishing the information on the web site.

(ii) Two-way communication

This is also known as asynchronous and synchronous stage of e-government which involves users and government to communicate using the web site and government is able to provide feedback to users through email contact or an online access account.

(iii) Transformation

This stage is also similar to Gartner's last stages of e-government development model. At this stage government web site should be able to change internal operation of government by reducing the cost of doing business within government and bringing efficiency.

(iv) Vertical and horizontal integration

This is stage is similar to the model proposed by Layne and Lee's (2001). This stage refers to the integration of independent government systems at different levels within departments and across government institutions.

(v) Political participation

Moon suggested that e-government development should be able to promote political participation among the citizens through services such as online voting and surveys.

2.6.5 World Bank (2003)

The World Bank also proposed the three stages e-government development model involving. (Figure 2.13).

(i) Publish

At this stage government web sites are expected to publish information online. This is the elementary stage of e-government development by having a website which is able to publish information about public organization and its services for the people.

(ii) Interact

After having only published the information on the websites, at this stage the web site is expected to interact with the citizens and the business by allowing them to submit application forms and able to receive responses from government online.

(iii) Transaction

According to the UNASPA, Citizens and the business at this stage are able to access government services anywhere and anytime using the website. This is the maturity stage of e-government development.

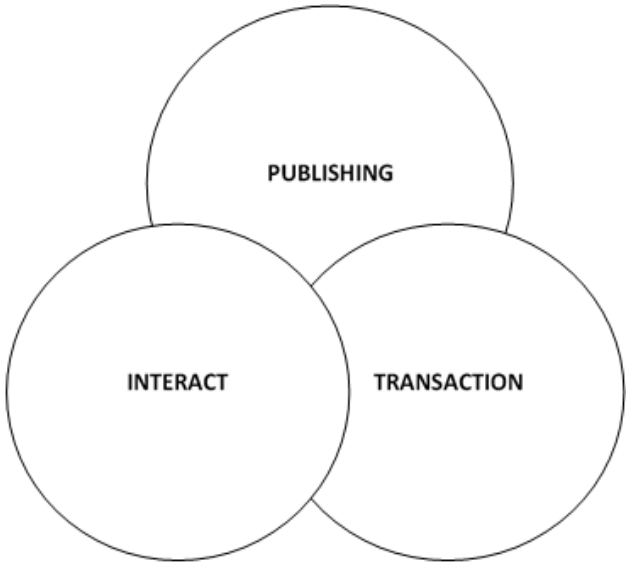
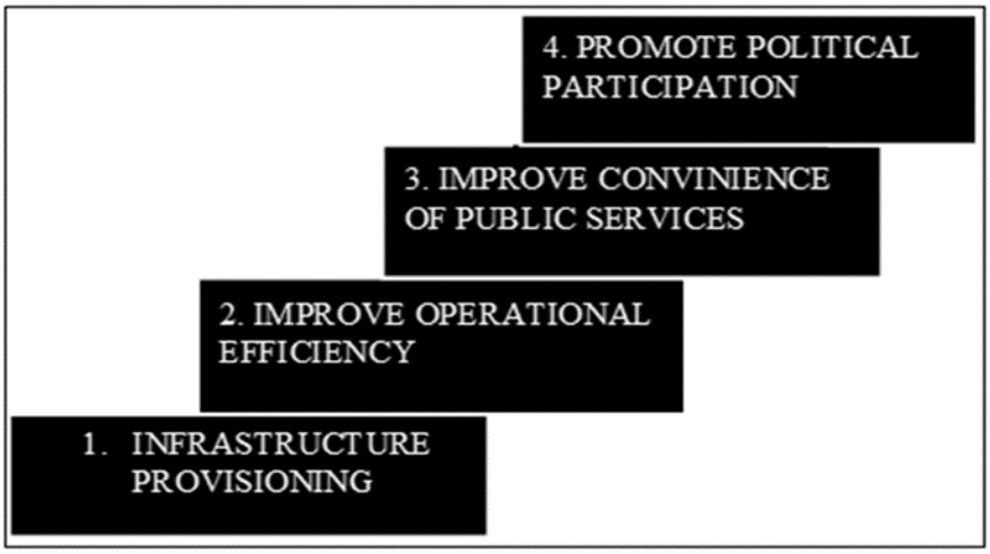


Figure 2.13: World Bank (2003) Three Stage E-government Model

2.7 NTT Data Model

Another e-government development framework is from the Nippon Telegraph and Telephone (NTT) Data Corporation of Japan. The model uses a four development stage to measure and guide e-government implementation and these include: Infrastructure Provisioning, Improving Operation Efficiency, Improve Convenience of Public Services and Political Participation (NTT Data Corporations, 2009). (Table 2.6).

Table 2.6: E-government Development Stages. Source: NTT DATA, 2009



2.7.1 Infrastructure Provisioning

According to NTT data, infrastructure provisioning should be number one priority in the e-government development processes (Ishikawa, 2008). (Table 2.7). The effectiveness of e-government in reaching out to citizens and businesses greatly depends on the availability of ICT infrastructure (ITU, 2017). Telecommunication Infrastructure is the transport channel that enables distribution of online services by government to the people. Adequate and reliable infrastructure guarantees quality of service for citizens and without it, there is no service access and distribution. Infrastructure is not only confined to internet, mobile subscribers or the number of broadband connections but recognizes the development of network backbone capable of connecting all government departments and local authorities through a Government Wide Area Network Infrastructure regardless of the location (OBI, 2015). Therefore, it is very crucial for developing countries to evaluate and adequately plan for telecommunication infrastructure when adopting e-government initiative (Heeks & Bhatnagar, 1999).

The Global Information Technology report (2016) is used to measures readiness of ICT infrastructure in a country based on affordability, usage, adoption, skill, socio and economic impact of technology. The development of Infrastructure should not only be used as an end, but to measure how ICT contributes to socio economic development of a country such as health, good governance and poverty reduction. Availability of Telecommunication infrastructure such as telephones (fixed and mobile), personal computers, servers, networks and software applications are used to ascertain a country e-government readiness (ITU, 2009). The government of Japan developed its information and communications infrastructure, such as installation of Government Wide Area Networks (GWANs) in prefectures, distribution of Personal Computers (PCs) and establishment of networks between the ministries, agencies and field agencies (UNPAN, 2004). Consequently, mobile broadband is one of the key network preparedness factors in the world today because of the huge mobile phone penetration (OBI, 2015). The infrastructure dimension also extends to the energy sector, as access to electricity is a precondition for a functioning ICT infrastructure (Lootah & Geray, 2006). When a country is entirely dependent on e-government for all its essential internal and external activities, the energy sector also need to build adequate infrastructure to sustain continuous operation of government business (Azab et al., 2009).

Table 2.7: Infrastructure Provision. Source: NTT Data Corporation, 2009

Stage 1	**Indicators**
Infrastructure Provision	• Internet Users • Broadband Subscribers • Mobile Cellular Subscribers • GWAN • LGWAN • PKI and Authentication

2.7.2 Improving Operation Efficiency

This stage reflects the utilization of ICT to improve internal business operation in government (OBI, 2015). NTT Data Corporation, (2009), adds that this stage also

improving productivity in government by reducing processing time and prioritize resources to area critical areas by utilizing ICT tools. The UNPAN (2004) reports that after japan had successfully implemented the second stage of the e-government model, internal management systems such as personnel management, accounting management, intra-agencies electronic documents exchanges and other e-administration were introduced. Use of ICT tools improves internal business operations and reduces on bureaucracy and processing time of services (Yigitcanlar, 2003). It reorganizes and standardizes administrative procedures of government and all processes become uniform across all government departments and agencies (Asgarkhani, 2005). According to NTT Data Corporation (2009), Japan in Ichihara-city and Chiba prefecture introduced a groupware that integrated different government systems to make business processes more efficient and effective by being accessed centrally. The system introduced enabled a centralized management of conference rooms and sharing of common database. After implementing the system, it improved access to government information, accelerated communication speed, decrease on resource wastage related time. Waseda e-Government Ranking, (2015) considers "improving operation efficiency" to be a critical business function that underpins the operational, financial, accounting and strategic planning of business, social, health and administrative affairs within the country. (Table 2.8).

Table 2.8: Improving Efficiency. Source: Waseda e-Government Ranking, 2017

Stage 2	Indicators
IMPROVING OPERATION EFFICIENCE	• Optimization Awareness • Full optimization (Enterprise Architecture) • Administrative and Budgetary Systems • use of e-mail and video conferencing • Document management and work flow for paperless operations • Integrated Financial Management Systems

2.7.3 Improving Convenience of Public Services

E-government has the ability to transform physical society into an e-society where citizens have seamless interaction with their Government on its functions and services (Basu, 2004; Fang, 2002). ICT have the potential to bridge the gap between government, citizens and the business through collaboration and increases on information disclosure and transparence of government business (Ndou, 2004; Republik & Kovačić, 2005). Many citizens and businesses will now search for government information on the web sites instead of flipping through the yellow pages and moving from one government office to another just to submit a form (Layne & Lee, 2001). It is so disappointing for stakeholders to look for business rules and procedures online and cannot find the information. Some Governments' provide static information on web pages; others offer services online; and others offer electronic consultation and participation about rules and procedures (Schuppan, 2009).

The use of information technology in government improves operation efficiency and information sharing among stakeholders. The publication of government rules and procedures online increase transparency, citizens and the business benefit from reduced delays, availability of many services under one roof and avoid many frequent visits to government departments and reduce corruption (Nkohkwo & Islam, 2013; Qaisar & Ghufran, 2010). There are many definitions to this concept; other researchers refer to it as e-services, online service, and e-commerce. It includes services that are offered to citizens or consumers using an Internet connection by government organization or companies (OECD, 2015). According to Waseda-e-Government Ranking survey (2015), this indicator refers to the services such as e-procurement, e-tax, e-custom, e-health and one-stop service (national portal). E-services helps to reduce costs, improves perceptions of government efficiency on the part of citizens and also delivering benefits for both customers and government (OBI, 2015; Kovačić, 2005).

The uses of ICT provide governments with the means to communicate and process transactions between the administration, citizens and businesses (ITU, 2009). Increased consumer demand for personalized real time services has made many governments to migrate from traditional ways of governance to an open government (Janssen & Veenstra, 2005). This is where Government institutions fully disclose public information on official web portals so that citizens can download and upload documents such as e-Application and e-Tendering. Citizens demand to fulfill government requirements on-line instead of having to go to a specific location to complete huge paperwork (Layne & Lee, 2001). Access to information and knowledge strengthens civil society, and leads to poverty reduction by allowing individuals and communities to expand their choices, United Nations, (2005). (Table 2.9).

Table 2.9: Improve Public Services. Waseda e-Government Ranking, 2017

Stage 3	Indicators
IMPROVING CONVINIENCE OF PUBLIC SERVICES	E-Procurement E-Tax Systems E-Custom Systems E-Health System One-stop service E-Pension E-Registration

2.7.4 Promoting Political Participation / e-Participation

The United Nation agenda 2030 for Sustainable Development Goals (SDGs), calls for an all-inclusive participatory governance system (UN, 2016). E-participation or political participation has the capacity to expand opportunities for civic engagement, including increased possibilities for citizens to participate in decision-making processes and service delivery to make societies more inclusive (Azab et al., 2009). Electronic participation is the process of engaging citizens to freely express their opinion by government through the use of information technology such as web portals on policy issues and decision-making

(Palvia & Sharma, 2007). (Table 2.10). This is what is also known as e-Democracy. Many governments are working hard to bridge the digital gap and recognize the need to ensure that all citizens whether online or not, continue to enjoy equal right of participation in the public sphere (OECD, 2003). According to the United States Presidential Management Agenda for e-government (2003), the government provides full information disclosure to its citizens using the web portal (firstgov.gov) about all government services just within a few clicks online (Al-Hashmi & Darem, 2008). This is a deliberate government strategy to reduce on bureaucracy and enable citizens' access government information within their convenience 24/7 using government portal.

The US government web portal is the most accessed web site as a one stop window to all government services online and it has encouraged most citizen to participate in decisions and governance processes (Breul, 2007). All governments have a duty to uphold the peoples' right to participate in public governance, (UN, 2014). According to the Direct.Gov or Gov.uk website, the UK government publishes important draft bills from all ministries and agencies at a single web site to effectively collect public comments. The portal provides a platform for the citizens and the business to read all draft bills and directly pass comments to government. However, E-participation does not replace traditional forms of public participation, whether through face-to-face meetings, paper-based communications, telephone calls, physical bulletin boards, among other offline modalities but expands government's toolbox for reaching out and engaging with its people (Sarrocco & Kelly, 2002; Alshehri & Drew, 2010). E-government facilitate broader and deeper ways of encouraging public participation by providing easier access to public documentation and ensure that the people have the platform to give their views on policy related issues (Bwalya, 2009). The use of ICTs and the increased availability of open and innovative channels of communication between government and citizens, including social media, have made e-participation more widely adopted than ever before (Bhatnagar & Schware, 2000). A service such as e-Voting is one of the potential mechanisms for e-participation.

India the world's biggest democracy successfully implemented e-voting since 2002 to improve on citizen engagement in democratic processes (Singh & Parihar, 2015). In recent years, e-government has enabled enhanced public participation in government decisions in ways that were unthinkable in the past, this is in line with the 2030 Agenda for Sustainable Development which encourages governments worldwide to ensure responsive, inclusive, participatory and representative decision-making at all levels (UN, 2015). This has triggered a shift from a "government-to-you" approach to a "government-with-you" approach focusing on collaboration within and outside government (Meziani & Saleh, 2010). Electronic Participation Index (EPI) measures online collaboration and engagement of citizens according to a three-level model of participation that includes: (i) e-information provision of information on the Internet, (ii) e-consultation – organizing public consultations online, and (iii) e-decision-making – involving citizens directly in decision processes (UN, 2015).

Table 2.10: Political Participation. Source: Waseda e-Government Ranking, 2017

Stage 4	Indicators
PROMOTING POLITICAL PARTICIPATION	E-Information Mechanisms E-Consultation E-Decision-Making

2.8 The E-government Enterprise Architecture

The concept of Enterprise Architecture (EA) is believed to have been originated from the pioneering work of John Zachman who is frequently referred to as the "father" of Enterprise Architecture (Ahuja & Neena, 2008). Enterprise architecture is a guides or a roadmap that give clues to an organization on how and what to do in order to fully optimize its business and achieve its business strategy and mission using information technology (FCIO, 2002). Enterprise Architecture can be defined as a model of an organization that

depict its current and future structure and processes aligned with its core goals and strategic direction using information technology (Fischer et al, 2007). The main objective of enterprise architecture is full optimization of the business entity by being customer centered using ICT (Ahuja & Neena, 2008). Enterprise Architecture principles are based on the business strategy and IT strategy of an organization. Lack of well-defined Enterprise Architecture for the government can really hinder planning and successful deployment of e-governance in developing countries (Fischer et al, 2007). EA helps in long term planning of ICT assets and business optimization. Ebrahim and Iran (2005) proposed a four staged framework. (Figure 2.14). The adoption of enterprise architecture for e-government aligns Information Technology assets with business strategy of an organization (IBM, 2008).

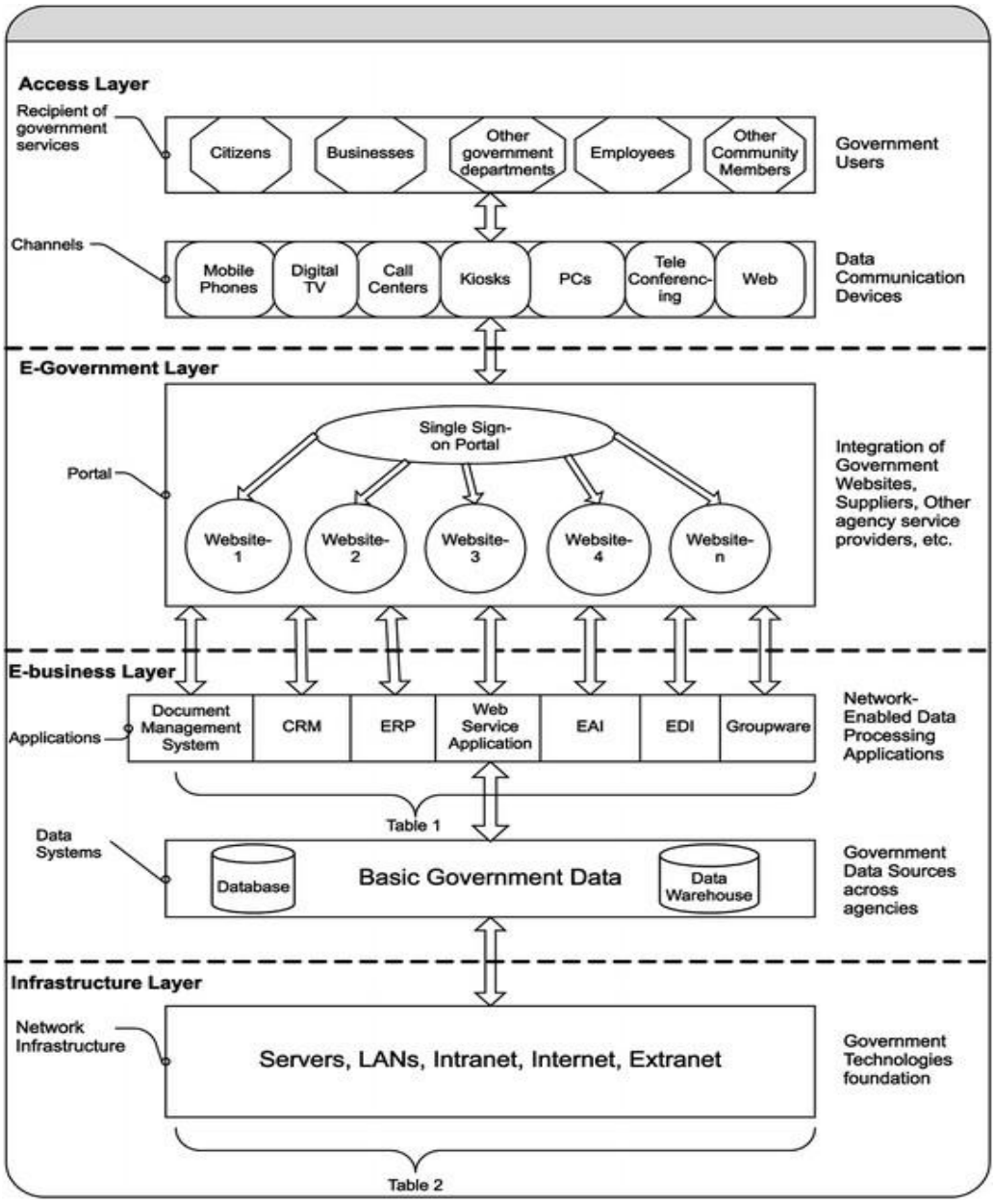


Figure 2.14: E-government Architecture. Source: Ebrahim and Irani, 2005.

2.8.1 Access Layer

Today there is an increase of new powerful and user-friendly technologies that are creating opportunities for governments to offer new ways to interact with citizens in order to

respond to their needs more effectively and with their integral participation (UN, 2012). Access layer provides a platform for government users to access various government services using a single window of access (Wimmer, 2002). Government users in this case include citizens, business, employees, other government agencies, and other community members. The single window of access consists of online and offline channels of distribution through which products, services and information are accessed and communicated. For example, web sites accessible from PCs, kiosks, mobile phone, digital TV, and call and contact centers (Ebrahim & Iran, 2005). The United States government portal provides a common platform for all government users to find all government information and services (Evans & Yen, 2006; Cabinet Office, 2000).

2.8.2 E-government Layer

This layer integrates different government business process from various ministries, departments, agencies and local authorities into a web-portal of government services or a one-stop e-government portal (Ebrahim & Iran, 2005). Connecting government service on the portal improves access to government resources, reduces service-processing costs, and enables government to deliver better quality of service (Wimmer, 2002; Sharma & Gupta, 2002). A web portal facilitates interaction between government and citizens (G2C), government and business (G2B), government and its employees (G2E), and government and government (G2G) (Ndou, 2004; Heeks, 2001). A portal has a web-based front-end application which is linked to different sources of information (back end) and it has the potential to reduce overhead and improve information flow and such a service, citizens will need to visit various government institutions, spend so much time in ques, complete and submit bulk forms (Ebrahim & Irani, 2005). This has made the use of web-portals become an important component of e-government infrastructure, because it allows citizens to reduce on cumbersome process of visiting different government offices and filling huge papers but do all these processes conveniently on the internet with few clicks. (Azab et al., 2009; OECD, 2015). Government is a very complex organization with hundreds of

agencies, departments, directorates, commissions, and regulatory bodies; a single government portal is capable of providing numerous services at once using a single entry with a few clicks online.

2.8.3 E-business Layer

This layer uses ICT applications and tools to facilitate knowledge sharing and information processing that takes place both w10ithin and across government departments (Ebrahim & Iran, 2005). This layer integrates the front-end e-government layer applications in the government portal with back-end activities such as common databases. This layer is used as a foundation that holds a single e-government portal and it also supports the relationship and interaction between G2G, G2B, and G2E (Abdalla, 2012). It provides a seamless, automatic and real-time communication between different systems at both data and process level. Traditionally, government departments, agencies and local authorities have maintained isolated databases that are not connected to each other (Siau, 2017). This creates barriers of data transmission and communication with government institutions and pose a huge implementation challenge for e-government in developing countries and use of a single porta (Al-Hashmi & Darem, 2008). Integrating different government databases, processes and applications is very critical because e-government depends on the existing government data, systems and processes (Nkwe, 2012). For instance, if a citizen performs a transaction at a local department or agency, the information and results of the transaction should be viewed across all government departments and agencies that are linked to the government web portal.

2.8.4 Infrastructure Layer

Building an information system requires a technology infrastructure that reaches out to all parts of public sector organization (ITU, 2009). However, electronic communication within and between public sector organizations is expensive and unreliable without adequate infrastructure and agreed standards between communicating systems (Wilkinson

& Reinhardt, 2005). Therefore, this layer focuses on technologies that should be in place before e-government services can be offered reliably and effectively to the public (United Nations, 2002). The potential of these technologies is to support and integrate the operations of information systems and applications in e-business layer across organizations by offering the necessary standards and protocols through network and communication infrastructure approaches such as intranet, extranet, and internet). This layer provides basic technologies, such as LAN with current hardware resources such as PCs, laptops, and mobile phones. Infrastructure layer supports the provision of user-friendly and innovative online services. (Bhatnagar, 2003; ITU, 2009) concluded that to have a successful e-government strategy, the public sector must create an IT infrastructure that is well optimized to support other new technologies and applications necessary for e-services at every stage. (Figure 2.14). It is also suggested that a successful e-government initiative depends on a solid IT infrastructure in the preliminary stage to successfully distribute online services.

2.9 The E-government Development Blocks

The objective of e-government is to establish interaction between government and citizens who are key government customers (Bhatnagar, 2002). Government's customer base is categorized into four key groups namely; Government to Government (G2G), Government to Citizens (G2C) and Government to Business (G2B) (Seifert and Chung, 2008). (Table 2.11). The interaction of government with its key customers is usually through the use of the internet.

Table 2.11: E-government Building Blocks: Source Ali, 2007.

E-govt Building Blocks	Information Request	Communication	Online Transaction
G2C	Information on taxes, driver's licenses and registers, fines, fees and all kinds of bills.	Two way communicate between government and citizens on administrative and political processes through web site or social media	Online services delivery such as e-voting and release of results online and e-participation
G2B	Information on business registration and licensing, customs and taxes rules, employment policy	Two way communication channel online between the business and the government on business environment and decisions.	e-transactions of services such as, e-auditing, e-procurement, e-services
G2G	Exchange of common databases across government on administrative processes	Information exchange across government and local authorities on laws, projects	Intergovernmental database sharing for knowledge management.
G2E	Information on workers performances, personnel policy, benefits and career management and development.	Two way Information exchanged among different government department with employees on labor matters and performance.	Online knowledge management and participation on personnel information and employment policy

2.9.1 Government to Citizens (G2C)

The objective of the Government to Citizen (G2C) e-government building block is to provide one-stop platform where all government information and services can be accessed by citizens (Bwalya, 2009). G2C is citizen centered because people are key government customers and they should be able to find what they need quickly and with easily. By establishing government portals which enable citizens to sign once and takes them to countless government sub portals accessing different government information and services through. This is arguably considered to be the primary objective of e-government initiative.

(Table 2.12). In Ghana for instance, government through their Ministry of education put up an integrated system for all primary and secondary schools. The systems allows citizens throughout the country to access information about pupil's selection to grade 1 and indeed if the pupils has successful qualified to the next level after exams (Uthman, 2014). In India and Latin American countries, governments in these countries in order to serve their people better also implemented an internet based systems for municipal business licenses, transport permits, citizen registration card, property registration and tax collection (Heeks & Bhatnagar, 1999). These systems allow citizens to access different government information and services instantly, conveniently instead of travelling long distances from government office to another (Ndou, 2004). E-government helps remove road blocks that exists between government and citizens.

Table 2.12: G2G Case Studies. Source: Subhash Bhatnagar, 2004.

No.	APPLICATION	EXAMPLES	BENEFITS
1	Payment of property taxes; Issue of Land titles	Delivering Citizen Services CARD in Andhra Pradesh at 230 locations; Bhoomi in rural areas in Karnataka and Maharashtra at 189 location	Transparency; Faster processing for citizens; reduced corruption; increased productivity for offices
	Income tax online submission	Brazil; Jordan; Chile; Mexico	Convenient; Quicker refund; better compliance; cost reduction
	Issue of driving License, Motor registration, passport, Birth Certificate, Social Security and Collection of fine	Citizens Services centers (mobile and shopping mall), Bahia, Brazil; Andhra Pradesh, Karnataka, Gujarat in India; Jordan	Cuts delays; Several Services under one roof; reduced corruption; reduction of intermediaries
	Online Issue/ Payment of electricity, Telephone and Water bill and Fines	E- Seva in Hyderabad; FRIENDS to Kerala	Convenient Location; Quick processing time; Customer does many tasks in one visit

2.9.2 Government to Businesses G2B

Businesses and industries most of the time are faced with serious challenges conducting business with the government due to bureaucratic government business processes (Crane & Matten, 2016). Small Medium Entrepreneurs have found unfavorable business environment with numerous and unclear business registration requirements by government. This is reason enough for many businesses and industries not to complying with government regulation and breeds corruption.

The objectives of the G2B category is to reduce the cumbersome processes and procedure in government (Bhatnagar, 2002). This can be made possible by providing one-stop access to information and services using the internet (Faokunla, 2012). Business houses should submit their business details once and not multiple times, but through common database sharing or integration of systems within government, government offices and agents should be able to access the details through such shared platforms. For example, when government publishes business registration requirement and rules for the public and businesses, this should help people not to engage layers or indeed any business registration consultant because all the information and procedures would have been made available online for everyone to access. When many electronic platforms are put in place that support service delivery using internet such as e-business registration, e-procurement and e-filling of corporate tax and clearance of goods by customs. This will create a condusive business environment that will reduce business process time and cost for government customers and also increase government revenue collection (Meziani and Saleh, 2010). (Table 2.13).

Table 2.13: G2B Case Studies. Source: Subhash Bhatnagar, 2004.

No.	APPLICATION	EXAMPLES	BENEFITS
1.	Trade facilitation	Dubai: Mauritius; Tunisia; Yemen	Quick turnaround of ships in ports
2.	Municipal Services	OPEN; Philippines; Brazil; Bulgaria; Chile	Quick permissions and issue of licenses, access and permissions
3.	E-procurement	Mexico; Philippines; Brazil; Bulgaria; Chile	Reduce advertisement cost; lower costs due to better prices; transparency
3.	New Business Registration	Jordan; Jamaica; China	Reduce time and number of visits; conveniences on filing tax returns/quicker refunds; increase in revenue collection for government
4.	Tax Collection (Sales tax, VAT and Corporate income tax).	Gujarat check post in India; Cameroon; Chile; Mauritius	Quicker clearance; less corrupts
5.	Customs Online	A total of 70 countries including India, Philippines, Mauritius and Jamaica.	Quick clearance: less corruption

Mobile-based e-government interaction and transactions have penetrated and have shown promising results over the last few years in areas with low fixed line tele density (ITU, 2009). This is because mobile technology requires less investment in infrastructure and its cost models, includes cheap prepaid cards, have made telephony and data transfer via SMS affordable for people with lower income(Schuppan, 2009; Sharma, 2008). Some e-government researchers have noted that one of the goals of e-government initiatives is to create a "one-stop shop" site where citizens can carry out a variety of tasks, especially those that involve multiple agencies, without requiring them to visit and contacts different government offices (Seifert, 2003). Citizens enjoy benefits from reduced delays, availability of many services under one roof, avoiding frequent visits to government departments and reduced corruption. By publishing information (rules and procedures) online, transparency has been increased.

2.9.3 Government to Government G2G

The objective of the Government to Government (G2G) portfolio is to enable government departments and local authorities work together in order to better serve citizens who are the key government customer in their key business line. To achieve this goal government institutions at central or local level must effectively collaborate and share information and adopt performance measurements practices. One of the ways is the use of mission critical systems to increase knowledge sharing which increases productivity by prioritizing resources, reduce government wastages (Fang, 2002). The use of information technology by government agencies and departments allows sharing of common databases and resources thereby enhancing efficiency and effective of government service delivery (Ashaye, 2014). Additionally, data captured electronically promotes transparence and easier monitoring of resources and assets for government. This is because electronic data is easily stored, managed, distributed and accessed across all government departments and agencies through a government local area network (Bhatnagar, 2004). As shown in (Table 2.14), mission critical systems in governments are those systems introduced to improve internal government administration such as human resources and payroll system, financial and accounting system, general administration system, residential registration information systems and electronica approval system.

Table 2.14: G2G Case Studies. Source: Subhash Bhatnagar, 2004.

No.	APPLICATION	EXAMPLES	BENEFITS
Increased efficiency within government			
1.	Use of e-mail and video conferencing	Government offices in a large number of countries	Usage is Low; Faster communication; Less travel
2.	Document Management and Workflow for paperless operation	SmartGov in Andhra Pradesh	Speed of processing; traceability of actions; greater accountability
3	Integrated Financial Management Systems	Computerized treasuries in Karnataka in India; Kosovo; Afghanistan	Better control of expenditure and prevention of frauds.

2.9.4 Government to Employee G2E

According to Fang (2002) Government to Employee (G2E) refers to the management of the civil service and relationship between government and its employees. Nduo (2004) further explains that it brings employees together and promotes information sharing on compensation benefits policies, civil rights law, training and recruitment. G2E increases the knowledge base and efficiency in service delivery within government. (Table 2.15).

Table 2.15: G2E Case Study. Source: Fang, 2002.

INFORMATION	COMMUNICATION ONLINE	TRANSACTION
Exchange of information in line with works and performance, personnel policy and notice for career management and development of government employees.	Information is exchanged among different department and employees, online discussion fora; involvement in negotiation and decision making, interaction regarding works and performance.	Interpersonal workflow, and exchange of personnel policy and solution, data, information and knowledge management, participation online, etc.

2.10 The E-government Implementation Guideline

2.10.1 Select Quick Win Projects

As demonstrated in (Figure 2.15), to successfully implementing e-government project, there is need to identify activities that have high impact and directly addresses the benefits for citizens (Bhatnagar, 2004). If stakeholders are able to relate with the project, it is very easier for buy in and they will understand what the project holds for them (Intven, 2011). A list of quick wins proposals can be obtained from different government departments and ministries, then reviewed and prioritized for adoption by the project committee (Zall and Rist, 2004). Projects that are cost effective but still easier to implement and able to deliver huge value of service to users, qualify for adoption as quick win projects (Meziani & Saleh, 2010). Prioritization of quick win projects has been a standard adopted mainly by countries that are new in e-government (Azab et al., 2009).

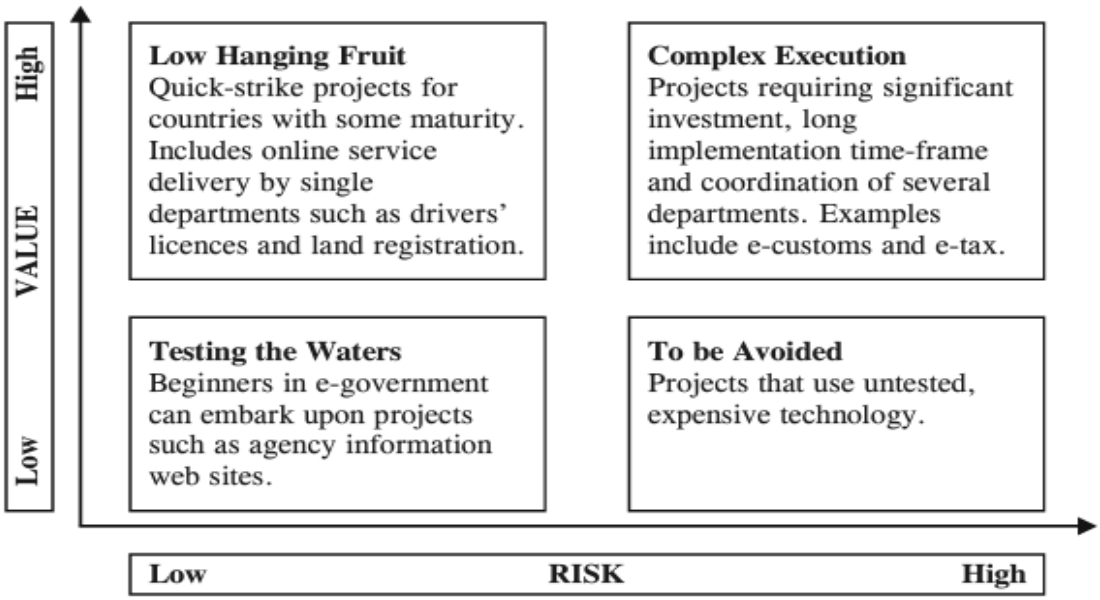


Figure 2.15: Project Prioritization Matrix. Source: Subhash Bhatnagar, (2004)

However, in this case low risk projects are highly recommended for adoption by countries who are beginners in e-government development (Bhatnagar, 2004). This will allow the project team to review and evaluate project risks and understand implementation issues to avoid future project failures.

2.10.2 Public Private Partnership (PPPs)

Private sector involvement in development is believed to be the quickest and most efficient approach to implement e-government projects in developing countries (Bhatnagar, 2004). Public Private Partnership – PPPs initiatives are believed to be a key e-government strategy. Governments can enter into a concession agreement with the private sector to deliver services that are of great social impact to citizens like telecommunication infrastructure development in rural areas, offer specialized ICT training to civil servants and development of enterprise software applications (Naftel & Spiwak, 2000). Using PPP frameworks such agreements include the built operate and transfer (BOT) or the built own,

operate and transfer help government to concentrate its resources to other developmental areas of economy and promote the ICT sector even further (BOOT) models (Comer, 1996).

2.10.3 Enabling Legal Framework

An enabling legal environment is very important when implementing e-government in developing countries because it encourages stakeholder buy in (Bhatnagar, 2004). Lack of mutual understanding between citizens and government can be a huge set back when implementing e-government in developing countries. Government will be required to create certification authority, payment gateway, transaction legislation, information access, privacy and data security law (Bhatnagar, 2004). Transactional security covers electronic communication and contracts, and electronic evidence, Computer network security as well as viruses (Sarrocco and Kelly, 2002). Privacy deals with how data about individuals is collected, processed and disseminated.

2.10.4 Bottom up and Centralized Approach

A bottom up strategy of e-government implementation is very common among developing countries (Azab et al., 2009; Rabaiah et al., 2016). The approach allows the project to identify key deliverables that have a high impact and low risk value on stakeholder (Ndou, 2004; Sarrayrih & Sriram, 2015; Ali, 2007). A project is successful if it addresses the needs and engages users at every stage of project development. This inspires users to own the whole project and it is good for stakeholder buy in (Kerzner, 2013). Adopting a centralized approach to e-government implementation offers different opportunity among developing countries. The strategy has the capacity to minimize and control resources wastage, project overlap and allows better goal settings (Bhatnagar, 2004). During project planning, a project must be handled wholesomely (full business optimization) and this helps to take care of system interoperability and integration challenges (Ebrahim & Irani, 2005). However, unlike bottom up, centralized strategy is difficult to implement because it leaves

little room for technological innovation, self-starters and creativity creating difficulties for stakeholder buy in (Kumar, Misra & Mishra, 2008).

2.11 Opportunities of E-government

E-government is now widely recognized as being fundamental to reform, modernization and improvement of government (OCED, 2007). The opportunities of implementing e-Government initiative are similar in both developed and developing countries especially in sub Saharan Africa. The only difference could be that developing countries have delayed implementing e-government initiative. Ndou (2004) has identified seven benefits that can be realized towards a successful e-government implementation by developing countries.

2.11.1 Cost Reduction and Efficiency Gains

E-government has the potential to solve problems of revenue collection, with improved service and provision of digital services to both government and other businesses (ICIEET, 2013). E-government enables users to save time and money by avoiding the need to resubmit the same data over and over when accessing government services online (Fang, 2002). This means that government will save time and cost by not re-entering the same information captured by a different government system due to integration. Citizens and industries have the authority to access government services anywhere and anytime without delay. Ndou (2004) further adds that placing government services online substantially decreases the processing cost of many activities compared with the manual way of handling operations.

2.11.2 Quality of Service Delivery to Industry and Citizens

In the traditional manual based public service delivery, the procedures are too bureaucratic and time consuming (Bhatnagar, 2004). A business or an individual wishing to renew a trade license or a work permit has to go through cumbersome procedures of filling out a number of application forms, visiting various government offices and spending hours or

days before successfully accessing the service (Bhatnagar, 2004: OECD, 2003). However, on the other hand e-government initiative allows users to access government services online 24/7 anywhere and at any time. It cuts on unnecessary government bureaucracy, reduces processing time and cost and increased efficiency in service delivery (Ndou, 2004).

2.11.3 Transparency and Accountability

According to Ndou (2004), e-government provides an opportunity for citizens and the business community to engage with their policy makers in governance. It allows stakeholders to access government information on policy matters, corruption queries and participate in the decision-making process online using social media. This allows government to undertake output based activities according to people's expectations and account for each and every activity undertaken. This increases on transparency and reduces corruption and miss appropriation of funds.

2.11.4 Increase the Capacity of Government

The use of Knowledge based or Expert systems improves internal administration and information flow of government. The intranet used allow different government department to share databases of common customer record and underutilized resources such as infrastructure and skill can be used in high priority areas with inadequacies (demand management). This will lead to quicker and quality decision making processes and improved responsiveness to service queries by government (Ndou, 2004).

2.11.5 Promotes the use of ICTs

The continuous use of ICTs by government to interact and communicate with stakeholders encourages the advancement and use of ICTs in society such as the internet and smart phones. This in turn reduces digital divide which exists among the people in societies (OECD, 2003). It is necessary to make it mandatory the use of ICT tools by government through training and awareness in society. According to the annual progress report (2015),

ZICTA has introduced and made the use of ICT in learning institutions in all schools mandatory in order to bridge the digital divide that exist in society and develop ICT skills. Awareness about ICT tools and application is essential in the society by government. Business houses and citizens to transact and coordinate electronically with government, it will require adequate use of ICT (Ishrak & Vegi, 2007).

2.12 Challenges of E-government

Despite the opportunities that e-government has scored in both developed and developing countries, they are a number of challenges confronting its successful implementation in developing countries (Danish, 2006). Some research have been carried out and literature is available that dealt with challenges of e-government implementation in developing countries (Heeks, 2003; Yeo, 2002; Ndou, 2009).

2.12.1 Privacy Issues

According Layne and Lee privacy and confidentiality are the major factors confronting successful e-government implementation both in developed and developing countries (Layne & Lee, 2001). Privacy refers to a high level of assurance given to an individual or an institution by government regarding their personal information (Alshehri & Drew, 2010). E-government services involve capturing, storing and exchange of data for citizens such as names, phone numbers, tax information, employment history, medical records, travel habits and property names electronically across government institutions (Almarabeh & Abu, 2010). And citizens' become very much uncomfortable with their information being captured and shared online, they feel that website are very unsecure to protect their private information from being misused or distorted by hacked (Nkwe, 2012; Seifert, 2003). There is need to formulate privacy policies that defines citizens' rights to privacy and mandate. Government must guarantee citizens that the data will be collected and used for legitimate purposes only (Ndou, 2004). Privacy issues posed to be one of the major challenges threatening successful e-government implementation.

2.12.2 Inadequate Business Planning Process

One of the main challenges for e-Government projects in developing countries is lack of appropriate and tailored in implementation strategy (Ndou, 2004). A number of e-government projects are being implemented in a quick time-frame which does not permit adequate time for planning (Bhatnagar, 2004). According to Zakareya and Irani (2005) successful e-government implementation require an integrated implementation framework that aligns Information Technology infrastructure with the Core Business Processes of an institution. This means that the e-government should be citizen centric and service driven by satisfying the needs of the people. (Figure 2.16), shows that e-government is a multidisciplinary strategy although it has been perceived as being technology based, but the real scenario is that information technology is only 20 per cent while 80 per cent is shared among business process planning, change management and managing stakeholders' expectations (Bhatnagar, 2004; Viscusi & Cherubini, 2009). It is possible to get the right technological solution but without adequate planning and constant engagements with stakeholders may lead to project failure (Ndou, 2004; Nugi, 2012). If project planning and implementation have been casually handled, the project may be good but can be abandoned by users for not meeting their needs and core business functionalities (Fang, 2002).

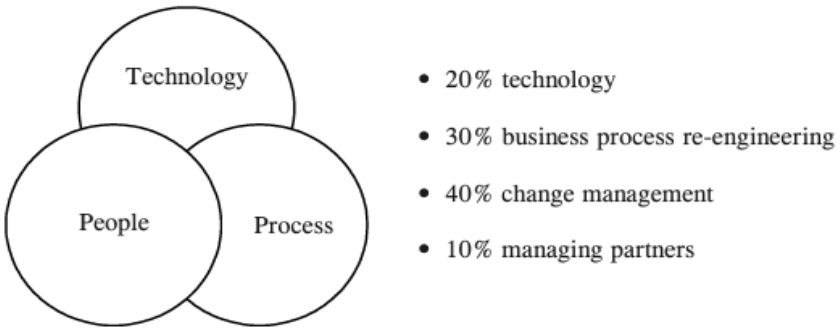


Figure 2.16: Source: Bhatnagar, 2004. Source: Bhatnagar, 2004

2.12.3 Security

The aspect of security not only from the side of data protection but also the integrity of software and hardware is a major barrier to effective implementation of e-government (Seifert, 2003). Alshehri and Dre declared that security means having guard of all information and assets against any manner of disclosure, unauthorized access and unauthorized modifications (Alshehri and Drew, 2010) However, if not carefully handled, security, is one of the biggest challenges in successful e-government implementation. Ensuring service availability is a very important confidence builder to citizens that systems introduced are reliable and secure and can be accessed 24/7 without downtime at any place. When planning for e-government, it is very important to formulate security policies and standards that addresses electronic activities and meet the expectations of the citizens (Palvia & Sharma, 2007; Haldenwang, 2004). This include having digital signatures, encryption, user names, passwords, customer unique numbers, bank account numbers, and having very good backup and recovery solution in case of system failure from natural calamities.

2.12.4 Lack of Technological Staff

Unlike developed countries, most developing countries do not have well established IT structures and they have raw IT skills level to manage e-government project (Bhatnagar, 2002). Alshehri and Drew (2010) adds in his finding that inadequate ICT skills is a major threat to successful e-government implementation more especially in developing countries. This already pose a project challenge for successful e-government (Alshehri & Drew, 2010). Successful e-government implementation largely depend on the availability of skilled human resource to spear head the project and this also demand a very good budgetary line to incentivize the available man power and for training (Fang, 2002). However, the rate at how ICT has evolved and adopted, skills development has lagged behind more especially in developing countries. The need for training is a fundamental prerequisite but has not been prioritized. Adequate skilled personnel in developing

countries is a huge hindrance to successfully implement e-government and this is because most developing countries have financial challenges to pay for skilled labor (Chen et al., 2006). However, a successful e-government critically depends on a well-skilled and motivated workforce (Almarabeh & Abu, 2010).

2.12.5 Telecommunication Infrastructure and Digital Divide

Many developing countries suffer from the challenges of digital divide this is due to lack of appropriate deployment of ICT infrastructure for e-Government deployment (Ndou, 2004). According to the telecommunication regulation handbook, in this modern society it is very important that everyone has access and skills to information technology equipment and service that can be allowing them to participate in the digital economy regardless of their location (ITU, 2011). Tamara and Abu defined digital divide as the gap between those who have access to the internet and those without (Tamara and Abu, 2010). Access to information technology such as mobile phone and the internet have also been recognized by governments and international aid agencies as important tools for national integration capable of enabling access to health and education services, and creating economic opportunities for underprivileged population in remote areas (Fang, 2002). The use of Information Technology is not an answer to many challenges faced by developing countries but it has huge implication on people or groups who have limited or no accessibility to it as they will be left out from socioeconomic opportunities such as Social equality (ITU, 2011; PricewaterhouseCoopers, 2009). ICTs have the potential to break cultural barriers (OECD, 2009). For example, ICT is being used to improve gender equality in education and girls may be undertaking their education through e-learning at home in an environment that disadvantage the girl child.

2.12.6 Resistance to Change

Every public sector organization goes through change either in new ways of processing and performing s new task is introduced or change in organizational culture (Aladwani,

2001). According to Ndou (2009) e-government must not be perceived as a cost saving and service improvement measure alone, but as business re-engineering strategy that transforms government processes and functions. E-government is a new business approach in the public sector in developing countries and this means migration from manual processes to an automated platform (Alshehri & Drew, 2010). However, employee's resistance to change can be the biggest barrier to a successful e-government adoption in developing countries if not well managed (Joseph, 2017; Ndou, 2004). Members of staff in public organization tend to be scared of ICT project that they may be replaced, lose their jobs and power (Nkwe, 2012). is very important to plan well resistance to change by employees by providing incentives for them to learn and change and by engaging them at every stage of the project so that they assume ownership of the project (Heeks & Bhatnagar, 1999).

2.12.7 Lack of Implementation Framework

Lack of policy direction can be so detrimental to the successful implementation of e-government in developing countries. The absence of common thought and aim can create a dysfunction among government ministries agencies and local authorities in adopting e-government. This may create duplication of services and wasteful of resources. There is need to have a national e-government implementation strategy that sets pace for government ministries agencies and local authorities to transform the common vision into reality for the betterment of citizen. Lack of coordinated framework exists across government and policy boundaries, this may compromise program effectiveness and performance efficiency (United Nations, 2002).

2.12.8 Low Internet Usage

Africa has the huge challenge of digital divide with very low internet usage. This is one of the biggest challenges hindering successful implementation and adoption of e-government. All services provided in e-government are electronic service based. According to the

International Telecommunication internet usage analysis report (2014) and the ICT gap analysis (2017), Zambia only has 15% of internet usage: From (Table 2.16), it is highlighted that they are very few users who actually use the internet for economic development, entrepreneurship, education, and health care. This could have been attributed as a result of high internet cost for users and the same is true among many African countries (Darrell, 2015).

Table 2.16: Internet Usage in Zambia. Source: ITU, 2014.

	2010	2011	2012	2013
Percent Using Internet	10	11.5	13.5	15.4
Number with Fixed Broadband Subscriptions	10,267	15,902	14,794	10,850
Number with Mobile Broadband Subscriptions	34,436	31,559	91,130	107,952

2.12.9 Chapter Summary

This chapter has revealed relevant literature to the study of e-government development in developing countries. The literature revealed that the trends of e-government in the world are measured using the EGDI. The chapter equally noted that e-government has development cycles or stages and if successfully adopted promotes open government data which is a critical component for good governance. Open Government Data establishes transparence, accountability, openness, efficiency and trust in the public service delivery.

CHAPTER THREE– RESEARCH METHODOLOGY

Introduction

This chapter presents discussions on different methodologies used to answer the research questions and the objectives in order to bring deeper understanding of the study. The research design include: data collection tools and techniques, research population and sample size selection, literature review, data processing and analysis and ethical consideration.

3.1 Research Strategy and Approach

The researcher used both qualitative and quantitative (positivism and interpretive) approach for this study. Mixed approach minimized research biasness. To establish the baseline of the research study, the researcher adopted the United Nations E-government Development Index as guide for the research. The United Nations use the EDGI to measure the adoption of ICT by governments in service provisioning. The three-dimension used to measure the adoption include; Telecommunication Infrastructure, Online Services, Human and Capital and E-participation. Each category of the EGDI addresses a particular aspect of successful e-government implementation framework in developing countries. This study offered a critical analysis of opportunities and challenges that affects a successful e-government implementation in developing countries. To successfully under take this study, the researcher drew up a questionnaire (See Appendix 1) which were distributed manually and electronically distributed to government ministries agencies and local authorities in the rural urban setting in Zambia. To capture an in-depth contextual analysis of the study, the research also adopted a case study strategy.

3.2 Data Collection

For the purpose of this research, the researcher used survey questionnaires with both closed and open ended questions and coupled with interviews and on the site observation on selected government ministries and local authorities.

3.2.1 Observation

The researcher took time to make observations more especially on online services, telecommunication infrastructure and Websites available to deliver public services. This was according to the e-government development stages as proposed by the United Nations benchmarking e-government (2001) and different relevant research frameworks by other researchers. Websites and online systems were observed based on the four stages of e-government (UNASAP, 2001). (Figure 2). To review service on government websites, the following questions were used as a criteria.

1. Is there an official government online presence is established?
2. How long do government websites updates the content or is the website dynamic?
3. Is the government website interactive with the users such having an official email, form download and search features?
4. Can users actually pay for any service and other online transactions?
5. Are these online services fully integrated across government administrative boundaries?

The information collected from observation and on the site visit was valuable and very useful in the research.

3.2.2 Interviews

The researcher conducted interviews on selected users with knowledge about the study in order to get their opinion regarding the research subject (Fisher, 2005). The interviews

were guided by the semi structure questions in the questionnaire according to the objectives of the research study and each interview lasted about 20 to 30a minutes. A number of follow up meetings and interviews were held with Senior ICT Officers in government ministries and agencies to gain acceptance of their participation in the research. The researcher also held a meeting at the Local Government Service Commission with the Commission Secretary staff and after explaining the scope and objectives of the study a go ahead was given to distribute questionnaires to local authorities.

3.2.3 Questionnaires

The study used open and closed ended questionnaires. These questionnaires were manually and electronically distributed to the targeted population as mentioned above. The questionnaire was guided by the United Nations E-government Development Index benchmarking e-government development and it was divided into six sections. (Table 3.1).

Table 3.1: Questionnaire Summary

QUESTIONNAIRE SUMMARY	
SECTION No.	**CATEGORY**
1	Telecommunication Infrastructure
2	Human Capital
3	Online Services
4	Change Management
5	E-govt Policy Road Map
6	Opportunities and Challenges

However, for online questionnaires, the researcher used google drive and a link was email to the addresses of the respondents and some were manually distributed. Before, a few questionnaires were tested to review the reliability and consistence of the data collected. Some questions were rephrased to satisfy the objective of the research.

The researcher also used secondary data from past researchers. The study systematically reviewed different literature, theories, concepts and models relating to e-government development in developing countries. The literature comprehensively reviewed comprised news articles, reputable research journals, information from government portals, masters' thesis and some international organizations. The researcher searched for the data online, collected, prioritized and read keenly to bring out the very critical issues and themes in line with the study (Wellington et al., 2005). A routine industry follow ups were made on selected government ministries, departments, agencies and local authorities and also individuals were purposively selected for interviews across government. Data was collected from 85 respondents comprising Heads of ICT and users in ministries, departments, agencies and local authorities in Zambia.

3.3 Target Population

A study population is a set of cases, objects or events of interest to the researcher from which a sample is drawn and to which the research findings would be generalizable (McMillan & Schumacher, 2001). In this study the researcher purposively targeted Policy Makers and Managers of ICT in government ministries and local authorities as key implementing agents of e-government in the public service. These included: Programmer Analyst, Senior Systems Analyst, Principal Analysts, and Heads of ICT. Users of ICT in government were randomly selected using a simple random technique.

3.4 Sampling Selection

According to White (2005), a sample is a subset or group of subjects selected from the larger population and whose characteristics can be generalized to the entire population. The purpose of this study was to investigate e-government readiness in government ministries and local authorities in Zambia and their capacity to sustain online services. To achieve this, a sample size was carefully selected targeting 25 government ministries and agencies and 6 local authorities in the following provinces Lusaka, Chilanga, Kafue, Kabwe,

Mumbwa and Chongwe in the rural urban of Zambia. The sample and their locations were selected because of budgetary constraints and that they were very convenient to be reached by the researcher and their more likelihood as pilot site for e-government deployment by government. However, from the 110 questionnaires distributed, 85 successfully responded and these were ICT officers in government and local authorities. They were selected purposively because of their knowledge in the study and their roll in driving the deployment of e-government on behalf of government. To calculate the sample size, an online survey monkey online calculator was used. (Figure 3.1). With 95 percent confidence level, 5 percent marginal error and 86 sample size.

Figure 3.1: Sample Size Online Calculator. Source: Survey Monkey

3.5 Data Analysis

Data collected from 85 respondents who participated in the survey was analyzed using multivariate analysis (Anderson, & Tatham, 1998). According to Mora and McCabe (2005), data gathered from both qualitatively and quantitatively (from interviews and questionnaires) were categoriesed in different themes and sections counting their frequencies and entered into the Microsoft Excel for further generation of descriptive statistics and graphs. The main advantage of content analysis using Microsoft Excel was for easy data sorting, error and omissions checking, and structuring of data for qualitative analysis according to the research objective and also for graphical representation of findings.

3.6 Ethical Consideration

The study was subjected to ethical considerations according to the University of Zambia research guideline. The researcher as earlier mentioned, during meetings, all the participants were fully informed about the objectives and scope of the study and were all assured that the data collected was going to be treated as confidential and for the purpose of the research study. The research proposal and other relevant research documents used in the study were cleared by the School of Engineering. This helped the researcher to respect the interests of the respondents.

3.7 Challenges of the Study

This study did not cover the whole Zambia as it is generalized in other countries but only concentrated on 25 government ministries, agencies and only 6 local authorities hence some important information could have been left out. Time and budgetary was a big constraint in the study. However, because of that the researcher concentrated more in Lusaka city and selected few local authorities along the line of rail in Lusaka, Kabwe, Chilanga, Chongwe, Kafue and Mumbwa. The retention of the questionnaires was another challenge faced in this study, the researcher made a number of follow up and phone call reminders which was so costly and time consuming.

3.8 Chapter Summary

The mixed method approach used in this study helped to collect different types of data and in some cases limitations were incurred as discussed in the chapter. The qualitative and quantitative procedure, data collection and analysis adopted made the research methodology for this study. The various methods used in the study enhanced the validity and reliability of the research instruments as described in the chapter. The research targeted 25 government ministries, agencies and 6 local authorities and 85 respondents participated in the study. These were managers and policy makers of ICT in government.

CHAPTER FOUR- FINDINGS AND DISCUSSIONS

Introduction

This chapter presents the empirical findings which were conducted in government ministries in Lusaka and six local authorities in Lusaka, Chilanga, Kabwe, Mumbwa, Kafue and Chongwe. The results are presented both qualitatively and quantitatively as presented by the E-government Development Index benchmarking e-government.

4.1 Telecommunication Infrastructure

The (Figure 4.1), shows the status of Telecommunication Infrastructure of government ministries, agencies and local authorities in Zambia. The research discovered that there is 14% of telecommunication infrastructure to adequately support the distribution of electronic services to consumers of public service who are citizens and businesses. Telecommunication according to the International Telecommunication Union (2009) includes reliable electricity supply, servers, LANs, GWAN, Internet, Intranet and Extranet. However, there is 86% inadequate infrastructure. The EGDI, Zambia's Telecommnunications Infrastructure Index is below the world average index of 0.3711 and Zambia is at 0.1182. The ITU, ICT Development Index (IDI) (2017) also justifies and ranked Zambia at 146 in the world ICT development Index. This shows that there is much that the nation needs to do in the area of telecommunication infrastructure development more especially in remote areas. According to the Zambia ICT gap analysis report (2017) the cost of ICT infrastructure and services are very high.

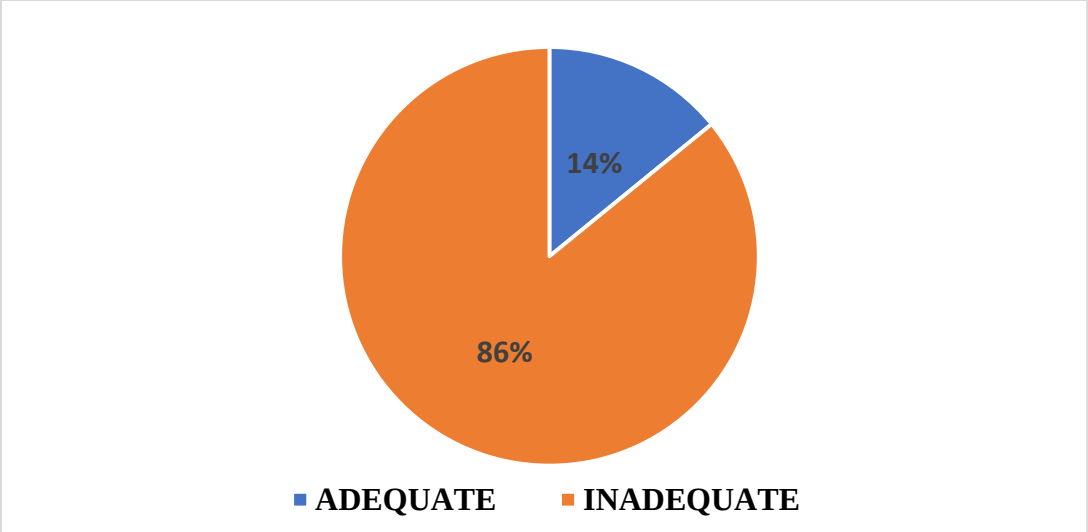


Figure 4.1: Telecommunication Infrastructure

4.2 Online Government Business Services

As highlighted in Figure 4.2 below, 88% of government ministries, agencies and local authorities have some form of web presence which they use to communicate with their customers or citizens. Third party Over the Top (OTT) applications such as WhatsApp and Facebook have widely been adopted by many public institutions to disseminate important government information such as health awareness and job advertisements to the people. According to moon (2002) and World Bank (2001) e-government development stages, the findings are described as having a one-way communication or simple communication. This is the elementary stage of e-government development. This means the public institution only publishes information online for the people to read.

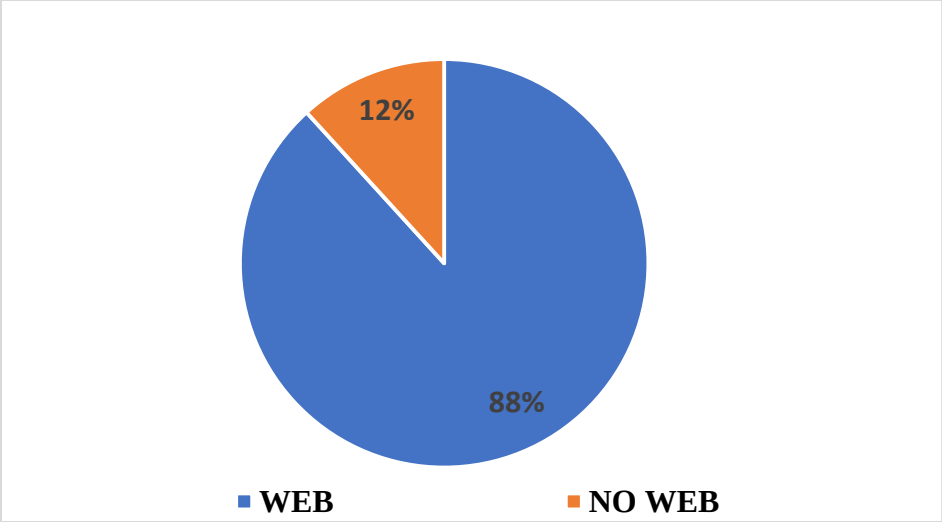


Figure 4.2: Government Web Presence

4.3 Systems Integration across Government (Full Optimization)

Arising from Figure 4.3, we realized that a number of government institution have a good web presence offering one way communication channel. According to the findings from figure 16, it is shown that despite having 88% web presence, 81% of government systems are partially integrated and only 19% of systems in government are fully integrated. Full system integration means that systems within government are should be able to share common government data sources such as databases (Ebrahim & Iran, 2005). Layne and Lee (2001) in the e-government development model, suggests that government systems should be vertically and horizontally integrated across government. The systems or website should provide transactional services for the citizens. Citizens applying for driving licenses should be required to enter personal data not more than twice and not required visit different government offices to complete their transaction.

When systems share common databases across government (system integration), citizens are required to enter information only once and replicated across government and local authority. This will reduce on business processing time, cost and enhance service

provisioning. When planning for a systems upgrade or business systems improvement, it is very important to consider other beneficiaries of the data output to avoid data duplication (Ebrahim & Irani, 2005).

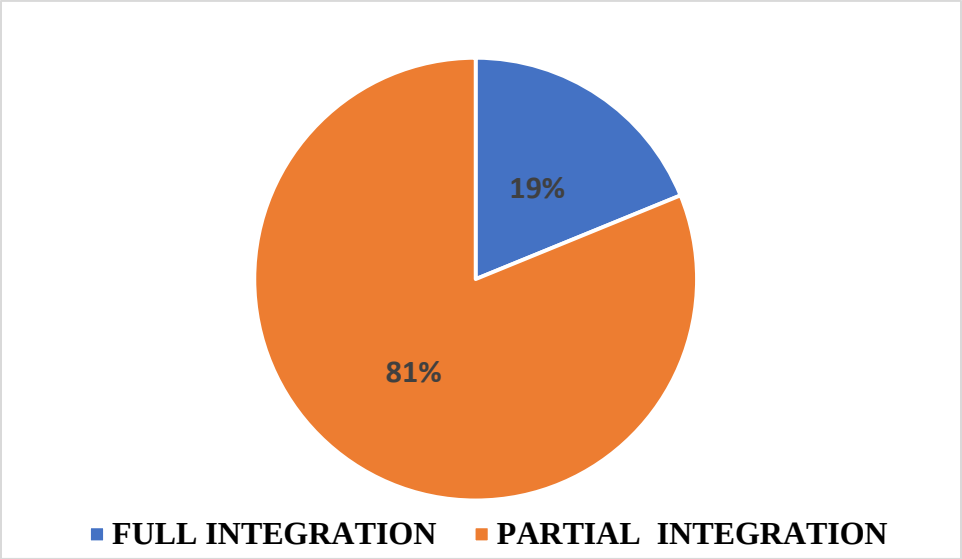


Figure 4.3: Government Business System Integration

4.4 Human Capital

From Figure 4.4, the researcher discovered that 19% of the available local man power is adequate with the right skill to manage e-government project successfully while 81% is not inadequate. However, according to Bhatnagar (2002), generally developing countries have challenges to find specialized IT skills. This is supported by the ITU, ICT skills development index report (2017) which reports that Zambia's skills index is below the regional average of 5.05 at 3.13. This and many other reasons challenge successful implementation of e-government in developing countries. In many cases, foreign consultants are highly depended upon to drive the development of e-government in developing countries including Zambia. This could be due to limited budget line for training and recruitment of skilled labor force that are in the private sector looking for better conditions of service (Basu, 2004; Ali, 2007).

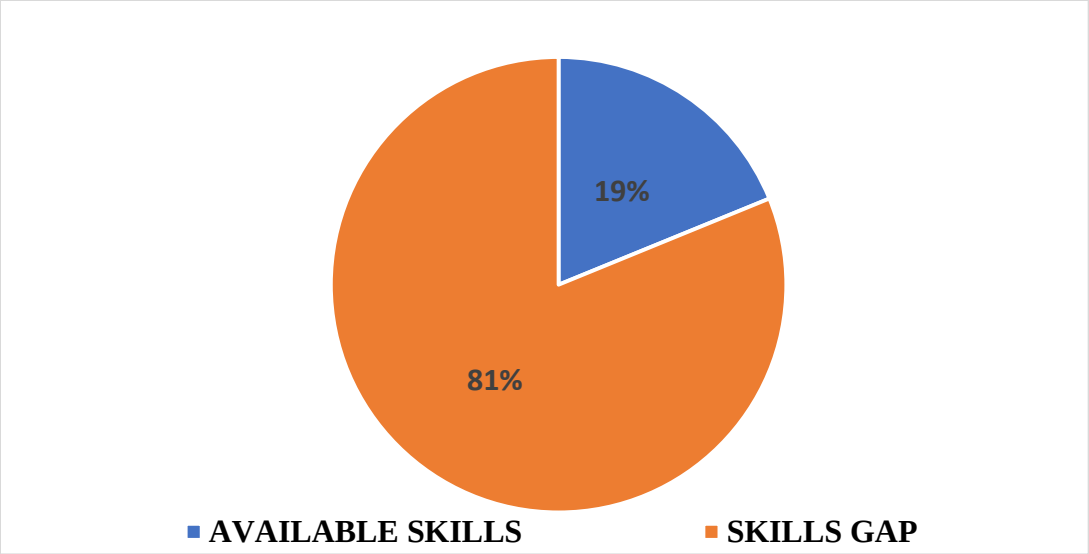


Figure 4.4: Human Capital

4.5 Change Management

According to findings as depicted in (Figure 4.5), it shows that 16% of change management activities have been conducted in line with creating awareness, sensitization about e-government implementation in government ministries agencies and local authorities. However, 84% of the finding suggested they is inadequate awareness and sensitization to the public and the people about e-government and its benefits to government. People and the business should be informed about the basics of e-government and services that government is providing electronically. Users are part of the critical stakeholders for the success of e-government initiatives. Some users could be resisting change, that ICT are threatening their jobs. There is a considerable lack of public awareness campaigns within government informing staffs, citizens and the business and indeed other related stakeholders about governments' services which are currently being delivered online service. Constant stakeholder engagement is very key in the success of every project, a very good business project without the involvement of users such as citizens and the business, the project will end up being a failed project.

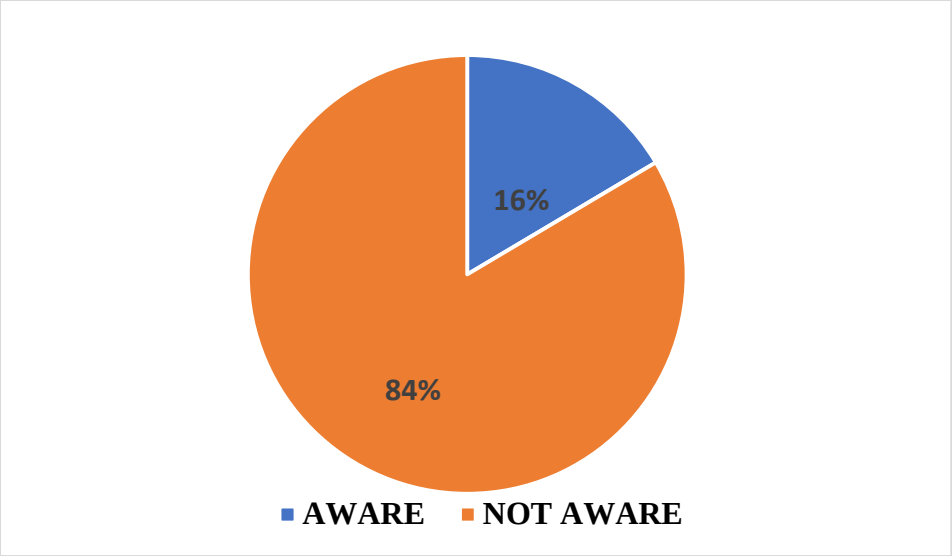


Figure 4.5: Change Management

4.6 Implementation Framework

The research findings revealed that 80% are not aware of any existing implementation framework to guide the deployment of e-government agenda in Zambia. Figure 4.6. However, 20% say there is an implementation framework which is currently guiding the road map of e-government but apart from the ICT policy which also needs to be revised, they should be policy documents which should is guiding day to day operation of e-government such as the 7th National Development plan and the National ICT policy and indeed other documents such as Strategic Work Plan and Master Plans from different government ministries and departments.

According to the United Nation e-government benchmarking (2002), the national e-government program development remained largely uncoordinated, a compelling lack of coordination exists across administrative and policy boundaries (UN, 2002). Ultimately this may compromise program effectiveness and performance efficiency.

There is need to have a specific document which directly address e-government. Ndou (2004) suggested that appropriate and tailored in implementation strategy is key for successful e-government adoption. There is need to have an integrated planning framework that aligns Information Technology solutions with the core business requirement of government organization.

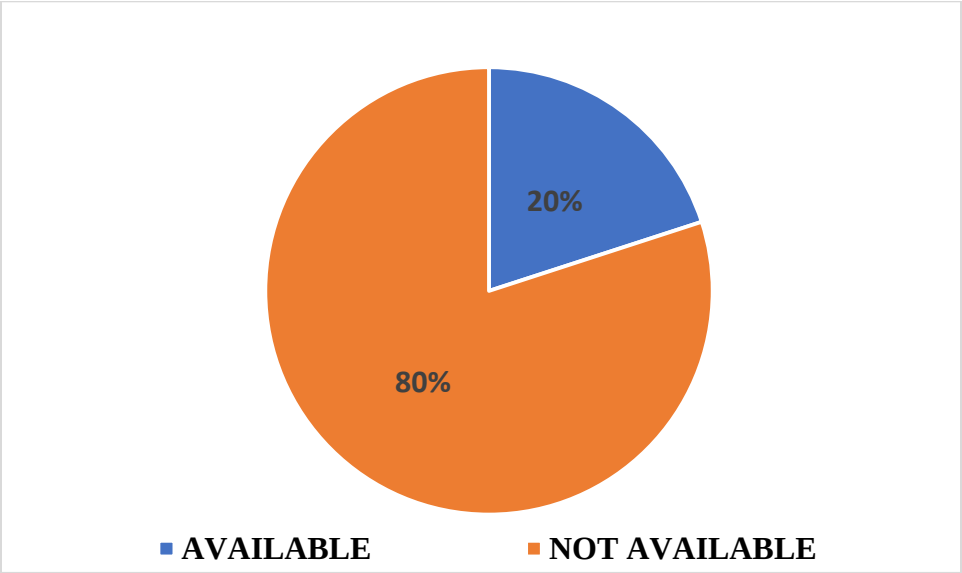


Figure 4.6: E-government Implementation Framework

4.7 Summary of findings

The (Figure 4.7) depicts the summary of all the findings relating to the opportunities and challenges in e-government development in government ministries agencies and local authorities in Zambia. According to the key indicators used in this study to evaluate the readiness of e-government in ministries and local authorities, the study calculated sum of all indicators used. These were used to benchmark the status of e-government environment and they include telecommunication infrastructure, human capital, online service, change management, implementation plan, and system integration. However, from the five indicators used, the researcher calculated the average percentage. (Figure 4.7). It was

established that they are 29% opportunities and 71% challenges to support online services in government ministries and local authorities in Zambia.

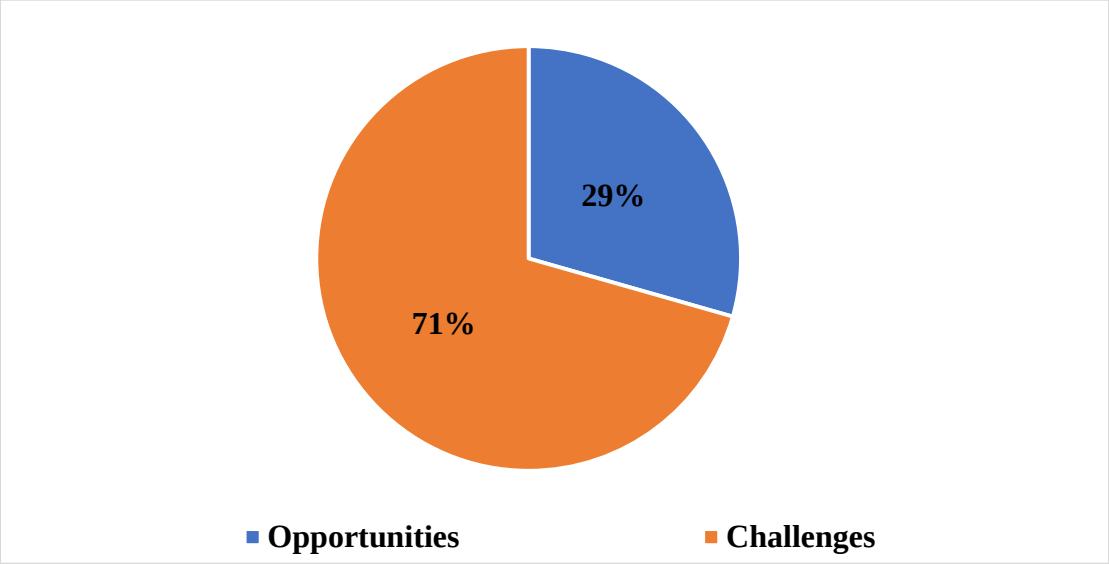


Figure 4.7: Summary on all Findings

4.8 Chapter Summary

Based on the research questions and objectives that this chapter presented, the findings presented showed that there is a good chance for government ministries and local authorities to successfully implement e-government in service delivery for the people. Despite the opportunities presented, they are some challenges that may hinder successful implementation of e-government in Zambia and these include digital divide, inadequate telecommunication infrastructure development more especially in remote areas, information privacy and security issues. Also, Change management, skills development and policies that enforce online transaction in government. These concerns need to be addressed in order to sustain service provisioning for the business, citizens and within government.

CHAPTER FIVE – CONCLUSIONS AND RECOMMENDATIONS

Introduction

This final chapter presents the summary of the research findings according to the research questions and research objectives. The chapters also brings out recommendations on what needs to be prioritized going forward in government ministries and local authorities towards the adoption of e-government in Zambia.

5.1 Conclusion

This study has brought out relevant fundamental concepts and theories of successful implementation of e-government in developing countries specifically in Zambia. E-government brings out many benefits to both developing and developed countries to support delivery of public services through the use of the internet. It was revealed that when successfully adopted in developing countries, e-government has the potential to promote Open Government Data which is an important aspect for good governance. Open Government Data promotes transparence, accountability, openness, efficiency and trust in the civil service. It was noted that e-government is a development cycle, its successful adoption requires a people centered approach that aligns ICT assets with the core business mandate of an organization and bring full business optimization. E-government promotes interaction between government and citizens by removing red tape. This interaction is what supports the main objective of e-government which is being citizen focused. To attain this objective, there is need to reinforce policies that encourage use of ICT in the delivery of basic public service using the internet. This allows citizens to have access to government and contribute to developmental through e-participation using social media and other online platforms. Zambia should take advantage of the good political will to implement e-government in the public sector. The research has brought out that ICT in public sector is considered as secondary or not relevant to government's daily business, this has reflected over time in budgets ICT Units are lowly funded in government.

5.2 Recommendation

It was discovered in the research that Zambia's telecommunication infrastructure is ranked 146 in the world by the ITU. This gives government an opportunity to refocus plans on telecommunication infrastructure development by increasing coverage also in the rural areas. The Universal Access and Universal service agenda should also be reinforced and prioritized by government. A good number of people more especially those in rural areas do not own or have access to a phones or a computers. Training and awareness need to be conducted to people in rural areas on basic ICT skills to bridge on the digital divide. It was noted in the literature review that telecommunication infrastructure development in developing countries is more covered only in highly densely populated areas for commercial purposes and not in remote areas. Availability and accessibility of service is a night mere in rural areas. However, government through the responsible offices should ensure full participation of all the people regardless of their geographical location in the Information Society.

Additionally, lack of an implementation strategy may hinder success deployment of e-government in developing countries. Lack of a well-defined e-government strategy may affect the implementation of specific areas hence very difficult to evaluate performance. There is need to adopt e-government implementation strategy according to the prevailing needs and standards set by internationally agreed principles. The strategies could be modified to address government information and service needs. The study highlighted that there is a good web presence of government institutions, but a number of these websites do not offer dynamic services that promotes online transaction and electronic form submission. Websites should be upgraded to national portals providing platforms for local products, knowledge and skills to be made available on a global basis.

E-government initiatives depend on government's role in ensuring that a proper legal system is in place to support its operations. Key back office and front office processes automated need to mimic the manual business processes and supported with a strong legal

framework. This means enforcement of existing policies that encourages electronic transaction and personal data protection against any abuse by government institutions. This should help instill confidence among users of government's e-services. One example of legal framework introduced by the Zambian government was ICT made mandatory for all the learners in schools at primary level. This will propel the development of ICT skills at the grass roots stage. If basic government services offered using the internet, it will encourages integration of government systems and allow easy data sharing and collaboration within government.

There is need to intensify awareness and sensitize people in government and local authorities about the objectives and benefits of e-governments. A good number of people who participated in this study did not understand what e-governments is and its benefits to service provisioning. Users of ICT believe that automation is meant to replace them and reduce their relevance. They don't know that it brings service efficiency and job enrichment. This is the reason for resistance to change. If information is passed on firstly across government ministries and other government agencies involving users to champion change, the task would have been half way successful because of user buy in.

E-government reduces cost of doing business for citizens more especially those in rural area. It enables them to access basic government services and information using the internet instead of trekking from one government office to another. These services directly and indirectly improve service delivery and reduce cost of doing business for both government and the business sector. For instance, in the tourism sector a number of processes are manual based, establishments to get a certificate or license are forced to travel long distances to submit an application form for license or renewal of certificate. They go through cumbersome manual processes before submitting the forms from one office to another. This is a window which will breed non-compliance among the players in the sector and may result in the loss of the much need revenue for government if not addressed.

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APPENDICES

PERSONAL DATA

Date: _____ /_____ /_____

First Name_____

Surname_____

Gender:

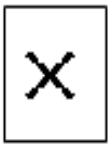
a) Male: [ ]
b) Female: [ ]

Your designation: _____
Name of the institution_____
_____

What is your current age group?

a) 18 – 24 [ ]
b) 25 – 34 [ ]
c) 35 – 44 [ ]
d) 45 – 54 [ ]
e) 55 – 64 [ ]
f) 65 YEARS AND ABOVE [ ]

Email: _____

Please when answering: Yes  **Tick OR No**  **Cross**

A. TELECOMMUNICATION INFRASTSRACTURE

1. **How adequate is the ICT infrastructure at your institution (LAN, Internet, Wi-Fi, Servers, PCs and Software)?**

   a) Inadequate**.** [ ]
   b) Adequate. [ ]

2. **How adequate is the Security and confidentiality to sensitive information systems (business, employees and customer records) at your institution.**

a) Inadequate. [ ]
b) Adequate. [ ]

3. How adequate is the service management support (help desk) towards internal and external daily customer requests?

a) Inadequate. [ ]
b) Adequate. [ ]

4. Have you partnered or outsourced any infrastructure related services with private sector?

a) Yes. [ ]
b) No. [ ]

5. What is your opinion about the statements below on the use of mobile phone in the e-government implementation in Zambia? YES OR NO.

a) Mobile phone has a higher penetration rate than a computer among citizens **[ ]**
b) Mobile phone are relatively low hardware and infrastructure deployment costs than computer based systems **[ ]**
c) Mobile phone has affordable usage rates among citizens **[ ]**
d) Mobile phone is a powerful tool for the provision of e-government services than a computer to regions without sufficient ICTs infrastructure **[ ]**
e) The mobile platform has potential availability of services anytime, anywhere due to its mobile characteristic than a computer **[ ]**
f) A mobile phone is a platform that government has not fully utilized to deliver services to its citizens **[ ]**
g) Do you think your institution (government) has taken advantage of the mobile technological platform to deliver better services to the public **[ ]**
h) Others:_____
_____
_____

B. E-GOVERNMENT AWARENESS AND CAMPAIGN

6. Which of the following statements below attempts to describe your institution's involvement in e-government? YES OR NO.

a) I have not heard of the term e-government, not until now. [ ]
b) Although i have heard of the term, i do not use it anyway. [ ]
c) Have attended seminars relating to e-government. [ ]
d) Have prepared strategies for e-government type of activities. [ ]
e) Planning of using e-government. [ ]
f) Undertaking e-government development. [ ]
g) Extensive user of e-government services. [ ]

h) Others:_____
_____
_____

7. Does your institution have or follow a national e-government implementation strategic plan (road map)?

a) Yes [ ]
b) No [ ]
c) Others:_____
_____
_____

8. Has there been any major ICT related (business automation) project at your institution?

a) Yes. [ ]
b) No. [ ]
c) If yes name of the project: -
_____
_____
_____

9. How high of a priority is your institution's commitment to e-government (ICT innovation)?

a) Higher priority [ ]
b) Emerging priority [ ]

10. What do you think is the role of e-government (ICT) in developing countries like Zambia? YES OR NO.

a) To get benefits from new technology [ ]
b) To provide better services to all citizens / customer [ ]
c) To increase interaction between citizens and government [ ]
d) To make the processes easier for citizens and government [ ]
e) It reduces digital differences [ ]
f) It increases service efficiency [ ]
g) It helps reduce corruption [ ]
h) It increases transparency [ ]
i) E-government increases efficiency in service delivery [ ]
j) It creates linkages between government departments and agencies [ ]
k) It leads to a shared services and ICT resources across the public service [ ]
l) To build citizen and stakeholders trust on government [ ]
m) Others:_____
_____

C. PUBLIC ONLINE SERVICES OFFERED

11. Do you have a website?

a) Yes. [ ]
b) No. [ ]

12. Do you gather suggestions, opinion and comments in the area of your core business online from stakeholders to enhance user participation and corroboration in governance?

a) Yes. [ ]
b) No. [ ]

13. Do you have an automated business management information system that support day to day internal and external operation of your institution (e.g. Budget and Expenditure System, Human resources and payroll system, general administration system, Customer Relationship Management System)?

a) Fully automated [ ]
b) Partially automated [ ]
c) No automation [ ]

14. What online services would you wish could be prioritized by your institution or any other public service provider towards the e-government development initiative? YES OR NO.

a) Online Income tax declaration and notification [ ]
b) Online Job search services [ ]
c) Online Passport and drivers licensing application, replacement and renewal [ ]
d) Online Car registration [ ]
e) Online Police report [ ]
f) Online Public libraries [ ]
g) Online Birth and marriage certificates application and delivery [ ]
h) Online High School and University enrolment [ ]
i) Online Home location changes notification [ ]
j) Online Health related services [ ]
k) Online tendering and procurement [ ]
l) Online transaction/e-payment E-Systems [ ]
Others: _____
_____
_____

15. Is there any systems interoperability among departments and across different government institutions to share common databases (full optimization)?

a) Yes. [ ]
b) No. [ ]

D. HUMAN CAPITAL

16. **What do you think is government's effort in the area of training, awareness and education towards e-government preparedness?**

a) Impressive [ ]
b) Unimpressive [ ]

17. **Do you think your organization has enough human capital to support e-government initiatives?**

a) Yes. [ ]
b) No. [ ]

18. **Do you think illiteracy and digital divide could lead to many people being excluded and disenfranchised from accessing e-government services?**

a) Yes. [ ]
b) No. [ ]

19. **Does your institution have an ICT department with a leadership role to manage and spearhead e-government (ICTs) programmes at senior management level**?

a) Yes. [ ]
b) No. [ ]
   a. Others
   _____
   _____
   _____
   _____

20. **Are any of the e-government services below being outsourced in your institution? YES OR NO.**

a) Telecommunication (ICT) Infrastructure [ ]
b) Online service delivery [ ]
c) Website development [ ]
d) Specialized ICT Training [ ]
e) Transaction and collection [ ]
f) Others:_____
   _____
   _____

E. E-GOVERNMENT CHALLENGES

21. **On of a scale of 1 – 5, with 1 being extremely important and 5 of little importance, rank the challenges below that may be impacting on your institution e-government (ICTs) development?**

a) Lack of a dedicated budget for e-government activities [ ]
b) Lack of trained ICT personnel [ ]
c) Limited internet and wireless access [ ]
d) Lack of a coordinated e-government strategy [ ]
e) Citizen unresponsiveness/unaware [ ]
f) Lack of political support [ ]
g) Others:_____
_____
_____
_____

22. What initiatives if any are being undertaken by your institution to support e-government (ICTs) programmes? YES OR NO.

a) Creation of an e-services institution within government [ ]
b) Partnerships with private sector in ICTs [ ]
c) Creation of specialized ICT units/department [ ]
d) None of the above [ ]
Others_____
_____
_____

23. Are any of the following been undertaken by your institution to encourage citizens accessing government services online? YES OR NO.

a) Financial assistance to local government for e-government initiatives [ ]
b) Government sponsored training programmes for citizens on e-government [ ]
c) National public information campaigns on e-government [ ]
d) Local citizens awareness programs [ ]
e) Public information kiosks [ ]
f) None of the above [ ]
g) Others:_____
_____
_____
_____

24. Do you think the following statements are the barriers to a successful e-government implementation in developing countries like Zambia? YES OR NO.

a) Lack of interest/unaware by citizens [ ]
b) Lack of skilled personnel [ ]
c) Funding issues [ ]
d) Inadequate ICTs infrastructure [ ]
e) Privacy and security issues [ ]
f) Poor political interest [ ]
g) Poor work culture towards digital services [ ]
h) Technophobic end users [ ]
i) Change management issues [ ]

j) Employee resistance [ ]
k) Lack of common goals and objectives [ ]
l) Lack of private sector partnership/outsourcing [ ]
m) Isolated service automation (optimization) [ ]