

E-Government Readiness in the Civil Service: A Case of Zambian Ministries

Shadrack Sikaonga^{1,*}, Simon Tembo²

¹Department of Electrical and Electronic Engineering, University of Zambia, Lusaka, Zambia

²Assistant Dean, School of Engineering, University of Zambia, Great East Road Campus, Lusaka, Zambia

Abstract E-Government is identified as one of the key pillars for economic and social development in Zambia's National ICT Policy of 2006. Coupled with Zambia's vision 2030 agenda of transforming the nation into a middle-income country, the goal of the SMART Zambia Agenda is to achieve social and economic transformation by adopting a paradigm shift from traditional paper and file format approaches to that of electronic service delivery. Though Zambia's e-Government implementation is still in its infancy, various e-Government initiatives have been introduced in the civil service especially in the last decade. However, there is a mismatch between Zambia's e-Government implementation performance at local and regional levels. For example, Zambia ranks lowly on the United Nations E-Government Survey Development Index (EGDI) compared to other UN Member States. Out of 193 Member States of the United Nations (UN), Zambia trails at 132 on the E-Government Development Index (EGDI) with a score of 0.3507 compared to other regional countries such as Mauritius, Tunisia, South Africa and Morocco with over 0.5000. Literature review shows that the Telecommunication Infrastructure Index (TII) is the lowest performing component on EGDI marginally rising from 0.0141 in 2010 to 0.1182 in 2016 compared to the World marginal rise of 0.4406 to 0.4922 during the same period. This however is compensated by the Online Service Index (OSI) that rose from 0.0356 in 2010 to 0.3696 in 2016 and the Human Capital Index (HCI) rising from 0.2313 in 2010 to 0.5643 in 2016 respectively though lower than the regional average scores. Similarly, the World Internet Statistics reports of 2016 indicated 40.2% internet penetration an implication that the majority of Zambians had no access to e-Services that are provided over the Internet. Therefore, a case study of all Zambian government Ministries was examined to understand e-Government readiness in the Civil Services as regards e-Government implementation. From the study, results indicated that the civil services are endowed with a vibrant workforce of less than 50 years with the majority being university graduates and eager to embrace electronic government while some Ministries were already in full gear delivering e-Government services. However, it was also discovered that there are a number of challenges that ought to be addressed for e-Government to attain its maturity and these included lack of publicity of e-Government services, non-existence of dedicated e-Government funding at Ministerial level, mismatch between policy pronouncements especially on ICT training with what was obtaining on the ground, cost of Internet and perceived inertia by a clique of civil servants to switch to electronic service delivery. Therefore, understanding the status core of e-Government readiness in the civil service provided an opportunity to cypher salient unaddressed challenges that could shape the road map for both policy makers and implementers in their decisions making.

Keywords E-Government, Telecommunication infrastructure, Human capital, Online services, ICT, Civil Service

1. Introduction

The emergence of Information Communication Technologies (ICTs) has in the recent past brought a lot of changes to the way things are done world over. Unlike the early twentieth century where public administration was

characterized by bureaucratic structures built on rationale principles that failed to respond to the changing requirements of the present times [1] modern governance systems are slowly shifting from the traditional paper and file types of administrative processes that dominated most government Ministries and Agencies. The disadvantage of such systems was that it called for the physical presence of citizens before business transactions could take place. The era created moments of apprehension resulting in delays in implementing government policies for societal development. However, in recent times both the private and government sectors have realised that ICTs are enablers of economic and social development. They have revolutionised the way the

* Corresponding author:

skysikaonga@yahoo.com (Shadrack Sikaonga)

Published online at <http://journal.sapub.org/ijis>

Copyright © 2020 The Author(s). Published by Scientific & Academic Publishing

This work is licensed under the Creative Commons Attribution International

License (CC BY). <http://creativecommons.org/licenses/by/4.0/>

private sector conducts its businesses within and outside its own environment, and the way government sectors provides and interacts with stakeholders in service delivery [2].

E-Government implementation in Zambia is linked to the enactment of National ICT Policy of 2006 [3]. Within the framework of the Policy, e-Government is identified as one of the thirteen pillars necessary to transform government service delivery using ICTs [3]. Though the process is still in its infancy stages, there are several electronic government services that the Zambian government has undertaken. Examples include, the implementation of the Online Tax Systems, Zambia Immigration Management Systems (ZIMS) or e-Visa System, Government Service Bus (GSB), establishment of the Integrated Financial Management Information System (IFMIS), e-Cab Memorandum, Management Monitoring System, and the decentralized Payroll Management and Establishment Control (PMEC) among others. Technically, all these systems are anchored on ICTs thus emphasizing the fact that e-Government cannot thrive without the application of ICTs [1] [2].

Statistics show that countries that perform extremely well in the area of e-Government globally are also ranked highly on ICT Developed Indices. For example, South Korea, Denmark, Iceland, and the United Kingdom (UK) are among the top 10 ranked countries on the International Telecommunication Union (ITU) ICT Development Index [4]. Equally all these countries make up the top 10 on the E-Government Development Index [4]. Similarly, at regional level, Mauritius, Tunisia, South Africa, Morocco, and Seychelles are among the top 10 performing countries both on ICT Development Index and the EGDI.

Despite government's effort in introducing various e-Government initiatives, the electronic government in Zambia presents several weaknesses especially in the area of telecommunication infrastructure, human capital, government online presence, systems integration, political will, financing, security and trust among others as cited by previous researchers. At global level, Zambia ranks lowly on the EGDI according to the UN E-Government Survey of 2016. Out of 193 Member States of the United Nations (UN), Zambia trails at 132 with EGDI of 0.3507 compared to other regional countries such as Mauritius, Tunisia, South Africa and Morocco with over 0.5000 [6].

The Telecommunication Infrastructure Index (TII) is cited as the lowest performing EGDI component for Zambia dropping marginally from 0.1247 in 2014 to 0.1182 in 2016 compared to the World marginal rise of 0.3650 to 0.3711 during the same period. Telecommunication Infrastructure evidently is a major hindrance to the country's e-Government implementation [7] [8] and the TII index on EGDI. On the contrary, Online Service Index (OSI) rose from 0.0356 in 2010 to 0.3696 in 2016 and the Human Capital Index (HCI) rising from 0.2313 in 2010 to 0.5643 to 2016 respectively [6].

Based on these composite indicators, this paper therefore attempts to assess civil service readiness in implementing e-Government as a tool of service delivery. Previous studies

by institutions such as the United Nations, ZICTA, OECD, as well as individuals [7] [9-13] have mainly been focused on generalized e-Government adoption models, challenges and opportunities with very little research attention paid on the actual policy makers and implementers who is in this case are civil servants.

2. Literature Review

2.1. Overview of E-Government

Like the early government systems, modern governments are arguably categorized by several factors as noted by different scholars. Previous studies reveal that some of the factors that frame up modern governments include the power structure of government; the source of power structure; government's political ideologies; principles of authority; and acquisition and exercise of power.

Ardently, the role of governments has always been that of maintaining good public order, providing national security, maintaining public safety, and providing material prosperity and economic stability [14]. Governments may either employ paper and file-based system or deploy services delivery mechanisms using Information and Communication Technologies (ICT) or may equally adopt both as is a common practice. [15] refers the deployment of ICTs and its associated applications as modern Electronic Government or 'e-Government'. E-Government is a concept with a capacity to transform public administration using ICTs according to [16].

Though there is no single universally accepted definition of e-Government [17] [18] states that the concept of e-Government is a relatively new area of study in the field of Information Systems (IS) that is concerned with the use of ICTs by government agencies to electronically deliver its services. Based on this presupposition, [19], defines e-Government as the use of ICTs that aims to promote efficient and cost-effective government, facilitates more convenient government services and allows greater public access to information. Effectiveness and efficiency can only be achieved where there is a two-way communication channel and to this effect [15] argues that e-Government is anchored on a two-way communication cycle that deploys the use of ICT by governments, civil societies and political institutions to engage citizens through dialogue. Any form of government service delivery model affects every human activity in one way or another and requires a combination of different development stages before attaining maturity.

2.2. E-Government Maturity Models

Implementing e-Government is a continuous process, and most often the e-Government maturity models are often conceptualised in stages [20]. These stages are often prescribed as sequential and are usually difficult to generalize. E-Government maturity models as categorised by [21] include three common categories.

1. **The governmental models:** developed by governments, consultants and academicians to help agencies identify and improve their level of e-Government maturity.
2. **The holistic approach models:** designed to be applied in public services development projects to help agencies identify if an e-Government project will be successful or not.
3. **The evolutionary e-Government maturity models** focus on the evolution of e-Government using sequential steps, from immature to mature e-Government with improved quality.

From an academic perspective, the most famous maturity models are the Layne and Lee model, Gartner Group of e-Government, and the United Nations Five-Stage Model. The model depicted in this study is that developed by Layne and Lee.

2.2.1. Layne and Lee Four Stage E-Government Model

E-Government projects [22] evolve through four stages of development as their integration, technological and organizational complexity increases. The model advances through four sequential development stages [23]. It is developed based on observations of e-Government initiatives normally at country level hence the selection of this model given the Zambian scenario. The sequence of implementation stages are;

Catalogue stage: governments establish an online presence of presentation. The initial efforts of the government are focused on establishing an on-line presence for the government interaction. At this stage, only one-way communication between the government and the public is possible.

Transaction stage: services are made available for online use and databases are readied for the support of such transactions. All e-Government initiatives are focused on connecting the internal government system to on-line interfaces and allowing citizens to transact with government electronically. This creates a two-communication between the government and the public.

Vertical integration stage: government operations within functional areas are integrated at local, state, and federal systems in all three branches of government namely the legislative, executive, and judiciary. Departments working in the same functional area integrate their online operations.

Horizontal integration phase: electronic systems are all government levels and branches with different functions and services are linked through a central portal. Different levels within similar functionality is posited to precede the horizontal integration across different functions [22].

Based on the Layne and Lee maturity model, literature shows that Zambia's position is assumed to be anchored between transaction and vertical interaction. This is because some form of manual interventions still exists such as application for various licenses where forms are downloaded

and completed manually before submitting to relevant institutions while at interaction level services that include electronic submission of annual tax returns, payments for application for Visas are among those that have been achieved so far. See the Figure 1 below.

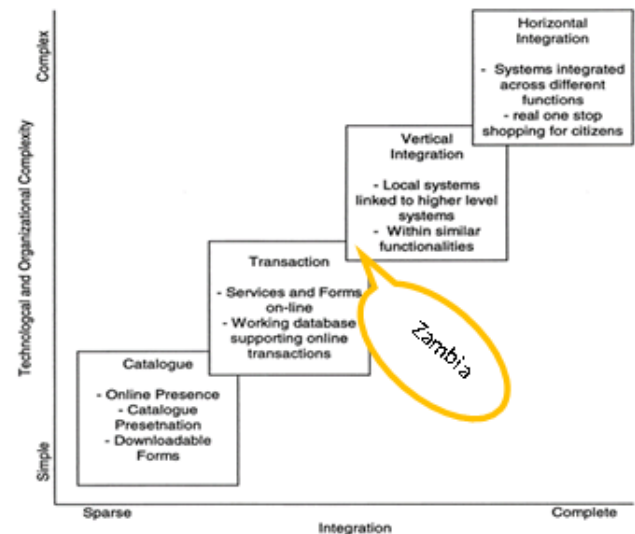


Figure 1. Zambia e-Government current position on Layne and Lee maturity model. (Adapted from International Journal for Informatics, January 2006)

2.3. Of E-Government

Primarily there are three different types of e-Governments implementation models namely Government-to-Citizen (G2C), Government-to-Government (G2G), Government-to-Business (G2B). Though Government-to-Employees (G2E) to some extent is considered as one of the categories, [15] argues that it is simply an extension of G2G. The following paragraphs discusses the basic e-Government categories and some typical Zambian initiatives Zambia in each category.

2.3.1. Government-to-Citizens (G2C)

Government-to-Citizens commonly referred to as G2C allows citizens to participate in government driven initiatives electronically. As noted by [24], the basic idea of G2C is to facilitate citizens' interaction with the government. A typical example of G2C platform is the Zambia Revenue Authority (ZRA) e-Tax Online System that allows businesses to electronically register their businesses, file tax returns and make payments and has received accolade from the business world especially the Small Medium Enterprises [25].

2.3.2. Government-to-Business (G2B)

Though like G2C, Government-to-Business (G2B) is a domain that focuses on the interaction between government agencies and the private businesses sector via online mediated environments. It basically involves electronic transactions with business entities and other institutions that may include non-profit making organizations. The electronic-Government Procurement (e-GP) System implemented by the Zambia Public Procurement Authority

(ZPPA) is a typical example of a G2B initiative. The e-GP platform is a web-based, collaborative system that facilitates the full lifecycle of a tendering process, for both buyers and suppliers [26].

2.3.3. Government-to-Government (G2G)

Government-to-Government (G2G) category as posits by [27] involves transactions done between the central, national or local governments, other government agencies and departments as well as attached agencies and bureaus while [28] notes that services provided through this dimension take place at two levels; at the local or domestic level and at the international level. The Integrated Financial Management Information System (IFMIS) is an example of a G2G category that enables all levels of government to work cohesively in an efficient and effective manner thereby reducing on the fragmented government processes that demotes sharing of information timely [29].

2.3.4. Government-to-Employees (G2E)

Though most researchers and academicians recognise only the first three categories of e-Government, Government-to-Employees (G2E) to some extent can be considered as one of the delivery modes of e-Government though [15] argues that it is simply an extension of G2G. Government-to-Employees refers to the relationship between government and its employees. The focus of G2E is on strategy and tactical mechanisms that are used for encouraging the implementation of government goals and programs as well as human resource management, budgeting and accounting [30]. The decentralized Payroll Management and Establishment Control (PMEC) program is an example of a Government-to-Employee model in Zambia.

In the context of e-Government, [10] ICT is viewed as a portal for information exchange or a platform through which decisions can be made. It facilitates interactions between government on the internal side and other stakeholders on the external side [31]. See Figure 2 below.

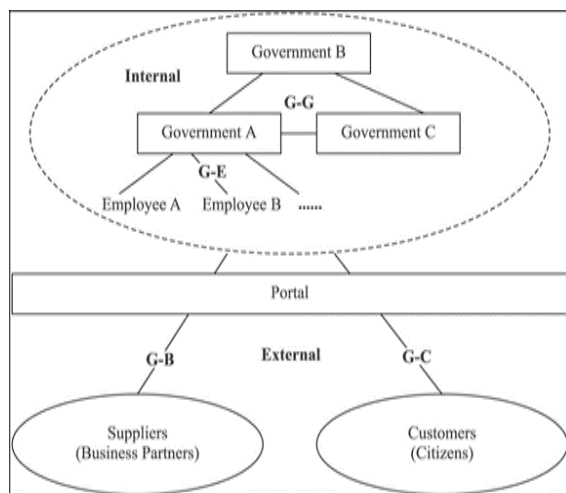


Figure 2. E-Government interaction dimensions. (Source: Siau and Long, 2005)

2.4. Benefits of E-Governments

In their e-Government study of ‘Harnessing e-Government Adoption in the SADC Region’, [32] observed that e-Government is a potential democracy tool, which promotes inclusive governance (e-inclusion) by allowing people to use ICTs to engage with government structures. The focus of e-Government [33] is largely on improving administrative efficiency and reducing administrative corruption while [1] views e-Government as a subset of governance. The advantages and benefits of e-Government implementation are more less the same for both developed and developing countries [15].

Other authors such as [34], note that the implementation of e-Government reduces cost and levels of organizational processes by streamlining and re-organizing operating procedures. E-Government has the capacity to transform old ways of running government and has the possibility of creating unprecedented possibilities for sustainable economic development, just as it has done for businesses in the industrial world according to [3].

Every governments wish is to deliver its services effectively and efficiently and this assumption is echoed by [35] who state that using of e-Government systems improves the performance of government agencies thus enabling them to deliver public services effectively and efficiently for all customers. Other benefits as outline by various researchers include;

1. potential to contribute to efficiency gains and cost reductions [36].
2. increased transparency of decision-making processes [15].
3. potential democracy tool, which promotes inclusive governance (e-inclusion) by allowing people to use ICTs to engage with government structures [32].
4. Increased employee responsibility [28].
5. eliminates some manual processes of tendering, bidding and notification of stakeholders [26].
6. Improves accountability, transparency, anti-bureaucratic tendencies as well as eliminating corruption [10].
7. Promotes the use of ICT in other sectors of society as transactions become electronic [7].

Summing up, [10], outlines e-Government benefits as that of time saving, reduced corruption resulting in facilitating transparency and accountability of different resources. And critical to all these is the component of ICTs as the main portal for distribution of services.

2.5. Challenges of E-Government

Now that ICT has become an integrated part of everyday life, the implementation of e-Government will continue to improve public sector performance notwithstanding certain factors that may impede its effectiveness. Factors may range from the initial implementation strategies and frameworks, aims and objectives of introducing e-Government initiatives

to structural organization and citizens perceptions and adoptions. Critical to all these is the Telecommunication infrastructure which has been cited by [7] [15] [10] [37] [38] as one major impediments to e-Government adoption. Lack of leadership qualities and failure in appreciating e-Government by top level policy makers is another cited majority barrier around e-Government implementation [7] [9] [15] [37] [38] [39]. Other common challenges in developing countries [25] [40] [41] include social economic conditions, lack of appropriate content, language barriers, digital divide, low ICT literacy levels, human resources, and skills to effectively implement e-Government projects.

Summing up [42] concludes that these factors affect the willingness of businesses and citizens to use, or take-up electronic services and have an impact on the success or failure of e-Government. Failure or success of e-Government largely depends of the reality gap that is created between 'where we are now' and 'where want to be' according to [43] analysis of 'why most e-Government initiatives fail'.

2.6. Overview of E-Government in Zambia

Assessing current e-Government readiness in the civil service in Zambia [45] call for reliable and relevant e-Government measurements. The researcher stresses that well-crafted measurements can lead to crucial signposts for policy makers and practitioners. Some important common threads highlighted [45] include a country's economic strength, technological development, and aggregate level of education. Others include infrastructure, human capital, government leadership, IT strategies and policies and many more.

Based on the aforementioned, the ITU e-Government

Implementation toolkit recommends four core dimensions of the e-Government environment; Infrastructure, Policy, Governance and Outreach [31] whereas the EU assesses e-Government services that covers the priority areas of the e-Government Action Plan. Each priority area is measured by one or more indicators, included in the so-called top-level benchmarks: User-centric Government, Transparent Government, Cross-border Mobility, and Key Enablers [6].

The e-Government evaluation in this study however, focus on the UN methodology of assessing e-Government development using a set of globally comparative e-Government core dimensions that include infrastructure, human capital and availability of online presence [44] using the E-Government Development Index (EGDI).

The EGDI in principle, is a weighted average of three normalized indices; Telecommunications Infrastructure Index (TII) data provided by the International Telecommunications Union (ITU), Human Capital Index (HCI) generated by the United Nations Educational, Scientific and Cultural Organization (UNESCO), Online Service Index (OSI) data collected from independent surveys conducted biennially by the UN [6]. Though UN agrees that methodological work on UN e-Government surveys has helped elucidate some of the issues in e-Government measurement, there is however, no formal agreement on a common framework of measurement [46].

Various diverse measurement techniques exist, yet some common threads emerge. According to [47], there are various approaches to measure the development of e-Government apart from those employed by the ITU and UN. Table 1 below shows some selected approaches applied in e-Government evaluation or benchmarking.

Table 1. A summary of selected approaches applied in e-Government evaluation. (Source: Sakowicz, M. (2003) How to Evaluate E-Government: Different Methodologies and Methods)

Project name (organisation)	Methodology of collecting and analysing data and scope of analysis	Character features of evaluation - criteria, primary goal and result
e-Europe, EU	Information society, national statistics offices, all tiers of government	E-Government is measured by comparison of on-line development of 20 key public services
e-Government Benchmarking Electronic Service Delivery	interviews, targeted questionnaires worldwide, selected advanced countries	Study has focused on a range of back office and wider e-Government issues, such as accessibility and interoperability.
KeeLAN	Local and Regional Level web scanning of 700 websites and then thorough examination along with interviews in the 50 Case Studies	Measures roadmaps for e-Government development at local level, 'top' websites on the basis of: Request/Application;

Understanding e-Government readiness in government Ministries calls for an all in-depth evaluation of the core indices as propagated by the UN and existing gaps between e-Government initiatives and the actual e-Government performance on the ground. Focus should be directed to understanding the existing infrastructure, human capital and online services and its implications on the level of e-Government implementation in the civil service in Zambia. As attested earlier in the introductory part of this paper, [10] there are several e-Government initiatives that have been implemented in the area of electronic government service

delivery and more to these include, ICT related sector policies such as the National Assembly ICT Master Plan of 2010, the SMART Zambia e-Government Master Plan 2016-2020, ICT Policy in Education, common Government Wide Area Network (GWAN) with intent of providing shared network services coupled with rolling-out of a combined Zesco and Zamtel fibre network covering over 9300 km across the country. This has made it easier for all Ministerial headquarters and provincial offices to have Internet connectivity. See Figure 3 below.

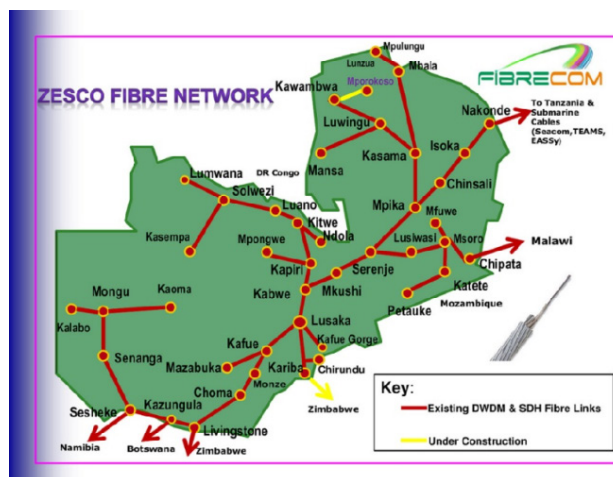


Figure 3. ZESCO Fibre Network Coverage. (Source: SMART Zambia e-Government Master Plan 2016-2020)

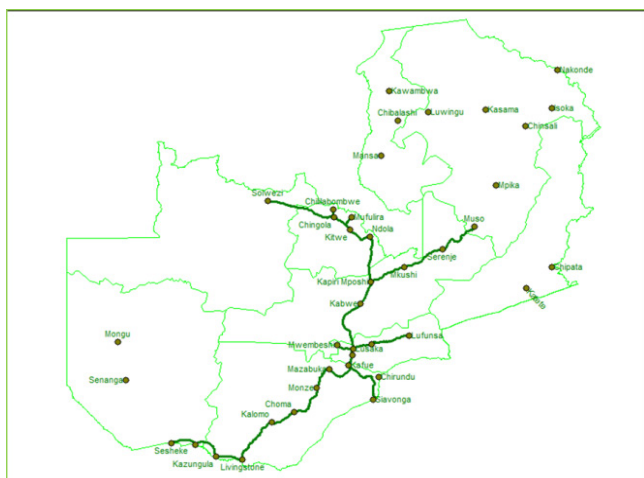


Figure 4. ZAMTEL Fibre Network Coverage. (Source: SMART Zambia e-Government Master Plan 2016-2020)

Despite reaching to all provincial districts, the challenge remains with the distribution of fibre network to those districts that are on the outskirts of provincial districts [10].

Given this backdrop, one would expect Zambia's e-Government performance to be relatively sound. However, the scenario presented on the ground is contrary to what is attested by several International bodies as well as researchers on the subject. For example, Zambia's Global e-Government rankings in 2016 stood at 132 out of 193 UN Member States [6] EGDI was at 0.3507 compared to other top ranked countries like Mauritius, Tunisia, South Africa and Morocco with over 0.5000 and only 17.34% of individuals had access to Internet or Online services in Zambia compared to the World average of 43.34% [6].

Further, statistics review that of the three UN core dimensions of measurement, TII is the lowest performing EGDI component for Zambia dropping marginally from 0.1247 in 2014 to 0.1182 in 2016 compared to the World marginal rise of 0.3650 and 0.3711 during the same period. The performance of TII evidently drags down the overall country's EGDI. Though the TII ranking may have dropped

slightly, it is however compensated by OSI and HCI that rose from 0.1417 to 0.3696 and 0.4504 to 0.5643 in 2014 and 2016 respectively [6]. Statistics show that countries that perform extremely well in e-Government on the EGDI globally are equally ranked highly on ICT Developed Indices. For example, South Korea, Denmark, Iceland, and the United Kingdom (UK) are among the top 10 ranked countries on the ICT Development Index [4]. Table 2 below shows Zambia EGDI trajectory from 2010 to 2016.

Table 2. Zambia e-Government development index 2010-2016. (Source: 2010-2016 UN e-Government Surveys)

Indicator	2010	2012	2014	2016
Infrastructure Index	0.0141	0.0601	0.1247	0.1182
Human Capital Index	0.2313	0.4993	0.4504	0.5643
Online Service Index	0.0356	0.3137	0.1417	0.3696
EGDI Ranking	143	154	163	132
EGDI	0.281	0.291	0.2389	0.3507

Zambia's e-Government is not far-fetched as literature reveals that there are many factors that contribute to such an outlook. For successful design and implementation of e-Government, [10] [15] [29] [48] recommended that developing e-Government strategies in a contextualized manner, investing in ICTs development, computerizing of the civil service, providing ICT training and budget specific funding to e-Government agenda, adopting the 'Start Small, Scale Fast' (SS-SF) concept are some of the attributes that are prioritised.

Countries that have implemented such measures are among the highest ranked on the EGDI. Countries such as the United Kingdom (UK), Australia, Singapore, South Korea, and Finland at global level, and Mauritius and Tunisia at regional level were cited in the UN E-Government Survey Report of 2016 as among the top ranked nations in the World.

The United Kingdom (UK) ranked 1st in the world on the EGDI scale [6], is a typical example of a country with a robust e-Government development agenda traced to the late 1980s when ICT promulgated in the civil service. United Kingdom's initial strategy was to computerise government departments and its agencies and later created a central hub called the 'Government Gateway' that links e-Government services across departments and promote access to online services.

On the other hand, the Republic of South Korea e-Government agenda, stems from the Civil Service Computerisation Programme (CSCP) introduced in 1981 which initially focused on computerisation of the public sector before incorporating other sectors. Similarly, the Republic of Singapore ranked 4th on the EGDI globally has a robust e-Government Strategy and well-defined implementation plans [6].

In the case of Singapore, its critical success story stems from the adoption of the 'Start Small, Scale Fast' (SS-SF) as way back as the early 1990s. Significant in realizing this

strategy was the establishment of the eCitizen Centre Portal which currently is home to more than 1,700 services that can be delivered electronically. According to the Government of Singapore, the country has continued to appreciate the role that ICTs plays in e-Government implementation as attested by setting aside \$1.7 billion explicitly for investments in various ICTs on which e-Government is anchored. The benefits extracted from such an investment can be witnessed by ICTs 5.7% contribution to Singapore's GDP in 2017. The Table 3 below shows Singapore's relative position on the EGDI scale.

Table 3. Top 10 EGDI in the World. (Source: 2016 UN e-Government Survey)

Rank	Country	EGDI	Online Service Component	Telecomm. Infrastructure Component	Human Capital Component
1	UK	0.9193	1	0.8177	0.9402
2	Australia	0.9143	0.9783	0.7646	1
3	Republic of Korea	0.8915	0.942	0.853	0.8795
4	Singapore	0.8828	0.971	0.8414	0.836
5	Finland	0.8817	0.942	0.759	0.944
6	Sweden	0.8704	0.8768	0.8134	0.921
7	Netherlands	0.8659	0.9275	0.7517	0.9183
8	New Zealand	0.8653	0.942	0.7136	0.9402
9	Denmark	0.851	0.7754	0.8247	0.953
10	France	0.8456	0.942	0.7502	0.8445

Others at regional level are Mauritius and Tunisia. According to [50]. Mauritius focus on e-Government implementation was characterized by way of computerisation of government processes as early as the 1990s [51]. The focus of computerization has remained steady over the years in managing revenue collection, maintaining Government's accounts and securing the identity of citizens and borders [50]. Currently, almost all Ministries and Departments in Mauritius are equipped with ICT systems that assist them in the delivery of their services and this speaks volumes as to why Mauritius was ranked 1st in Africa according to the UN e-Government Survey of 2016 [6].

Table 4. Top 10 EGDI in the Africa. (Source: 2016 UN e-Government Survey)

World Rank	Africa Rank	Country	EGDI	Online Service Index	Telecomm. Infrastructure Index	Human Capital Index
58	1	Mauritius	0.6231	0.7029	0.4596	0.7067
72	2	Tunisia	0.5682	0.7174	0.3476	0.6397
76	3	South Africa	0.5546	0.558	0.3807	0.7253
85	4	Morocco	0.5186	0.7391	0.3429	0.4737
86	5	Seychelles	0.5181	0.4058	0.4624	0.6861
103	6	Cape Verde	0.4742	0.4565	0.3629	0.6031
108	7	Egypt	0.4594	0.471	0.3025	0.6048
113	8	Botswana	0.4531	0.2826	0.4215	0.6553
118	9	Libya	0.4322	0.1087	0.4291	0.7588
119	10	Kenya	0.4186	0.558	0.1808	0.5169
120	11	Ghana	0.4181	0.4493	0.2594	0.5458
125	12	Namibia	0.3682	0.2826	0.2669	0.5551
128	13	Uganda	0.3599	0.5	0.1129	0.4668
129	14	Gabon	0.3584	0.1522	0.3068	0.6162
130	15	Tanzania	0.3533	0.5725	0.09	0.3974
132	16	Zambia	0.3507	0.3696	0.1182	0.5643

Conversely, the Zambian government on the other hand

has been implementing e-Government initiatives for over a decade [10]. This is demonstrated by the approval of the National ICT Policy and subsequent enactment of the ICT Act in 2009 which signified the birth of various e-Government implementation strategies whose strong emphasis was on the creation of an innovative, market responsive, highly competitive, coordinated and well-regulated ICT industry [3].

The concept of 'Think Big, Start Small and Scale Fast, is like the root taken by Singapore has been included in the e-Government Master Plan and replicated in Zambia's strategy on e-Government implementation. With this concept in mind, several priority e-Government projects and applications have been developed and rolled-out to citizens, businesses, and the government.

In comparison to other countries at both global and regional levels, rightly, one would have thought that the accelerated initiatives undertaken would be commensurate with Zambia's performance hence the need to assess the readiness of the civil service in the implementation of e-Government because this is the sector that is both policy developers as well as implementers.

Given the preceding case scenarios, one critical element that stands out is that successful government strategies have had their initial drive directed towards resource capacitation of government departments in terms of computerisation service deliveries. This is a long journey which successful countries embarked on as early as the 1980. In contrast, Zambia's e-Government implementation strategy can only be linked to the last decade as attested by [3] [10]. The subsequent section therefore discusses some of the key findings obtained from the study and presents recommendations based on the outcome of the study.

3. Methodology

The research methodology applied in this study was a combination of both qualitative and quantitative approaches. The motivation for utilizing both qualitative and quantitative methods stems from high precision analytical results obtained in various studies that have used this approach before. Secondary data was collected from case studies, student's thesis, paper presentation, journal articles, policy documents as well as data from public service workers. Primary data was collected using survey questionnaires which were physically administered at all government Ministries' Headquarters. Questionnaires included both structured and semi-structured questions as well as open-ended questionnaires with reference to understanding the readiness of the civil service on e-Government implementation. During the research, certain ethical issues were considered including participants' rights to privacy, dignity, self-determination, and the researcher's right to know.

The study population was purposefully drawn from those government departments that are exposed to ICTs in their

execution of duties such as the planning department, Finance, IT, Procurement, Human Resource, and the e-Government division under the Office of the President. The targeted study sample size of 373 respondents from a total population of 13698 was selected based on the 2016 government payroll for Ministry Headquarters. The rationale behind confining the study to Lusaka District was that all government Ministry headquarters are based in Lusaka District and that time and financial resource was a constraint allow for extended coverage area.

It is the view of this researcher that future studies in this area may further be extended to cover the entire civil service across the country.

4. Research Findings and Discussion

4.1. Sample Size

The targeted sample size was 373 from a total of 27 government Ministries and one e-Government Division. Below is a table showing percentage distribution of participating Ministries.

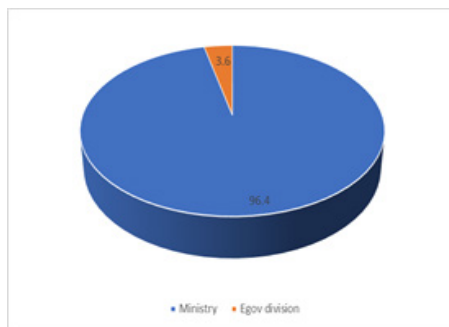


Figure 5. Percentage distribution of participating Ministries and e-Government Division

4.2. Demographic Information

Out of a total sample size of 373 respondents interviewed, 59% constituted males whilst 41% accounted for female. The higher numbers of participating males are attributed to the proportional employment figures in the civil service. Key to this presentation is that the majority in the civil service are university graduates in the age range of 20 – 49 years with competent ICT skills. See Figure 6 below.

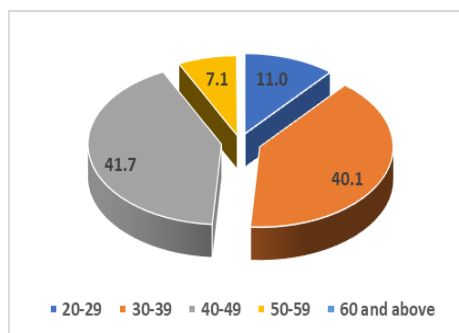


Figure 6. Gender distribution

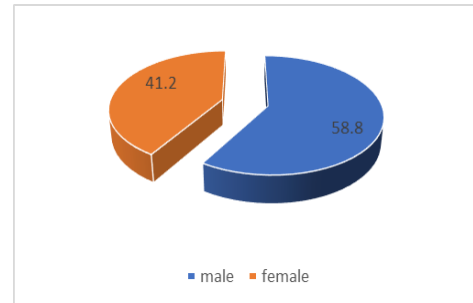


Figure 7. Age distribution

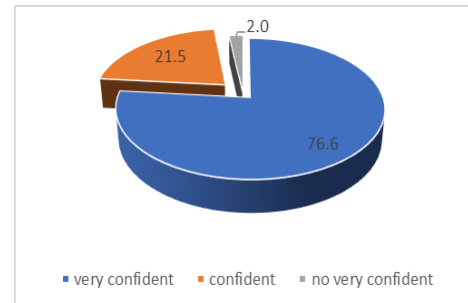


Figure 8. ICT competence levels

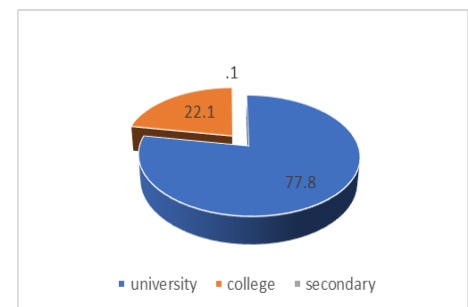


Figure 9. Highest of Level of education

4.3. E-Government Publicity

From literature reviewed, it is evident that the Zambian government has been on top of things in ensuring that e-Government initiatives are accelerated in service delivery. From the data collected, there was a slight difference in perceptions. Those that said e-Government had enough publicity accounted for 51% while 49% said otherwise. Though the difference may seem insignificant, attention should be directed at understanding the issues raised by this group that suggested otherwise.

See diagram below.

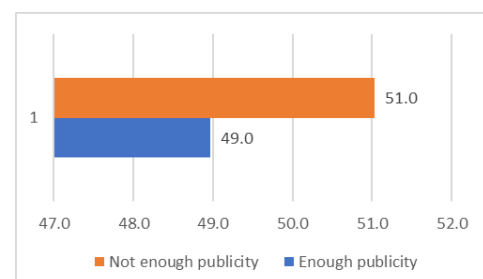


Figure 10. E-Government publicity

This group indicates that almost half of the sample believe that government has not done enough to sell its e-Government agenda to the public. Successful e-Government projects [52] require good publicity in order to encourage citizens to make use of them. The UN Centre for Democracy and Technology argues that people, especially if they are unfamiliar with technology, tends to be reluctant to try e-Government services out of distrust or belief that online services will not meet their needs or due to lack of understanding of the technology.

4.4. E-Government Maturity Cycle

Critical to successful e-Government is the element of time lapse. Time to mature is one of the key factors that governments must endure with. In the case of Zambia, percentage distribution showed that over 80% of respondents agreed that the time taken for e-Government to mature had a significant impact on e-Government implementation while 11.1% disagreed with the assumption. Cost of Internet was another factor identified while Cultural and tradition had a relative impact on e-Government attracting a 50.4% and 49.6% yes and no responses respectively. See Figure 11 below.

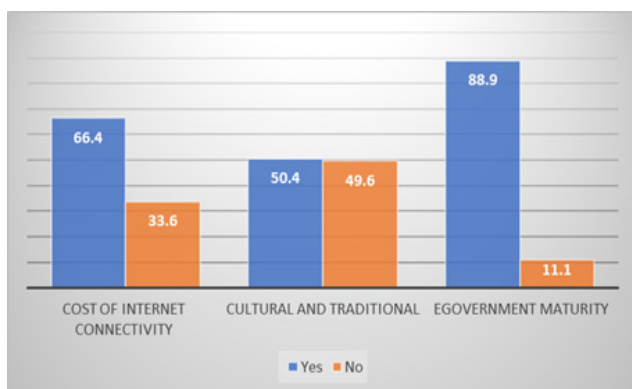


Figure 11. Factors affecting e-Government in the civil service

4.5. Telecommunication Infrastructure

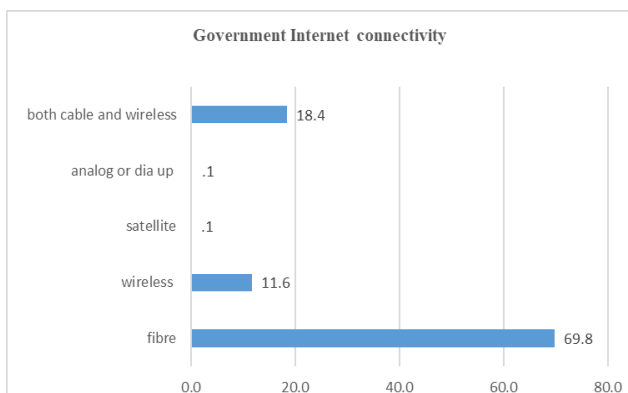


Figure 12. Ministries with different Internet connectivity

Taking into consideration the three core dimensions applied by the UN in assessing e-Government implementation, literature shows that IT infrastructure is the

driving force for all e-Government activities. Zambia has continued to demonstrate its commitment by way of introducing various interventions or initiatives as attested both by literature and study findings. The introduction of a Government Wide Area Network coupled with rolling-out of a combined Zesco and Zamtel fibre network of over 9300 km across the country with 69.8% riding on this network. See Figure 12 above.

4.6. ICT Budget Allocation

Literature shows that countries that have successfully implemented e-Government have deliberately set aside budget lines specifically for ICT development and implementation in line with policy pronouncements. From the literature reviewed, successful e-Government implementing countries have budget lines specifically set aside for ICT development and implementation under which e-Government is a component. On whether there is a separate budget line for e-Government implementation in Zambia, the results showed that 36% said yes, 45% where not sure, and 19% said no. Having the majority in the category of “not sure” and “no” is a clear indication that very little is being done in this area. Results in Figure 13 below show the levels of participant’s awareness or knowledge on budget lines directed at e-Government service provision.

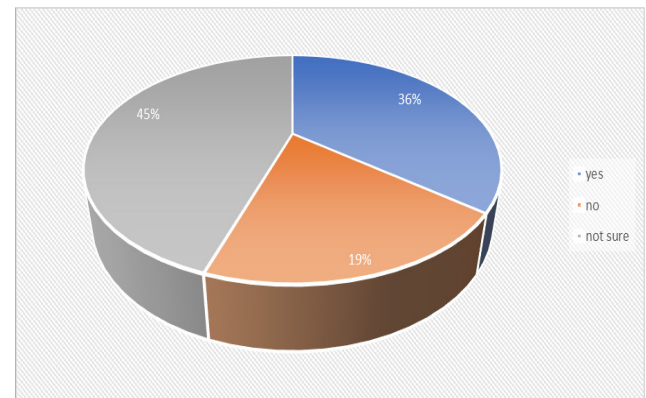


Figure 13. ICT budget allocation to government Ministries

4.7. ICT Training Policies

The Human Capital Index (HCI) is another key component considered in measuring e-Government for UN Member States. Successful nations in e-Government have invested heavily in human resource capacity building. From the figure given below, 69.8% of the respondents indicated that most government Ministries lacked deliberate ICT training policies at workplace while 30.2% said otherwise. To assess strides made by government in championing the e-Government agenda, data on ICT training policies was inevitable. This provided the basis to assess whether the civil service had the capacity to embrace e-Government agenda. From the findings, we can conclude that there is a mismatch between political pronouncements and actual implementation of ICT training policies. See Figure 14 below.

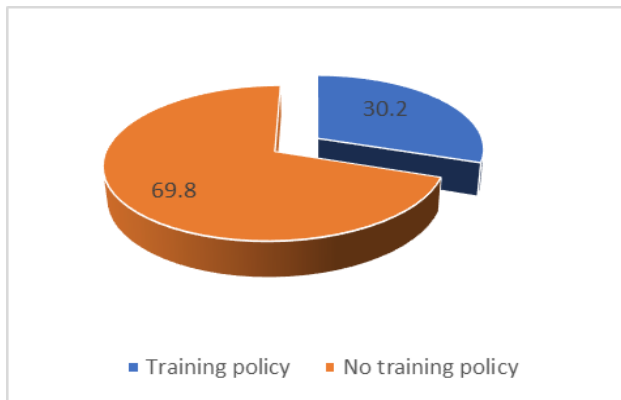


Figure 14. Availability of ICT training policies in Ministries

4.8. Government Online Services

The presence of e-Government services is one indicator within the confine of Online Service Index that helps assess the status on individual country's performance. From the results obtained, all Zambian Ministries now have Internet connectivity with some able to offer online. Respondent were asked whether they were aware of any transactions done online and the bar chart below shows the percentage distribution of responses.

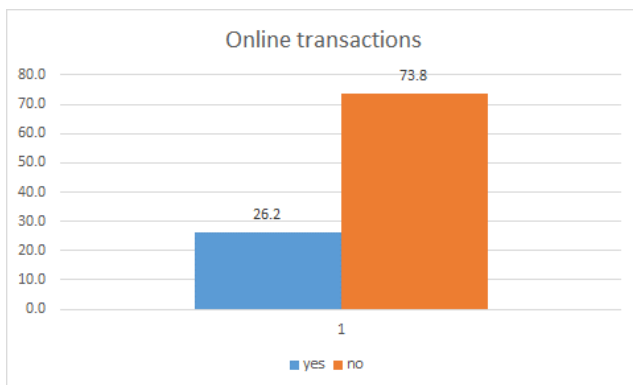


Figure 15. Online transaction awareness

The bar chart above shows that a large proportion of respondents (73.8%) were not aware of online transactions in their respective Ministries and only 26.2% agree that online transaction existed.

4.9. E-Government Services

The presence of e-Government services is one indicator within the confine of Online Service Index that helps assess the status on individual country's performance. From the results obtained, all Zambian Ministries now have Internet connectivity with some able to offer online services such as immigration services, taxes and other online payments for government services. As indicated above, limited publicity of e-Government services has an implication on the preference of mode of e-Government service delivery. Most citizens currently would rather transact with the government manually rather than electronically. See graph below.

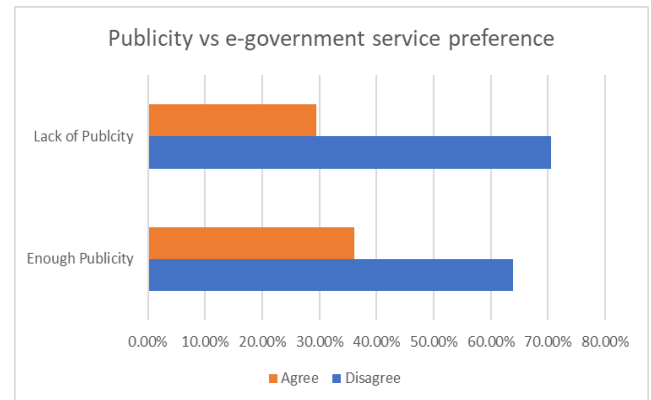


Figure 16. E-Government publicity against mode of service delivery

The graph shows that out of those that agreed that yes there is enough publicity of e-Government services, only 36.1% preferred to transact with the government electronically while 63.9% preferred to the old paper and file formats. It is even worse for the category of lack of publicity as close to 70% preferred the manual way against the 29% that would go electronic. These statistics clearly indicate that the lack of publicity on the part of government has resulted in citizens shunning e-Government services and opting for the traditional file format. This scenario is a serious impediment to propagating e-Government agenda in Zambia if not addressed. Currently as the study reviewed, there are very limited online services that the government is offering despite having all the 27 with Internet facilities.

4.10. Mode of Service Delivery

Respondents were asked to choose which mode of service delivery was better between electronic or manual means. Figure 17 below shows respective responses.

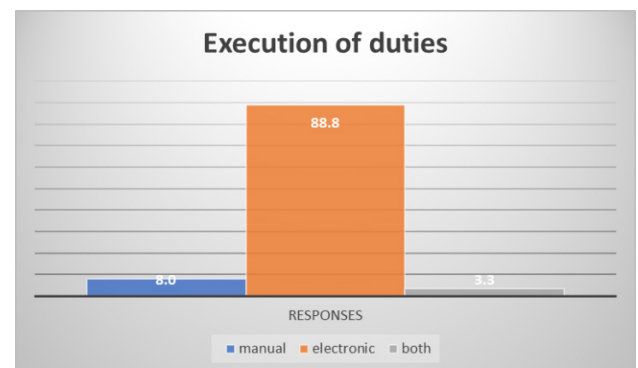


Figure 17. Perception on mode of executing duties

From the histogram above, nearly 90% agreed that government service delivery to clients requires applying ICTs by way of promoting Government-to-Government, Government-to-Citizens and Government-to-Employees. Those that preferred manual or both accounted for 8% and 3% respectively. It was further discovered that the latter group mainly composed of those in the category of workers who had served longer in the government.

4.11. Implication of Age on E-Government Implementation

Age is an important demographic variable that has a significant impact on behavioral intention and acceptance of technology according to [53]. Age was explored in the context of using and adopting of electronic services. Normally, it is expected that older citizens will have less skill and motivation to acquire and use of new technology. On the contrary, this hypothesis proved otherwise in this case study. Results analysed showed that over 70% of civil servant aged 40 and above were equally ready to accept the electronic way of doing business unlike the old times when paper and file was the norm for this group. See graph below.

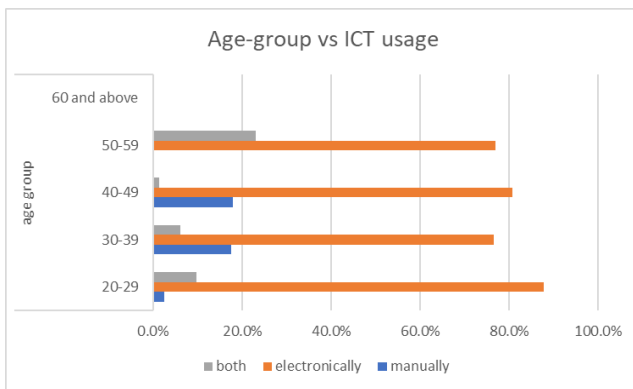


Figure 18. Perception on the choice of service delivery

4.12. Perception on the Choice of Service Delivery

For e-Government to succeed there is need to understand how current government services are delivered and whether these meet the aspiration of clients. In this regard, respondents were asked to state whether services delivered electronically were more convenient than those delivered manually. Figure 19 shows the results.

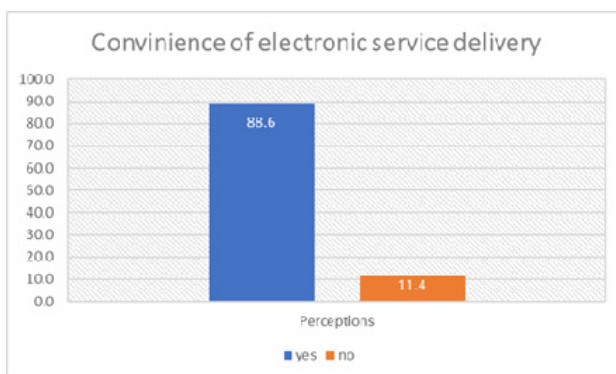


Figure 19. Preferred mode of service deliver

As shown above, a large portion of respondents (88.6%) agreed that services that are delivered via electronic means are more convenient while 11.4% were against the idea and preferred the traditional paper and file mode of service delivery. This information particularly helped in discussing the extent to which e-Government is being implemented in Zambia.

5. Conclusions

The results presented from several Ministries indicated that Zambia still has a long way before its e-Government can reach maturity in the civil service. The paper presented several key factors that could be viewed as opportunities and impediments to a fully functional e-Government within government Ministries. The availability of well-educated workforce was discovered as one of the opportunities that government can leverage on. On the flip side, limited publicity of e-Government services, inadequate e-Government services, lack of ICT training opportunities, non-existence of budget lines for ICTs, the slow and parallel pace at which ICT infrastructure network is rolled out across the country marks some of the key factors that have implications on the successful implementation of e-Government in the civil service. In view of the above electronic government readiness in the Civil Service and specifically in Zambia should call prioritised and committed public administration of ICTs. The following are therefore recommended.

1. detach all ICT related functional areas from other departments in the civil service and make ICT units them autonomous with independent funding.
2. bring on board various stakeholders especially the private sector involved in e-Services to help deliver e-Governments services across the country. E-Government services are only useful if people know about them [54].
3. marry policy pronounced with actual implementation plans especially in the area of basic computing skills.
4. In order to progressively move “catalogue and transaction stage” (current Zambia’s position) to “horizontal transaction” (maturity), government should expedite and link all government electronic systems through a central portal. This once created will act as a one-stop-entry point for all e-Government services.
5. expedite the planned proposes of coming up with a coordinated telecommunication infrastructure development where all institutions be it private or public with fibre networks are built on a common infrastructure to reduce redundancies.

Given the limited resources and time constraint, only government Ministry headquarters were target. However, it is worth noting that most of these Ministries have presence at District level and it is the researcher’s view that future studies on this subjected should be extended to these areas. Other future studies in this particular area should also endeavor to analyse internal systems within Ministries and what other factors decelerate the implementation e-Government in the civil service. It goes without saying “a vision without substance is a vision that is vague, misrepresentative of institutions, current position and time” [55].

ACKNOWLEDGEMENTS

First and foremost, I would like to acknowledge the abundant grace and love that the Almighty God has bestowed on me and my family. It has not been a kids journey to see the fruition of this project but credit goes to the favour from God and kind understanding of my peers and advisors for keeping me in good health throughout the rigors and demanding tasks of this research study. My sincere heartfelt gratitude goes to Dr. Simon Tembo for the relentless guidance and encouragement he gave me during the process of working on this research. At a time when all hopes were lost, Dr Banda raised me up and encouraged me to finish that which I had started. Thanks Doc.

Lastly, I pay gratitude to my beloved children, my parents, and brothers and only sister Janet for providing me with unfailing financially and moral support. To Niza Nakaonga, this one if for you.

Disclosure

This section is ONLY for those who requested disclosure. The name of the experts that reviewed your paper, in case they accepted selling disclosure to you, will appear here. Each reviewer is allowed to make their own price for that, since that is a public endorsement of your findings and may be used for varied purposes.

REFERENCES

- [1] Monga, A. (2008). 'E-Government in India: Opportunities and challenges. *Journal of Administration & Governance*, Vol. 3, No. 2.
- [2] Nkwe, N. (2012). 'E-Government: Challenges and Opportunities in Botswana'. *International Journal of Humanities and Social Science*, Vol. 2 No. 17; September 2012.
- [3] Ministry of Communication and Transport (2006). *National Information and Communication Technology Policy*. Government Printer, Lusaka.
- [4] International Telecommunication Union (2017). *Measuring the Information Society Report 2017 - Volume 1*. [Online]. Available: <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2017.aspx>.
- [5] United Nations (2018). *UN E-Government Survey: Gearing E-Government to Support Transformation towards Sustainable and Resilient Societies*. [Online]. Available: <https://publicadministration.un.org/en/research/un-e-Government-surveys/>.
- [6] United Nations (2016). *UN E-Government Survey: E-Government in Support Of Sustainable Development*. [Online]. Available: <https://publicadministration.un.org/en/research/un-e-Government-surveys/>.
- [7] Liywaliil, E. and Tembo, S. (2019). The Impact of Ethical Issues on E-Government Implementation: A Case of Zambia. *International Journal of Information Science* 2019, 9(2): 27-39.
- [8] Bonham, G., Seifert, J. and Thorson, S. (2001). The transformational potential of e-Government: The role of political leadership. Paper presented at 4th Pan European International Relations Conference, University of Kent.
- [9] Banda, S. (2011). *Success and Failure of e-Government Projects in Developing Countries: A Case of Zambia*. Johannesburg: University of Johannesburg.
- [10] Bwalya, K. (2009). Factors Affecting Adoption of E-Government in Zambia. *The Electronic Journal of Information Systems in Developing Countries*, 38, 1-13. [Online]. Available: <http://www.ejisdc.org/ojs2.../index.php/ejisdc/article/viewFile/573/286>.
- [11] Bwalya, K. J. & Mutula, S. (2015). *A Conceptual Framework for e-Government Development in Resource-constricted Countries: The Case of Zambia*. Johannesburg: SAGE.
- [12] Coates, N., & Nikolaus, L. (2010). Zambia and e-Government: An Assessment and Recommendations. In *E-Agriculture and E-Government for Global Policy Development: Implications and Future Directions*. Maumbe, B. (Ed.). 137-161.
- [13] Weerakkody, V., Janssen, M. and Hjort-Madsen, K. (2007). Integration and Enterprise Architecture Challenges in E-Government: A European Perspective. *International Journal of Cases on Electronic Commerce*, Vol 3, pp. 13-35.
- [14] Lenz, T.O. and Mirya, H. (2013). *American Government*. University Press of Florida, Gainesville.
- [15] Ndou, V. D. (2004). E-Government for Developing Countries: Opportunities and Challenges. *The Electronic Journal of Information Systems in Developing Countries*, Vol. 18, No.1.
- [16] Heeks, R. (2003). Most e-Government for Development fail: How can risks be reduced? *iGovernment Working Paper Series, Paper No. 14*. [Online]. Available: http://www.sed.manchester.ac.uk/idpm/research/publications/wp/igovernment/documents/igov_wp14.pdf.
- [17] Halchin, L. E. (2004). Electronic government: Government capability and terrorist resource. *Government Information Quarterly*, 21, 406-419.
- [18] Patel, H. and Jacobson, D. (2008). Factors Influencing Citizen Adoption of E-Government: A Review and Critical Assessment. *Proceedings of the 16th European Conference on Information Systems*, Galway, 9-11 June 2008, 176-188.
- [19] Bwalya, K. J. (2011). *E-Government Adoption and Synthesis in Zambia: Context, Issues and Challenges*. Johannesburg: University of Johannesburg.
- [20] Tamara, A. and AbuAli, A. (2010). A General Framework for E-Government: Definition Maturity Challenges, Opportunities, and Success *European Journal of Scientific Research ISSN 1450-216X Vol.39 No.1 (2010)*, pp.29-42.
- [21] Concha, G., et al. (2012). E-Government procurement observatory, maturity model and early measurements. *Government Information Quarterly*, 29, S43-S50.
- [22] Layne, K., and Lee, J. (2001). Developing fully functional E-Government: A four stage model. *Government Information Quarterly*, 18(2), 122-136.

- [23] Scholl, H. J. J. (2002). E-Government: A Special Case of ICT-enabled Business Process Change. Proceedings of the 36th Hawaii International Conference on System Sciences (HICSS'03) 0-7695-1874-5/03 IEEE.
- [24] Seifert, J. W. (2008). A primer on e-Government: Sectors, stages, opportunities, and challenges of online governance. *E-Government in High Gear*, 99.
- [25] Zambia Daily Mail (2015). ZRA implements ASYCUDA in 23 stations countrywide. [Online]. Available: <http://www.daily-mail.co.zm/zra-implements-asy cud-23-stations-countrywide/>.
- [26] Zambia Private Public Procurement (2017). e-Procurement system [Online]. Available: <https://www.zppa.org.zm/e-procurement-system>.
- [27] Klamo, L., Huang, W. W., Wang, K. L. and Le, T. (2006). Successfully implementing e-Government: fundamental issues and a case study in the USA. *Electronic Government, an International Journal*, 3, 158-173.
- [28] Al-Shafi, H. S. (2009). Factors affecting e-Government Implementation and Adoption in the State of Qatar. Thesis Submitted for the Degree of Doctor of Philosophy.
- [29] Mwango, C. (2003). Presentation of Zambia IFMIS to World Bank Meeting3. [Online]. Available: <https://www.scribd.com/presentation/200323054/Zambia-IFMIS-Presentation-to-World-Bank-Meeting3>.
- [30] Riley, T. B. (2001). Electronic governance in context. *Electronic Governance and Electronic Democracy: Living and Working in the Connected World*.
- [31] International Telecommunication Union (2009). *E-Government Implementation Toolkit: A Framework for e-Government Readiness and Action Priorities*, Geneva: ITU Publications.
- [32] Bwalya, K.J., & Healy, M. (2010). Harnessing e-Government Adoption in the SADC Region: a Conceptual Underpinning. *Electronic Journal of e-Government*, 8(1), 23-32.
- [33] Bhatnagar, S. (2004). *E-Government: From vision to implementation. A practical Guide with Case Studies*. Sage Publication. New Delhi.
- [34] Seifert, J. W. (2003). *Primer on E-Government: Sectors. Stages, Opportunities, and Challenges of Online Governance*.
- [35] Rubin, B. and H. Wang, H. (2004). Embedding e-finance in e-Government: a new e-Government framework. *Electronic Government*, vol. 1, no. 4, pp. 362-373. 2004.
- [36] Tapscott, D. and Caston, A. (1993). *Paradigm Shift: The New Promise of Information Technology*, McGraw-Hill: New York.
- [37] Nkohkwo, Q.N. and Islam. M.S (2013). 'Challenges to the Successful Implementation of e-Government Initiatives in Sub-Saharan Africa: A Literature Review' *Electronic Journal of e-Government* Volume 11 Issue 2 2013, (pp253-253), [Online]. Available: www.ejeg.com.
- [38] Ebrahim Z. and Irani Z. (2005). E-Government Adoption: Architecture and Barriers. *Business Process Management Journal*, Vol. 11, no. 5, pp. 589-611.
- [39] McClure, D.L. (2001). *Electronic Government: Challenges must be addressed with Effective Leadership and Management*. GAO-01-959T, Testimony before the Senate Committee on Governmental Affairs, on behalf of the U.S. General Accounting Office. [Online]. Available: <http://www.gao.gov/new.items/d01959t.pdf>.
- [40] Dada, D. (2006). The Failure of E-Government in Developing Countries: A Literature Review. *The Electronic Journal on Information Systems in Developing Countries*, Vol. 26, no. 1, pp. 1 -10.
- [41] Netchaeva, I. (2002). E-Government and e-Democracy: A comparison in the North and South. *Gazette: The International Journal for Communication Studies*, 64(5), 467-477.
- [42] Luo, G. (2009). E-Government, People and Social Change: A Case Study in China. *The Electronic Journal of Information Systems in Developing Countries*, 38, 1-23. [Online]. Available: www.ejisdc.org/ojs2/index.php/ejisdc/article/view/511/285.
- [43] Heeks, R. (2003). *Achieving Success/Avoiding Failure in e-Government Projects*, IDPM, Univ. of Manchester. [Online]. Available: <http://www.egov4dev.org/success/sfdefinitions.shtml>.
- [44] United Nations Report (2012) *Un E-Government Surveys: E-Government for the People*. [Online]. Available: <https://publicadministration.un.org/en/research/un-e-Government-surveys/>.
- [45] Oltean-Gocan (2017). *Global E-Governance Index – Study Case Singapore*. [Online]. Available: <https://www.performancemagazine.org/global-e-governance-index-singapore/> [Accessed on 14/12/2018].
- [46] UNITED NATIONS REPORT (2002). *BENCHMARKING E-GOVERNMENT: A GLOBAL PERSPECTIVE*, UNITED NATIONS DIVISION FOR PUBLIC ECONOMICS AND PUBLIC ADMINISTRATION, [ONLINE]. AVAILABLE: <http://unpan1.un.org/intradoc/groups/public/documents/un/unpan021547.pdf>.
- [47] Sakowicz, M. (2003) *How to Evaluate E-Government: Different Methodologies and Methods*. Warsaw School of Economics, Department of Public Administration.
- [48] Bwalya, K. J. and Zulu, S. (2012). *Handbook of Research on e-Government in Emerging Economies: Adoption, E-Participating, and Legal Frameworks*. Hershey. IGI Global.
- [49] Mbasela, G. (2011). *A Critical Review of the Benefits that E-Government Would Bring to the Zambian People*. Lusaka. Cavendish University.
- [50] Kundra, V. (2011). *Central Informatics e-Government Strategy 2013 – 2017: Empowering Citizens, Collaborating with Business and Networked Government*, Mauritius.
- [51] Statistics Mauritius (2016). *ICT Statistics Year 2016*. [Online] Available: http://statsmauritius.govmu.org/English/Publications/Pages/ICT_Stats_Yr2016.aspx.
- [52] InfoDev (2002). *The e-Government handbook for developing countries: A project for InfoDev and the Center for Democracy and Technology*.
- [53] Abu-Shanab, E., Al-Rub, S. and Md Nor, K. (2010). Obstacles Facing the Adoption of E-Government Services in Jordan. *Journal of E-Governance*, 33, 35-47.

- [54] Gichoya, D. (2005). Factors Affecting the Successful Implementation of ICT Projects in Government. The Electronic Journal of e-Government Volume 3 Issue 4, pp 175-184, available online at www.ejeg.com.
- [55] Moran, C.R. (1998). Strategic information technology planning in higher education: A new roadmap to the 21st century academy. 1 edn. Bolton, MA: Anker Publishing Company, Inc.