

The State of Public Sector ICT Infrastructure in Zimbabwe and its Implications on Service Delivery.

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Abstract

This paper seeks to establish the current state and government support of ICT infrastructure development and modernisation as enabling tools to enhance service delivery to the Zimbabwean citizens as they transact with government departments. This paper focuses on ICT infrastructure at ZIMRA, Immigration, ZINARA, Registrar General's departments of Births and Deaths and Passports offices. Mixed method research design was used in this research. Questionnaires, interviews and observations were the research instruments used to collect data from 1191 research subjects. The Pearson Chi-square statistic was also used to test the themes that emerged from the research questionnaires and interviews. The research findings indicate that current ICT infrastructure in Zimbabwe is now inadequate, fragmented and uncoordinated, especially at ports of entry and other government departments under study. The research findings also show that whilst government is committed to ICT infrastructure development and modernization in the public sector, funding is the limiting factor.

Key Words: Public sector, ICT infrastructure, Zimbabwe, Service delivery

Introduction

The Zimbabwean government has been reeling under severe economic recession from 2007 to date. This situation has led to the deterioration of existing ICT infrastructure in most government ministries and departments. Lack of Direct Foreign Investment (FDI) to fund new ICT projects and constrained fiscal space have also contributed to the stagnation of ICT infrastructural development and modernization in the public sector. The current ICT infrastructure in most government departments has become inadequate as it can no longer cope with larger volumes of traffic and it requires massive upgrades and new ICT projects to meet the new challenges.

ZIMConnect framework (2011-2015) postulates that the government of Zimbabwe (GoZ) is not new to ICT and e-government. It started in 1977 with the central computing services (CCS) and now Ministry of Information Communication Technology (MICT) to provide ICT services to the public. In a nutshell, the government's intention is to harness ICT in order to provide better service delivery to the people and to enhance national socio-economic development. The ZIMConnect framework of 2011-2015 further states that there is need to redefine the civil service role which requires utilisation of modern technologies in order to enhance business, public administration and service delivery and, more importantly, to ensure that ICTs receive budget allocations and the attention they deserve.

Literature Survey

Bwalya (2009:1) notes that the world over, governments have realised the importance of e-government, whilst traditionally, many African governments have been using brick and mortar approaches to manage their businesses, proving to be a big setback on matters of accountability to citizens (Mehlrtems *et al*, 2001:165). Having realised the benefits that e-government brings to stakeholders, many governments worldwide have adopted e-government as an effective tool for reaching out to their citizens and other different stakeholders (Zhu and He, 2002:470), thereby greatly improving their images.

Khalu *et al* (2002) support arguments by Zhu and He (2002) and Bwalya (2009) that the e-government, if understood correctly, its purpose is to utilise ICT breakthroughs to make geographic barriers more accessible between government agencies and the citizens and recognising citizens as stakeholders who should participate electronically in matters that improve their lives. Most African governments are now realising that people first (South African government, 2004) as an e-government strategy is the right direction to be taken in order to improve their images as government agencies transact with clients (South African government, 2004).

ICT Infrastructural Development

Ngulube (2009) postulates that infrastructure is key to e-government implementation and whilst ICT infrastructure is the bedrock in e-government, the infrastructure needs to be built up for all aspects of e-government for efficient delivery of services by the government. The major task of government is to ensure that developments of infrastructure in various parts of the country are done in a coordinated fashion to avoid a situation where some areas are ICT-enabled while others are not. Such a situation is common in developing nations where resources are scarce and Zimbabwe is no exception.

A national e-government infrastructural development master plan can be developed as a guide for current and future developments in Zimbabwe. With a master plan in place, a national government can prioritise funding to less advantaged and remote areas whilst the urban centres can then be funded through various partnership funding models. The ZimAsset blueprint (2013) emphasizes that ICT must be ubiquitous in the public sector and Farelo and Morris (2006) conclude that infrastructure has a positive influence on e-government.

The e-government infrastructure is divided into two categories, namely the hardware infrastructure, which comprises of the entire national communication infrastructure and the software infrastructure which include the computing infrastructure, data centres, the e-government architecture, the interoperability framework and the domain name policy.

The ICT Hard and Software Infrastructure

Setting up communication infrastructure by the government is crucial for e-government to deliver proficiently its services online. Equally so is the need to set up nationwide network for citizens to access easily government services in both urban and remote areas in the rural set-up. Generally, urban centres of a country are normally equipped with communication facilities; hence governments need to direct their efforts to the rural and remote areas of the country to avoid a digital divide.

However, research indicates that developed and developing countries have benefited immensely from successfully installed communication infrastructural technology and this includes the basic dial-up system, leased lines, radio frequency, fibre optic, satellite and, now, broadband (www.whtistechtarget.com). Studies by Ngulube (2009) indicate that issues of economic well-being of the country, demographic patterns and geographic dispersion of the populace make it a mammoth task to implement the strategy. It may be prudent for the nations that are affected to implement these projects in a phased manner, because a strong and reliable communication infrastructure is the bedrock for the success of any e-government project.

Ngulube (2009) argues that in developing nations, generally, communication infrastructure is available and accessible in cities and towns while in rural and remote areas the infrastructure is poor and sometimes inaccessible. Governments may not have requisite resources to address ICT infrastructure problems in rural areas. It is, therefore, important to court private sector participation in government efforts to develop both hardware and software infrastructures for e-government in these areas in partnerships with Universities in Zimbabwe.

Governments in both developing and developed nations need large computing infrastructure or high performance computing systems to deliver better e-government services to citizens. As stated by Ngulube (2009), there are also higher disparities in the affordability and availability of the computing devices in cities and towns and in rural and underdeveloped remote areas. According to UNESCO report (2005), due to lack of basic infrastructure such as electricity and telephone systems, people may not see it necessary to own computers and accessories even if they do afford them. The report further states that in order to overcome the challenges, governments worldwide are setting up common and shared community infrastructure such as internet kiosks and community information centres (CIC) to be accessed by citizens.

Governments can also use alternatives in making their services accessible to citizens in the form of cell-phones, cable television networks and other hand-held devices. To achieve this, it is, therefore, necessary for governments to partner with local institutions, notably in Zimbabwe, like Enhanced Communication Network (EcoNet), Network One (NetOne), Telecel and African Communication (Africom) and Universities whose mandates are science and technology like National University of Science and Technology (NUST), and Chinhoyi University of Technology (CUT) in setting up CICs, computer centres and internet kiosks, whereby citizens go and access the e-services efficiently.

Because projects of this magnitude are capital intensive to undertake, African governments need to partner with the private sector to assist with financial resources and abundant skills they possess to drive the projects. It is however pleasing to note that the Zimbabwean government acquired the state of the art super computers with high performance computing capabilities but as stated before awareness about their use and their strategic impact in the civil service becomes necessary.

Research methods

In order to ascertain the current state of ICT infrastructure, level of government support and the implications to service delivery in the public sector the study addresses the following questions:

- What is the current state of ICT infrastructure in Zimbabwe?
- What is the level of government commitment and support to ICT infrastructure development and modernization?

Mixed methods in the form of survey questionnaire and case study were the research designs used in the study. A semi structured questionnaire was administered to the following government departments employees: Zimbabwe Revenue Authority (ZIMRA) at Beitbridge (BB), Chirundu (CHI), Nyamapanda (NYA) border posts and Harare International Airport (HIA), Immigration Department employees at

BB, CHI, boarder posts, HIA inland port and Head Office (HO) and the Registrar General (RG)'s department employees in the following towns: Gweru (GWR), Harare (HRE), Mutare (MTRE), Masvingo (MSV) and Bulawayo (BYO). Face to face interviews were conducted with regional managers at the ports and towns understudy and senior executives at ZIMRA, RG's office, ZINARA and Immigration department.

To argument the interviews, observations with a specific observation protocol were conducted at BB, CHI, NYA, HIA ports of entry for ZIMRA and Immigration department. Similar observations were also conducted at ZINARA tollgates at Chivi, Mashava road, Shurugwi road, Nyabira and Shamva turnoff and the some regional offices around the country.

A total of 217 questionnaires were received giving 77% response rate. Similarly a total of 22 interviews were conducted with regional managers and top executives in the government departments giving an 88% response rate. 952 valid observations of research subjects actual were conducted at the boarder posts, ZINARA tollgates and the RG's departments understudy giving a response rate of 81%. The overall average percentage response rate was 82% of the sample.

Research findings

Qualitative Results

Observation at the Beitbridge boarder post which houses ZIMRA, Immigration Department and other government agencies show that ICT infrastructure is now inadequate as it was designed for not more than 1500 volumes of passenger traffic at the time when it was installed. With 5000 to 8000 customers passing through the boarder post daily, the infrastructure can no longer cope.

Interviews with the regional managers at the boarder posts show that ICT infrastructure is inadequate rendering the service management in-effective and causing queues which could have been eliminated by the efficient ICT systems.

Observations also at all boarder posts understudy reveal that the ICT systems are not integrated and coordinated with other important government agencies such as Criminal Investigations Department (CID) for clearing vehicles, checking overstayed stakeholders, Security agencies for counter terrorism, Port Health for controlling transmission of communicable diseases like Ebola, Environmental Management Agency (EMA) for controlling substances harmful to the environment, the banks for electronic transfer of funds and other e-services among others. Even at the only one stop boarder post Chirundu, services are not linked, despite the fact that ZIMRA

has the capacity to link all services and can be accessed electronically through their ASyCUDA world ICT led system.

The immigration station manager at Chirundu commenting on ICT integration said,
“ICT is not yet there if we are not online. We need integrated ICT systems with police, ZIMRA and others so that these State agencies can also control criminal activities in real time.”

The Immigration station manager at Beitbridge supporting on the integration of ICT systems said,

“Immigration wants a system where a passport is scanned and the requisite visa fee payment done immediately. System should generate an electronic printed visa and receipt instead of a second officer doing the receipting, this will cut on clients waiting time.”

Observations at the Harare International airport also show that services are not integrated and harmonized with other important government agencies. There is no provision inside the port for, e-services like e-ticketing. The systems become chocked if two or three airlines arrive at the same time, indicating that the available ICT led services fail to cope with large volumes of traffic. However on 30 November 2014, the finance minister was quoted in the Daily News on Sunday saying that, by June 2015, Zimbabwe would have introduced a one-stop border system on the Zimbabwean side at Beitbridge to improve clearing processes, movement of travellers and enhance revenue collection. He went on to say:

“The facility will entail coordination and cooperation among all agencies involved in regulations requirements at the ports of entry... The electronic single window platform will guarantee access rights to view and monitor enforcement of regulations by all relevant agencies through an interface to the ASyCUDA world systems under ZIMRA”.

Observations at ZINARA tollgates understudy also show that although they migrated from manual system to ICT led one, long queue are still observable at these tollgates especially at pick hours. The system has not been upgraded to e-tolling and traffic management (ETT) system which completely eliminates queues by automated e-tolling system.

Whilst the Registrar General (RG)'s office has gone far in having ICT led systems, shortages of resources are a stumbling block to fully modernize the current ICT system in the department. The department, however, embedded an ingenious automated text messaging system to alert passport applicants that their passports are ready for collection. However, the state of ICT though inadequate and needs constant modernization, has greatly reduced queues in the department country wide.

Employees in the immigration department though agreeing that government is committed to infrastructure development and modernization in the public sector, observations at the ports of entry understudy reveal that current ICT systems such as the immigration profiling system also need massive upgrading so as to be integrated with other agencies at the ports of entry to improve service delivery. The Registrar General's department employees in the births and deaths section corroborate the sentiments by immigration department employees that government is committed to ICT infrastructure development and modernization. This is revealed by the Masvingo provincial registrar who when commenting on government commitment said, *"Government funds the implementation of ICT within the department through the Modernization Department in the office of the President and Cabinet (MDOPC)"*.

Interviews with the ZINARA's acting CEO revealed that government funded the migration from manual tolling system to ICT based system hence showing government commitment to ICT development in Zimbabwe through MDOPC.

Interviews with senior management in the Ministry of ICT, Posts and Courier Services reveal that the current state of ICT in the public sector needs continuous upgrading but funding is a serious challenge.

Commenting on government commitment to ICT the principal director in the ICT ministry said,

"the government formed ICT ministry to put functions of ICT under one roof and the major policy driver of ICT at policy level is Office of the President and Cabinet (OPC), he further commented that "at policy level through OPC we identify ICT flagship projects hence ministry of ICT provides technical expertise".

The fact that the government created two arms that is, the MDOPC and a fully-fledged ICT ministry is a clear testimony that the government is committed to ICT infrastructure development and modernizing the existing ones. This was also corroborated by the acting director in the modernization department in the office of president and cabinet that the creation of the ICT ministry was a testimony of government commitment to ICT development in the public sector in Zimbabwe.

Quantitative results

The results for the government of Zimbabwe (GOZ)'s commitment to ICT infrastructure development and modernization are summarised in fig 4, tables 1 and 2 below. The infrastructure development and modernisation variable was also tested using Pearson Chi-Square statistic to find out if there was a positive relationship or not between the variable and government commitment to ICT infrastructure development and modernisation development.

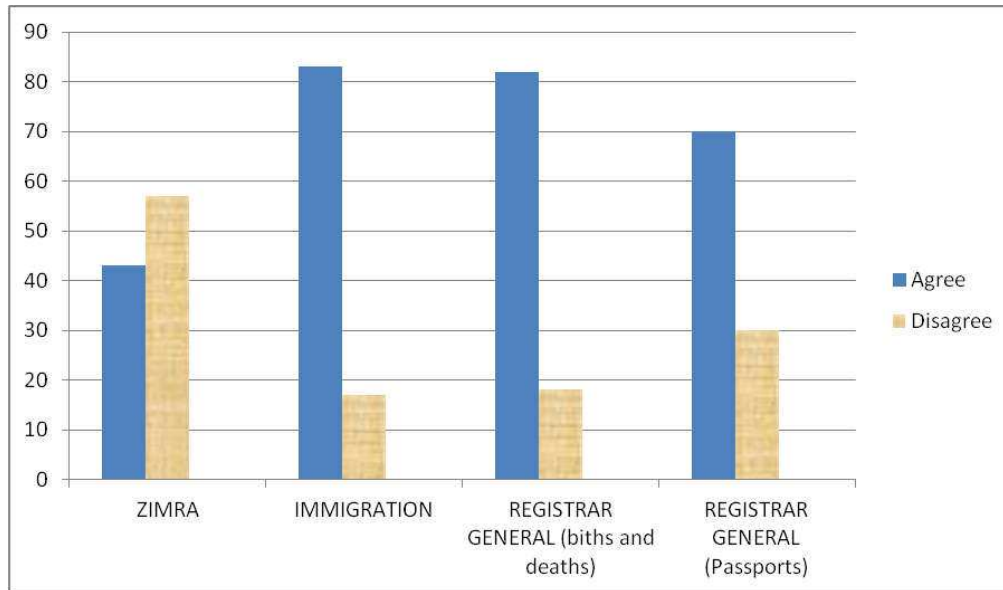


Figure 1 Government commitment to infrastructure development and modernization.

The results in the figure 1 show that an average of 57% of the ZIMRA call face employees at the targeted ports of entry agree that government is not committed to support ICT infrastructure development and modernization in the civil service.

Testing e-government infrastructure development and modernisation and government commitment, for ZIMRA, Immigration and RG's department.

The results in tables 1 and 2 summarise the findings.

Responses from ZIMRA employees as shown in table 1 show that there is a positive relationship between e-government infrastructure development and modernisation and government commitment as indicated by the following two border posts, that is, Chirundu with 0.004 and Nyamapanda with 0.044. Chirundu border post is a modern one-stop border post housing customs offices from both Zimbabwe and Zambia, and Nyamapanda is simply because the border post is very small and with very low traffic. But responses from immigration department employees also in Table 1 reflect a different perspective as they agree that there is no relationship at all between government commitment and e-government infrastructure development and modernisation as indicated by Beitbridge with 0.134, Chirundu with 0.263, Headquarters with 0.143 and Harare International Airport with 0.941 P values.

Results in Table 2 show that all other regional offices, save for Gweru, indicate that there is no positive relationship between ICT infrastructure development and modernisation and government commitment to e-government in the civil service. However, results from Gweru regional office show that there is a positive relationship between government commitment and infrastructure as indicated by a rating of 0.003. The reason is that the provincial office in Gweru is housed at the new government complex, built in the 1990s.

Table 1 P values for ZIMRA and Immigration departments understudy

Table 1.2 P values for the Registrar general's departments of births and deaths and passports.

Discussion of findings

The quantitative and qualitative investigations have shown that ZIMRA's Automated System of Customs Data (ASyCUDA) world is underutilised as it has the capacity to integrate with other agencies like Immigration, Criminal Investigation Department (CID), Environmental Management Agency (EMA), Port Health (PH) and security services to increase efficiency in revenue collection for the nation.

The study revealed that ZINARA has state of the art ICT led tolling system but it needs to be upgraded to e-tolling and vehicle management system to eliminate queues caused by among others the unsuitable left hand driven trucks and integrate the system with Central Vehicle Registry (CVR). Evidence has shown that ZINARA queues are not as a result of technology but clients pay toll fees using larger denominations like USD 100 posing change challenges and left hand driven trucks also cause delays as the driver has to disembark to go and pay toll fees.

On the other hand the Registrar General's office's ICT system is not integrated with hospitals such that those seeking birth certificates have to go to the nearest registry after having been given birth notification number at the hospital. The passport automatic text notification system has greatly reduced queues.

The creation of a fully fledged ICT ministry and the Modernization Department in the Office of the President and Cabinet to spearhead ICT prospects is a clear testimony that government of Zimbabwe is committed to ICT infrastructure development and modernisation.

By identifying ICT flagship projects through MICT, it is clear that the Zimbabwean government wants the nation to be an e-economy in the long run.

Conclusion and Recommendations

An inter-ministerial ICT taskforce headed by ICT ministry and MDOPC is required to spearhead flagship projects. The taskforce must be mandated to source funds through partnering with private sector and Reserve Bank of Zimbabwe for e-government infrastructure bonds. ASyCUDA world system should be integrated with e-visa, SAP, IPS and other agencies to improve service delivery in the public sector in Zimbabwe. ZINARA tolling system has to be upgraded to e-tolling there by segmenting the market and enjoy prepaid revenue generated through that strategy. ZINARA has to create awareness on the need of its stakeholders to use loose money to pay toll fees as they pass through the tollgates to avoid queues. The MDOPC must be capacitated financially if its goals of monitoring and evaluating ICT projects are to be realized.

The activities at the RG's office have to be harmonized for people to enjoy e-services under one roof. The passport collection must be decentralized to districts without compromising security.

References

Bwalya, K.J. (2009) *"Factors affecting adoption of e-government in Zambia"* *The Electronic Journal on Information Systems in Developing Countries*. Vol 38.4, 1-13

Farelo and Morris (2006) *"Status of E-government in South Africa"* Research paper, STAfrica Conference, Pretoria, South Africa

Mehrtens, J. et al (2001) *"A model of internet adoption by SMEs"* *information and Management*, 39, 165-176

Ngulube, P. (2009) *Preservation and access to public records and archives in South Africa*. Saarbrücken: Lambert Academic Publishing AG & Co.KG.

Zhu, J. J. H. & He, Z. (2002) *"Perceived characteristics, Perceived Needs and perceived Popularity: Adoption and use of the internet in China"* *Communication Research*, 29 (4), 466-495.

ZimAsset (2013) *Zimbabwe Agenda for Sustainable Socio-economic Transformation 2013-2018*.

Zimconnect: *E-Government Framework and Implementation Strategy 2011 - 2015*

www.southafrica.info (Accessed Aug 2014)

www.whitistechtarget.com (Accessed 2015)