The Adoption of E-Government in the Department of Home Affairs – Unpacking the Underlying Factors Affecting Adoption of E-Government within the Selected Service Centres in Limpopo Province, South Africa

KENNETH S NOKELE
Tshwane University of Technology
Department of Public Management
sonakenny@gmail.com

RICKY M MUKONZA
Tshwane University of Technology
Department of Public Management
MukonzaRM@tut.ac.za

Abstract

Recent developments in South Africa show that since the introduction of e-government policy initiatives within state institutions, there have been major advances made in terms of e-services. The reviewed literature focused much attention on Government to Citizens (G2C) e-services with little on how the affected departments communicate internally, Government to Government (G2G). Most user departments, such as the Department of Home Affairs, which is the contextual focus of this article, have demonstrated that the adoption of e-government has not been an easy ride, meaning that there are influential factors that cannot be overlooked. The current study investigated the factors affecting the adoption of e-government in the selected DHA centres in the province of Limpopo. A qualitative approach was employed with data collecting tools such as (face-to-face) interviews used to glean information from nine officials, three from each of three centres, consisting of management and help desk (junior) officials. The study confirmed that there are a number of common factors affecting the adoption of e-government in those centres. These are: age, poor infrastructure, language barrier and motivation. This article proposes a number of solutions that can enhance adoption of e-government in the DHA.

Key words: e-government, e-participation, e-services, Home Affairs, South Africa

Introduction

The use of Information Communication Technologies (ICT) by governments to facilitate public administration and improve access to services is no longer a theoretical contemplation but a reality. As such, the adoption of e-government in most contemporary democratic governments such as South Africa in the 21st century confirms the assumption that e-government and service delivery are necessary binaries and their usage can be intertwined. This article is extracted from the study that investigated factors affecting the adoption of e-government by the Department of Home Affairs (DHA) in South Africa's Limpopo Province.

Judging from the recent e-government development index in Africa under which South Africa is ranked number 5 – coming after Seychelles, Mauritius, Tunisia and Egypt (United Nations, 2018), it can be argued that the level of recognition and use of technology either by government or citizens (e-participation) is improving, but this does not imply that there are no challenges. In other words, the above status or ranking does not necessarily reflect the dynamics involved in the Government to Citizens (G2C), Government to Government (G2G) and Government to Business (G2B) e- government communications [these types of e-government communications will be explained later in this article]. A larger part of literature has focused on G2B and G2C with little focus on G2G. This article seeks to fill this void in the literature by identifying and understanding factors affecting e-government in the DHA.

The study focused on the Department of Home Affairs (DHA) in Sekhukhune, Waterberg and Capricorn service centres. The DHA offers a multitude of services to the citizens of South Africa, as well as foreigners, who wish to visit, work or stay in South Africa. The Department's core functions are classified under civic and immigration services. Civic services include maintaining the National Population Register (NPR), which means managing the birth, marriage and death records; determining and granting citizenship; issuing travel documents and passports; and issuing identity documents (ID) (DHA, 2014:55-24). This article will report on the findings of the study. Below, a background on e-government development in Africa is outlined.

Background on E-Government Development in Africa: The Index and Ranking in the Global Community

The state of e-government in Africa varies from country to country. In Zambia, implementation of e-government is still in its infancy, without a dedicated strategy in place (Bwalya and Healy, 2010). Zambia has a deficiency of e-government capacity with an index of 0.76, below many other African countries such as Zimbabwe, Congo and South Africa. Botswana is currently considered one of the ICT usage power houses in the sub-Saharan Africa (Bwalya, 2009). However, it still lags behind countries such as Tanzania, South Africa

and Lesotho due to lack of both a formal e-government strategy and a problem of trust in the e-government technology employed by both citizens and employees. Thus, citizens are still reluctant to fully utilise the e-government services. There is also a problem of limited education, making it hard for people to access e-government information and exchange views with government officials for decision making. Bwalya and Healy (2010:87) argues that almost everywhere in Africa it can be shown that the level of adoption of ICTs, and correspondingly e-participation, is still very low as most countries shun e-govt despite having to pay the cost of not introducing it'.

Mauritius, South Africa and Seychelles are some of the countries that have dedicated e-government projects whereas Mali and Niger have the least developed e-government institutions (Kitaw, 2006:10). Other countries, such as Botswana, Uganda, Tanzania, Namibia, Nigeria, and Kenya, have also started drawing e-government development plans and have one or two e-government applications running online (UN e-Government Survey, 2010:18). All of these countries have at least a government portal with static information display as an entry point to accessing government information and guidelines on accessing public services. Two-way communication interactivity brought about by dynamic Web content, as detailed in most of the maturity models discussed above, is missing even among the leaders of e-government implementation in Africa. The rest of the countries are mostly at the ICT policy development levels (Gerster Consulting, 2008 in Kutiyi, 2013). Seychelles and Mauritius are the countries with the best e-government implementation strategies on the continent. In general, Africa has seen improvement in e-government with countries in the region looking to increase their online presence through developing websites for government ministries and agencies. Table 1 below shows the top ranked countries in Africa.

Table 1: Top ranked countries in Africa on e-government development

		e-Government development index		World government development ranking	
Rank	**Country**	**2018**	**2012**	**2018**	**2012**
1	Seychelles	0.5192	0.4179	84	104
2	Mauritius	0.5066	0.4645	93	77
3	South Africa	0.4869	0.4306	101	97
4	Tunisia	0.4833	0.4826	103	66
5	Egypt	0.4611	0.4518	107	86
6	Cape Verde	0.4297	0.4054	118	106
7	Kenya	0.4212	0.3338	119	124
8	Morocco	0.4209	0.3287	120	126
9	Botswana	0.4186	0.3637	121	117
10	Namibia	0.3937	0.3314	123	125

Source: Adapted from United Nations (2018)

Table 1 above shows that Seychelles (0.5192) climbed several points to number one in the region in 2018, followed by Mauritius (0.5066) and South Africa (0.4869). It is notable that the leading African countries increased their e-government development index value in 2018, but lost in comparative performance around the world, except for Kenya and Morocco, which gained in the world rankings from 124 to 119 and from 126 to 120 respectively. Tunisia (0.4833) and Egypt (0.4611) declined in rank substantially, as did Cape Verde (0.4297) because their improvements did not keep pace with those of other countries around the world. Having outlined the e-government maturity levels on the African continent, it is important to give a snapshot view of e-government challenges in Africa. Therefore, the next section presents e-government challenges in developing countries.

Understanding the Nexus between Information Communication Technology, E-Government and E-Governance in South Africa – Literature Review

E-government and e-governance – differences and connexion

Conceptualising e-government requires one to interrogate and clarify other related concepts such as e-governance that may be interpreted as similar to it. There are no generally accepted fit-all definitions of electronic governance (e-governance) and e-government. As such, these words are used synonymously and interchangeably. However, in this study, these terms are strictly distinguished. In order to obtain a succinct understanding of what e-government and e-governance entail, a discussion follows of the fundamental views of these two terms as evidenced from the literature review emanating from different e-government researchers. Palvia and Sharma (2007:1) have offered an excellent account of what e-government and e-governance mean. E-government involves the delivering of government's (national or local) information to the general citizenry, businesses or other government agencies utilising new technologies and other digital means. E-government allows pervasive access to government's information resources, replacing the traditional operations of physical government offices with their characteristic red tape; facilitates participation of citizens in public policy-making processes; facilitates improved productivity; and enhances cost savings (Palvia andSharma, 2007:6).

E-governance focuses on administration and management of resources within the organisation. Examples of e-government activities might include e-procurement of government tenders, electronic voting (e-voting), tax filing (e-filing), and payment of bills. On the other hand, e-governance includes applications that manipulate information to calculate retirement benefits, access to important public service delivery applications, and collaboration among government employees (Bwalya, 2010:59).

In light of this information, some of the differences between the characteristics of e-government and e-governance are noted and listed in Table 2 below.

Table 2: Distinction between e-Government and e-Governance

e-Government	e-Governance
• **ICT superstructure and institutional approach to public service delivery systems using ICTs** • **Rules and roles in public service delivery frameworks** • **Implementation of e-government** • **Electronic productivity (e-productivity)** • **Electronic voting (e-voting)** • **Electronic workflow**	• System functionality and performance • Business processes for public service delivery • e-Consultation • e-Participation • Coordination of public service delivery systems • Goals and outcomes

Source: Extracted from Bwalya (2010:42)

Development, Adoption and Implementation of E-government Initiatives in South Africa

In South Africa the use of electronic channels including the Internet in delivery of government services has been actively promoted since early 2000. The country's first e-government policy document launched in the year 2001 provides details of government's vision regarding the use of Information and Communication Technologies (Department of Public Service and Administration, 2001). Research carried out by Netchaeva (2002:467) and Silcock (2001:88) note the crucial role that ICTs are playing in improving work productivity and creativity in South African government departments. According to the latter, the presence of e-government initiatives has visibly improved efficiency, increases in the transparency and accountability of government functions, convenient and faster access to government services, improved democracy and lower costs in respect of administrative services.

It is unarguable that over the past decades significant progress has been made in ensuring availability of government services electronically. For example, currently all mainstream national and provincial government departments and a majority of municipal governments have web presence that is used to provide a comprehensive array of information to members of the public (*see* Government Communication Information Services (GCIS), Online). Some of the information documents that can readily be found on most government department websites include legislative information, annual reports, selected speeches by government officials, media releases, green and white papers, as well as policy documents**.**

The South African government, under the leadership of former President His Excellency Mr Thabo Mbeki, recognised the potential benefits to be gained from harnessing the power

of ICT, which could be used to create a workforce to contribute to a dynamic economy and to participate in the information society. Government departments and agencies such as the Department of Public Service and Administration (DPSA) and the State Information Technology Agency (SITA) conducted stakeholder briefing sessions on the Gateway Project. This project was aimed at providing 24-hours-a-day, 7-days-a-week government service delivery to citizens no matter what their geographical location might be (Bridges, 2002:2). Apart from accessing information from mainstream government departments, citizens are also able to access a number of downloadable government forms online including application forms for identity cards, passports, marriage certificates, and government jobs. Some departments are able to offer online application services to citizens, thereby making it easy for people to submit applications without the need to visit their offices. For example, the Department of Labour allows for citizens to register their domestic workers for the Unemployment Insurance Fund online. Citizens are also able to check the status of different applications online, including the application status of identity documents or passports with the Department of Home Affairs.

Despite main relevant interventions that have been put in place to promote the proliferation of e-government in South Africa, there are also many challenges that have been faced (Naidoo & Van Jaarsveldt, 2004:139). Implementing an electronic strategy is one such challenge, which is further complicated by the language and cultural diversity of the people of South Africa (Naidoo & Van Jaarsveldt, 2004:2). Another challenge that has been evident for a long time has been the lack of willingness of the government departments and businesses to conduct business online due to the lack of a predictable legal environment governing these online transactions. Fortunately, there is hope in this regard as some Acts of Parliament regarding this issue are slowly and with much dedication being implemented. Further, most of the websites exist as information silos without due integration with other public services offered by other departments.

Types of E-Government Applications

The role of e-government technologies entails three main forms of interaction with three main distinguishable target groups, namely, citizens, businesses and other government agencies (Makene, 2009:35). The different implications of e-government are evident depending on what kind of e-government model is being implemented. Kokkinaki, Mylonas and Mina (2005:2) state that there are many forms of e-government: Government-to-Government (G2G), Government-to-Business (G2B), and Government-to-Citizen (G2C), and these forms present the different stakeholders that participate in the different interactions brought about by e-government. In reviewing literature on the different applications of e-government, the researcher gains insights into the nature of services offered via the Limpopo DHA online applications and queries. The following subsection outlines the detailed specifications of each of these e-government application types.

Government-to-Citizens (G2C)

This is type of service represents all activities directed at citizens by government or its agencies. Citizens are given the chance to effectively participate in the governance protocols and influence the direction of policy using ICTs. G2C facilitates appropriate citizen-government interaction and is generally perceived to be the primary goal of e-government). Thus, Naidoo (2007:323) refers to G2C services as e-citizens services and argues that they are initiatives connecting citizens to government while improving relationships as well as the services rendered to the people. The Department of Home Affairs online application system under study presents this G2C application, which facilitates improved interaction with citizens and the electronic delivery of services by the DHA in Limpopo province, thereby reducing the need for physical queuing for services at various DHA offices.

Government-to-Businesses (G2B)

G2B allows interaction between the government and different business establishments. This enables the business community to participate in policy formation and to be abreast of government information such as memos, policies, rules and regulations. The DPSA (2001) refers to this application as e-society services, which are described as how government strives to improve interactions with business and society through use of technology. G2B also involves e-procurement, which is a government dispensation for the exchange and purchase of goods and services (Palvia & Sharma, 2007:5). Brynard (2002) addedthat it helps to open up opportunities for citizens and private companies to offer services directly to government in an accountable and transparent manner. Correspondingly, e-procurement enables cost savings on the part of the government as there are no middlemen or agents in the procuring process (Mimicopoulos, 2004:3). This application of delivery is covered by the new DHA online application where tenders are given to financial institutions to enable citizens to apply for their smart ID card in various banks in South Africa.

Government-to-Government (G2G)

This represents activities done within government in connection with its various agencies. G2G enables different government line ministries and agencies to seamlessly integrate, thereby facilitating faster and efficient public service delivery and transparency (Bwalya and Healy 2010:52). According to Naidoo (2007:323), this interaction is often called e-administration, meaning that G2G makes use of technology to improve the internal administration processes of government to put into practice economic measures that promote the efficiency of government staff.

Effective e-government implementation demands that the internal systems and procedures that allow collaboration among different government departments be strengthened before electronic transactions with citizens and businesses can be successful.

It is worth noting that G2G is a good example of e-governance as it strives to improve efficiency of public service delivery from within the internal business processes (Bywala and Healy, 2010:53).

The internet is regarded as the most persuasive means of implementing e-government, although the concept e-government is not only accomplished over the internet. Hence the Department of Home Affair's e-services initiatives, although mainly based on the internet (online), also combine other means of e-government through the incorporation of mobile technology (m-government). Thus, the SMS system is also used to convey information to applicants' mobile phones at each stage of the application process. For example, customers can enquire by SMS, by simply sending keywords (ID (for Identity Document i.e9010035752080) to a code (32551) and they will receive the status sent directly to their cell phone via SMS (DHA, Online.

General E-Government Challenges Facing Typical African States: Critical Areas of Concern to be addressed

The implementation of e-government in African developing countries (South Africa included) is generally more problematic than those in the developed nations. This is exemplified in the study conducted by Ndou in 2004 whereby web-based research of 15 case studies in developing countries (Argentina, Brazil, Chile, China, Colombia, Guatemala, India, Jamaica, Philippines) was explored. The study focused on countries that had implemented e-government initiatives. The findings confirmed that e-government indeed offers opportunities for governments, however, the ability of developing countries to reap the full benefits of e-government is limited and is largely hampered by the existence of a myriad of political, social and economic hindrances (Ndou, 2004).

Bwalya (2009) identified the following challenges in regard to e-government development; resistance from both employees and citizens, lack of ICT infrastructure for accessibility to e-government projects, lack of IT skills among human resources, especially in rural areas, and overreliance on donor support to fund e-government development. In addition, Cogburn and Adeya (1999:4) posit that the key challenges to ICT implementation in Africa broadly consist of "(1) the development of information and communications infrastructure; (2) human resources development and employment creation; (3) the current African position in the world economy; and (4) insufficient legal and regulatory frameworks and government strategy". For example, corruption as one of the challenges hampering e-government implementation, especially where the developing country's political landscape is characterised by political elites who influence the direction of ICT initiatives. Van Dijk and Hacker (2003) add that access to ICTs is also a problem. This is so because access problems constitute mental access, skills access, material access and usage access (Fuchs & Horak, 2008; Van Dijk & Hacker, 2003).

In addition to the foregoing, the technological determinism in most ICT implementations is perhaps the key challenge. ICTs in the developing world are often naively adopted without sufficient consideration of the social, cultural and historical context in which implementation occurs (Braa, Monteiro & Sahay, 2004). Kitaw (2006) goes on to add literacy levels to the list of challenges, stating that low literacy levels hinder the types of media available for e-government implementations. Overall, there appears to be no consensus in literature on what the main challenges are in developing countries, although it can be argued that the challenges facing governments are contextual. The challenges facing e-government can hence be broadly categorised into social issues, economic issues and technological issues, which rightly encompass all the challenges highlighted in the literature (Signore, Chesi & Pallotti, 2005).

Furthermore, in implementing e-government in developing countries, one is likely to face the following challenges: limited ICT infrastructure, especially in the remote rural areas; non-user friendly design of websites for e-government due to limited computer literacy levels; low education levels, which have also increased the rate of unwillingness to use e-government because the content is mainly presented in non-local languages; an inadequate human resource base trained to handle e-government projects; donor funding dependency affecting the sustainability of the projects; lack of a formal e-government strategy; and ignorance of citizens about the importance of e-government due to limited sensitisation, promotions and awareness (Bwalya, 2009).

Table 3: Overcoming e-government implementation challenges

Challenges	Recommendations
1. Infrastructure development	• Develop projects compatible with a nation's telecom infrastructure • Use public access kiosks and mobile centres if telecommunication density is low
2. Law and public policy	• Give legal status to online publication of government information • Clarify laws and regulations to allow electronic filings with government agencies
3. Digital divide	• Provide communal access through village computer centres or kiosks • Combine access and training
4. E-literacy	• Special attention should be given to groups difficult to integrate (suchas women, immigrants, and the elderly) • Provide aides at access points who can train citizens in basic computer Skills
5. Accessibility	• Establish as a legal requirement that the government must adopt technology to assist the disabled • Set performance criteria and measure progress
6. Privacy	• Educate and train government officials on the importance of privacy • Design applications that integrate privacy protections • Follow 'fair information practices'. Minimise the collection and retention of personal information
7. Security	• Designate a senior official responsible for computer security • Continually assess systems to make sure that security precautions are being implemented • Back up information regularly and store backups in a secure location • Provide on-going training to employees on computer security
8. Transparency	• Highly-placed public officials can expedite transparency and accountability efforts by making their offices positive examples of openness • Post online rules, regulations and requirements for government services (such as requirements for obtaining a licence) to minimise subjective actions by officials
9. Records management	• Encourage data sharing and co-operation between government departments • Streamline online record keeping processes to make the transformation to online publication easier

Source: Adapted from Almarabeh and AbuAli (2010:32-34)

As mentioned above, the recommendations shown in the table above may be used to assess the maturity levels of e-government adoption. In addition, research shows that the above identified challenges can be countered against. In that regard, Mpinganjira (2013)agreed that in order for government to effectively do this, government departments need to ensure that more people continue to hold positive attitudes towards e-government. This can be done by, among other things, paying particular attention to factors that impact on attitude including perceived ease of use in order to positively influence users In terms of perceived ease of use, it is important for government departments to look at factors that may have an impact on perceived ease of use of their e- services. While some studies are quick to point to the contribution of high illiteracy levels to low computer efficacy in most African countries as one of the biggest challenges associated with perceived use of each , it is important for government departments to bear in mind that there are other factors that may also impact on the perceived ease of use of e- government services (Mpinganjira, 2013:335). In addition, Mukonza (2015:226) points to the fact that one of the active actors in this is education. Education appears to significantly influence adoption of e-government services. The author further itemised that this can be seen from the fact that the percentage of people that have used e-government services seems to rise as levels of education rise (Mukonza, 2015). These recommendations are guiding principles of how assessment of e-government maturity should be done. The following section explains the adopted research methods in this study.

Research Methods and Design

This study was carried out at the Department of Home Affairs, and the research design used was a qualitative case-study design. This design is known as research that produces descriptive data from people's own written or spoken words and observable behaviour (Creswell, 2018; Cook & Cook, 2016; De Vos, Strydom, Fouché & Delport, 2011). As such, the design was helpful for this study especially because the main intention was to understand factors affecting e-government adoption in the selected DHA service centres from the officials' perspectives and experiences. The three chosen centres were Capricorn, Waterberg and Sekhukhune. The Capricorn centre was chosen as representative of a semi-urban area, and because it predominantly services clients that may bring forth the cosmopolitan dynamic of the inner city, since most of them reside around the capital city, Polokwane. The other two (Sekhukhune and Waterberg) centres are rural-based centres and they were included in the study to help understand the state of e-government and the crises faced in rural centres of DHA.

In order to glean relevant data to effect the aforesaid aim, firstly, a purposive sampling method, which according to De Vos et al. (2011) allows the researcher to exercise own discretion in selecting proper and suitable research objects, was applied to select a total of nine officials (three from each centre) who were comprised of both management centre and frontline officials. All these participants were subjected to semi-structured face-to-

face interviews, which allowed the researcher to ask both primary and probing questions, but most importantly, the collected data was analysed and triangulated against findings from the reviewed literature in order to balance the validity of the empirical findings. In addition to validation of the study, and as cautioned by Tshamano, Shopola and Mukonza (2021:06), where interviews or contact is made with [a group of] participants in research, the question of ethics should always be taken care of. Indeed, in the study that the current article is extracted from, ethical clearance and all necessary permissions were sought from both the DHA and the Tshwane University of Technology.

Findings from Empirical Evidence and Discussion

In addressing the objective of this article, which is to establish factors affecting e-government adoption at the DHA centres in Limpopo Province, this section will present and discuss the findings from the empirical investigation. Below is the brief background information of the participants.

Background information of the participants – characterisation

The rationale in collecting the background information of the participants in this study was to determine their age, level of education, etc. and how these factors affect adoption of e-government in the participant's respective centres. Of the 15 targeted officials, only nine availed themselves for interviews. There were three selected centres (Waterberg, Capricorn and Sekhukhune), and only three participants per centre were interviewed. The majority of the participants were female with six of them working as Community Help Desk clerks. With the exception of two, all the interviewed clerks were over 40 years of age. The remaining three males worked as centre managers and were over 50 years of age.

Factors affecting e-government adoption in the DHA Waterberg, Capricorn and Sekhukhune Centres

As evidenced in the literature (Bjalwa, 2009; Mukonza, 2015), there are numerous factors, ranging from e-government policy to infrastructure development, that are central to the adoption and implementation of e-government. In the box below is a summary of factors affecting e-government adoption in the DHA selected centres.

Box 1.1: Factors affecting e-government in the DHA

Policy on e-government with DHA
Age
Previous experience
Motivation
Poor infrastructure development

Source: Authors' own compilation, 2021

The e-government policy factor

The majority of participants admitted that they are aware of the National e-Government Strategy that formally came into effect in 2017. However, mixed views emerged, with some indicating that the strategy had never been funded and therefore remains, in the words of Participant 1, who is a Centre Manager, aged 51, "just mere trophy that will be shelved for ever…a plan must have financial commitments if it is to be achieved". What this participant raised is the willingness to convert policy mission to action, which is the same old practice that many researchers and policy analysts such as Graham (1971) and Theletsane (2016) have noted and cautioned against. That is, the ability to craft many public policies and the limited ability and capacity to implement. It appears that the DHA does not fully fund its strategies.

Concurring with the participant above, managers of the other two centres raised similar challenges that they are faced with regarding e-government. They cited poor commitment to the implementation of the e-government strategies; a serious lack in terms of budgetary resources to fund e-government programs to capacitate officials so that they are efficient and effective; and poor community or client participation. As noted by the United Nations Secretariat Department of Economic and Social Affairs (2008a), the real benefit of e-government lies not in the use of technology per se, but in its application to the processes of transformation. However, and despite the above points, other participants in the DHA centres, particularly the Help Desk Officers, mentioned that the application of the e-government strategy is still new in the Department, implying that it is still in its infancy.

Despite the above, another challenge, which is more of a policy question that was raised during interviews with the help desk officers in the two rural centres, is the "language barrier", not necessarily with G2G but with G2C. A help desk officer aged 47 interviewed in the Sekhukhune centre said that "now we conduct our business in English…but our clients are Sepedi speaking people in majority. How this is a factor in the e-government thing is that it delays our services and the pace through which we communicate because now my boss will ask me to process certain documents …but you find that the applicant has filled in wrong information because they don t understand what is written there…therefore our daily performance is stalled".

The age factor

The majority of participants agreed that age is a constraint in the centres when it comes to G2G communications. This finding is consistent with Schuppan's (2009) conclusion that illiteracy is a critical factor in the implementation of e-government and it should be thoroughly dealt with. Adding to that, another participant from the Polokwane Centre, aged between 30 and 35, said "the adoption of e-government is marred by incompetence and resistance to use technology mostly by old age officials". The participant continued to say "the help desk officers must be trained on how to operate computers so that they are able to operate the newly introduced software programs". Another participant who comes

from Sekhukhune Centre confirmed the above assertion; he lamented "...to teach an older person how use (to) technology or computers is a piece of work, trust me, my man…". Officials aged over 50 were also interviewed. Most respondents in the centres have also raised issues that are critical to the adoption of e-government in the Department. They indicated that the training that they receive from the centres is poor and is worsened by the fact that there is poor infrastructure. A help desk officer from Polokwane said:

The Department must understand that we are representing e-services for this Department…without proper training we will fail. Their training methods are out-dated because we deal with technology, which rapidly changing day-by-day and if they train us using new systems that they themselves [management] do not understand, how can we become effective? (Help desk officer, aged between 45 and 50 from Polokwane Centre).

Cadonone (2008) put forward that the very first step of implementing e-government on a larger scale entails an assessment of the ability of both employees and recipients to communicate through ICTs and the buy-in. Based on the findings above, it appears that technological education or workshops among employees has not been done since the DHA switched to e-government.

Previous experience and motivation as factors

In cases where employees have used technology before, the findings show that such experience is a positive rather than a negative factor. Most officials who came from other departments or have been involved in technology before find it easy to relate to ICTs in the Department. Gudmundsdóttir (2005, cited in Jantjies, 2010) reiterated that more emphasis should be placed on the skills and opportunities required to utilise technology because employing people and giving access to the internet does not necessarily guarantee the ability to use or make use of the technology in order to bridge the digital divide. Officials need to motivate as well. Constant changing of programs without workshopping the staff is demotivating in most cases.

Poor infrastructure development as a factor

Infrastructure in the rural centres (Waterberg and Sekhukhune) is reported to be poor. One of the disturbing problems is that the "intranet is not fast as expected", one official who is also a centre manager revealed. The official added that sometimes they take time to respond to on-line communication and emails from clients because the internet and intranet are always down. For this, Hughes (2012) argues that having the department's website on the net does not mean communication is fast-tracked or government is present. The Department's website is not always active for G2G or government to community for one reason or another; officials have off hours, which normally means that the service is active for nine hours during weekdays. As the researcher observed, officials would come to work for the whole day but they sometimes work for only a few hours due in part to a poor intranet.

A study by Jantjies (2010), although focusing on implementation of e-government within the provincial government of the Western Cape, made similar findings on the factors confronting e-government, particularly from the side of the officials. The latter proceed to assert that infrastructure is a serious impediment to the implementation of e-government and that if government wants to be effective, it must invest in infrastructure. The current study found that the selected centres have an ailing infrastructure with old computers and programs. Results confirm that the Department is not investing sufficiently in the infrastructure, therefore it is difficult for employees to implement e-government as expected.

What can be done to enhance adoption of e-government in the selected DHA centres?

One of the disturbing challenges that were noted during interviews with street level officials in the centres was lack of knowledge, skills and training on the ICT projects. This article recommends that the Department put in place cost-effective measures as a way of increasing the capacity and skills of the employees in the centres. This will not be limited to creating internship opportunities so that young people are trained for ICT facilitation, but will increase the chances of e-government being implemented effectively.

In addition, and given the nature of the application of e-government in the DHA at the centres where there is resistance towards technology, it is recommended that the Department undertake an internal awareness campaign regarding the e-government paradigm (on-line applications and communications) within the Department. The awareness campaign must focus on people who are hampered by socio-economic and cultural factors such as old age and lack of education. It is through awareness or workshops that in such areas (Sekhukhune and Waterberg) the critical targets of e-government could be met. According to Heeks (2008), these targets are:

- Improved government processes (e-administration)
- Connecting citizens (e-citizen and e-services)
- Building external interactions (e-society)

The Department should train employees, particularly the help desk officials, whenever new ICT are introduced. This will maximise knowledge and awareness as well increased participation in the ICT programs.

It is recommended that the DHA use more resources on the development of ICT infrastructure as a form of investment. It is a known fact that communities in South Africa are still drowning in inequalities, particularly with the digital divide in Limpopo province. A maximised investment in ICT will ensure that there is sufficient access to technological

impetus necessary for e-government in the Department. This will also facilitate economic development in the society.

Moreover, South Africa has eleven official languages that are currently spoken in society. It was found that the Department's website uses English only as a medium of communication with internal and external communities. One participant lamented that this has become a barrier to participation on ICTs among community members and is stalling their efficiency as a centre. The same observation was made by Mawela, Ochara and Twinomurinzi (2017). These authors, although their study focused at a local level (municipalities), echoed the call made in this article that the DHA amend policy to cater for the different languages of their recipients. Interviews with help desk officials in the centres show that one of the barriers in the use of ICT programs was language, which could not be resolved by operations nor ICT officials because it requires policy change. This would be important for maximised community participation in the use of ICTs and e-government projects. The success of G2G can also be measured by the extent to which officials communicate relevant information that makes a direct contribution to service delivery.

Conclusion

This article sought to report on the study that was conducted in the DHA centres in the province of Limpopo in South Africa. The study looked into the factors affecting the adoption of e-government at three selected centres, namely, Waterberg, Capricorn and Sekhukhune. Various factors were identified and discussed and the dominant factor that the study showed needing serious attention is the ICT development in the centres. It is important that the DHA consider vast infrastructure investment and education in the implementation of ICT programs as critical facilitators of e-government. Averting challenges faced in the process would mean that the Department must heed outcomes from empirical research studies such as this one for positive options and recommendations to improve and predict future prospects and hindrances.

References

Almarabeh, T., & AbuAli, A. (2010). A General Framework for E-Government: Definition Maturity Challenges, Opportunities, and Success, Euro Journals Publishing, Inc., 39(1):29-42. Available from www.eurojournals.com/ejsr_39_1_03.pdf (Accessed 7 June 2018).

Braa,J., Monteiro, E. & Sahay, S. (2004). Networks of Action: Sustainable Health Information Systems across Developing Countries. *Management Information System*, 28 (3), pp. 337-362.

Bwalya, K.J. (2009). Factors affecting adoption of e-Government in Zambia*, The Electronic Journal on Information Systems in Developing Countries (EJISDC)*, *38*:1-13.

Bwalya, K.J., & Healy, M. (2010). Harnessing e-Government Adoption in the SADC Region: A Conceptual Underpinning, *Electronic Journal of e-Government*, *8*(1), pp. 23-32.

Cogburn, D. L., and Adeya, C.N. (1999). Globalization and the Information Economy: Challenges and Opportunities for Africa, Report from the United Nations Economic Commission for Africa.

Cook, B.G. & Cook, L. (2016). Research designs and special education research: Different designs address different questions. *Learning Disability Research & Practice*, 00 (0):1-9.

Creswell, J.W. (2018). *Research Design: International Student*, 5th edition. London: SAGE Publications.

De Vos, A.S., Strydom, H. Fouche, C.B. & Delport.C.S.L 2011. *Research at Grassroots: For the Social Sciences and Human Services Professions*, 3rd Edition. Hatfield. Van Schaik.

DPSA (Department of Public Service and Administration). (2001). Electronic government: The digital future – A public service IT policy framework [Online*].* Available: http://www.dpsa.gov.za/egov_documents.asp [2018, 15 November].

Fuchs, C., and Horak, E. (2008) "Africa and the digital divide", *Telematics and Informatics*, Vol 25, No.2, pp. 99-116.

Graham, H. (1971). *Public policy instruments: Evaluating the tools of public administration*. Toronto: Nelson.

Heeks, R. (2008). ICT4D 2.0: The Next Phase of Applying ICT for International Development. In *Computer*, 41 (6): 26-33. Doi: 10.1109/MC.2008.192.

Jantjies, S.O. (2010). An Evaluation of E-Government within the Provincial Government Western Cape (PGWC). Dissertation (Masters). South Africa: Stellenbosch University.

Kokkinaki, A.I., Mylonas, S., & Mina, S. (2005). E-Government Initiatives in Cyprus. E-Government Workshop '05. Brunel University. West London, UK.

Kutiyi, G.M. 2013. The role of information communication technology (ICT) small and medium enterprises (SMEs) in job creation in Kampala, Uganda. *Asia Pacific Journal of Business Administration*, 1 (5), pp. 75 – 82.

Mawela, T., Ochara, N.M., & Twinomurinzi, H. (2017). E-Government implementation: A reflection on South African Municipalities. *South African Computer Journal*, *29*(1), pp. 147-171.

Mimicopoulos, M. G. (2004). *E-Government funding activities and strategies*. Department of Economic and Social Affairs, Division for Public Administration and Development Management. United Nations: New York.

Mpinganjira, M. (2013). Diffusion of e-government: A citizen's perspective. *Journal of Public Administration*, *47*(2):500-517.

Mukonza, R.M, Maserumule, M.H and Moeti, K.B. (2015). *The adoption of information technology by the residents of the city council in Zimbabwe: Perspectives and challenges*, *1* (1):185-196.

Mukonza, R.M. (2014). *E-governance: a new paradigm* in Public Administration Journal of Public Administration Volume: 49(2):499-511.

Mukonza, R.M. (2015). *An empirical analysis of e-government in governmental relations and service delivery: A case study of selected Local Government Authorities in Zimbabwe*. D-Tech, et Phil. Thesis. Pretoria: Tshwane University of Technology.

Naidoo, G. & Van Jaarsveldt. (2004). Electronic government: Strategies and Implementations: e-Governance in South Africa: A perspective on initiatives, readiness and development issues. In Gupta, M.P. (ed.). Towards E-governance Management Challenges, 138-144. New Delhi. India.

Ndou V. (2004) "e-Government for developing countries: Opportunities and challenges", *The Electronic Journal on Information Systems in Developing Countries*, Vol 18, No.1, pp. 1-24.

Netchaeva, I. (2002). E-Government and E-Democracy: A Comparison of Opportunities in the North and South, Gazette. *The International Journal for Communication Studies*, 64(5), pp. 467-477

Palvia, S.C. & Sharma, S.S. 2007. E-Government and E-Governance: Definitions/Domain Framework and Status around the World. *Foundations of e-government*, pp. 1–12. doi: 10.3991/ijac. v5i1.1887.

Schuppan, T. (2009). E-Government in developing countries: Experiences from sub-Saharan Africa. *Government Information Quarterly*, *26*(1), 118-127.

Signore, O., Chesi, F. & Pallotti, M. (2005). E-government: Challenges and Opportunities. Available at https://www.comune.pisa.it/doc/cmg2005Italy.pdf [Accessed on 09 Jun. 21].

Silcock, R. (2001). What is e-Government? *Parliam Aff,* 54:88–101

Theletsane, K.I. (2016). Public policy analysis: A critical overview. *Journal of Public Administration*, *51*(2), pp. 184-193.

Tshamano,W., Shopola, A. & Mukonza, R. (2021). Unmasking merger problems from employees' perspectives: A case of the disestablished Aganang Local Municipality, South Africa. *Africa's Public Service Delivery and Performance Review,* Vol *9* (1), pp. 1-11.

UN e-Government Survey (2010). Leveraging e-Government at a time of financial and economic crisis. unpan1.un.org/intradoc/groups/public/documents/un/unpan016066.pdf (Accessed 06 April 2019).

United Nations (UN). (2010). E – government Survey: Leveraging e-government at a time of financial and economic crisis. Accessed at https://publicadministration.un.org/egovkb/portals/egovkb/documents/un/2010-survey/complete-survey.pdf. [08 May 2020]

United Nations Secretariat Department of Economic and Social Affairs. (2008). United Nations E-Government Survey 2012: E-Government for the People. UNPAN.

Retrieved from http:
//unpan1.un.org/intradoc/groups/public/documents/un/unpan048065.pdf
Van Dijk, J. and Hacker, K. (2003) The digital divide as a complex, dynamic phenomenon, *The Information Society*, Vol 19, No. 4, pp. 315-326.