



Investigation of Factors Influencing eGovernment Readiness in Limpopo Province, South Africa: A Case Study of the Department of Transport and Community Safety

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Abstract

E-government readiness is becoming an increasingly important need for public departments in South Africa, driven by the shift toward a digital economy. However, in most developing nations, geographic and rural characteristics hinder the implementation of e-government due to several factors. The case of the Department of Transportation and Community Safety (DTCS) in Limpopo Province, which was selected, is primarily rural, with several underdeveloped towns. The rollout of e-Government services is often accompanied by costs that render them exclusionary and limiting. This consequently affects the level of utilization of e-Government services by key stakeholders. There is a need for strategies that cater to the rural population who is at risk of exclusion through various forms of digital capitalism. The rural community lags in participating in an Internet-led economy because Internet data and digital tools are not universally accessible. This means that access to public services is now determined by digital inclusion and exclusion. Conclusions and recommendations for future research will be provided. – Remember the guide of abstract writing, thus revisit. My understanding is that your previous presentation resulted in this article and therefore you may keep the approved abstract.

Keywords: E-Government, Public Service Delivery, Digital Inequalities, Limpopo Province, South Africa.

INTRODUCTION

In South Africa, the development of information, communication and technology (ICT) infrastructure was not well developed until recently in the late 1990s (Evans, 2019). Most government services are still offered manually, and there is pressure to prioritise ICT development and infrastructure in various departments to provide quality service delivery, such as renewal of drivers license (Scholl, 2018). According to the White Paper on National Integrated ICT Policy (2016), information and communication technology is seen by the government as helping South Africa's inclusive socioeconomic transition. The ICT, in terms of the White Paper context, includes varieties of innovations and technologies such as internet, information and communication technology as well as audiovisuals. Mawela, Orcharab & Twinomurinzic (2017); Rahman (2016); Irafan (2017) posit that in order to keep up with the changing global platform,



South Africa has chosen to utilise ICT to improve service delivery and community participation as part of shared governance.

In South Africa, eGovernment refers to the use of ICT to automate both internal and external government processes. Government-to-Government (G2G) systems, such as the Electronic National Transport Information System (e-Natis) and the Police Crime Administration System (CAS), are used by all departments or for a particular area of the government. For eGovernment services to be successful, it is necessary to alter how the government operates, how it handles information, how officials understand their roles, and how they engage with the public. Government agencies, citizens, and the commercial sector must work together actively to achieve eGovernment services. The public, corporations, and government employees who use eGovernment services are the "customers" who must provide ongoing input and feedback to the process. Making eGovernment services function requires their input and ideas (National eGovernment Strategy and Roadmap, 2017:7).

Government officials acknowledged the importance of information technology (IT) as a vital enabler of the process in the 2001 publication *Electronic Government, the Digital Future: A public service IT policy framework*. The framework enables citizens to interact with the government and conduct business with it through a number of communication channels, seven days a week, and 24 hours a day. In addition, there are countless opportunities provided by IT to improve internal operations and assist government functions. The framework expected an electronic government (eGovernment) initiative to address: (a) E-governance; (b) E-services (delivery and feedback); and (c) E-business (South Africa, 2001; SA, 2017).

Initiatives for e-Government must be developed with a systematic and logical approach, guided by defined objectives, affordability, and interdependence at the forefront. The eGovernment project should always focus on the needs of the customer, although ICT is a powerful tool for providing services to the public. The information technology should be used to achieve citizen needs economically and effectively (South Africa, 2001:7; South Africa, 2017:21). The radical transformation of government to eGovernment needs smart governance and strong leadership to achieve its objectives and goals. The collaboration, coordination and management of resources efficiently and effectively in all three spheres of government, namely national, provincial, and local, need to be strengthened. Decisive leadership, availability of the required infrastructure, and dedicated budget from the fiscus will be among the factors that will ensure the success of eGovernment (Manda, 2021 & Madyibi, 2019).

The South African government faces several difficulties in raising the level of service provision expected by citizens. The government used information and communication technologies to their fullest extent to improve service delivery through eGovernment (ICT) (Blom & Uwizeyimana, 2020). Several challenges that affect negatively on the progress of eGovernment include: (a) lack of synchronisation across different departments; The government's eGovernment initiatives are



fragmented; there is no dedicated budget allocated for eGovernment implementation; the eGovernment program has not been directed and managed collaboratively; the government is experiencing issues with service delivery; there are no government-standardized requirements for the delivery and administration of data; and redundant procedures, databases, extensive system inefficiencies, and incompatibilities (National eGovernment Strategy and Roadmap, 2017: 16).

The Limpopo province is mainly rural and has one city and several underdeveloped towns. Most of the citizens are poor and depend on the government for service and livelihoods in the form of various welfare grants and job opportunities (Kyei & Gyekye, 2012; Gadisi, Owusu-Sekyere & Ogindeji, 2020). The infrastructure such as buildings, utilities, etc., is old and needs a lot of investments to provide decent, quality service to its citizens. The tax base in the province is very low as most people are unemployed, especially youth (National Treasury, 2015; Dagume & Gyekye, 2016). The province is also unable to attract and retain the required skills due to its rural nature and few growth opportunities (Omotoye, 2011).

Impact of factors on the readiness for eGovernment

Heeks (2003) asserts that the reason why eGovernment projects fail is due to the design reality gap, or the amount of change required to move from the current state to the new desired state. The magnitude of the gaps affects how likely it is that something will go wrong. Although these causes of project failure have been identified (Bhatnagar, 2000; Lessa, Negash, & Belachew, 2012), little has been done to address them. Readiness has been identified as a strategic hindrance to eGovernment in all of Africa.

Developmental opportunities in rural areas are necessary to implement e-Government successfully

The success of the implementation of e-Government depends on the development and facilitation of a capable state that will be able to take radical and decisions required to realise the implementation of e-Government. This notion is rooted around capable and decisive leadership, which can drive the eGovernment processes through bureaucratic state institutions and also manage key and relevant stakeholders. To enhance service delivery and promote inclusive, citizen-centered and development-oriented societies, governments are putting digital transformation policies into practice (Manda, 2012: 2).

The convergence of these technologies and their interaction across the physical, digital, and biological realms have been regarded as what distinguishes the Fourth Industrial Revolution (4IR) from other industrial revolutions. In this revolution, emerging technologies and broad-based innovations are diffusing much faster and more widely than in previous ones (Schwab, 2016:12). A democratic state aims to create a society where citizens have intellectual, social, economic, and political power. A variety of conditions must be met for the state to be able to



mobilize the productive forces necessary to secure the achievement of these goals on the social, economic, and political levels.

Diffusion of Innovation Theory and E-Government

It is commonly recognized that diffusion of innovation theory (DIT), which emphasizes the important factors affecting an innovation's acceptability, is useful in understanding special features of innovations (Min. et al. 2018). The DIT is a comprehensive sociological and psychological theory that attempts to predict how people will decide whether to accept a new innovation by identifying their adoption patterns and comprehending the design of the idea. The DIT states that each of the following five innovative characteristics must exist before any adoption: "The five factors that must be taken into account are: (1) relative advantages (economic gains or perceived convenience), (2) complexity (relatively easy to use or try), (3) compatibility (being consistent with the existing values, needs, and past experiences of potential adopters), (4) observability (implication assessment) and (5) trialability (experimented with before adoption)" (Min. et al. 2019:1).

The DIT was used by the researchers to invest in whether eGovernment will improve the quality of life of citizens economically and convenience to use. Many people, especially in townships and rural areas, are not well exposed to technology and 4IR, and the system needs to be easier to use. If it is complicated or perceived as complicated, many people will not use it, and the investment will be in vain. The introduction of eGovernment should be an integrated system that performs better than existing systems and addresses the needs and values of citizens. To increase usage of the eGovernment, users must be convinced by observing how easy it is to use the system and the direct benefits. The eGovernment must be subjected to thorough trials to minimise risks and errors before it can be adopted (Mhlanga, Ndlovu, & Hofisi, 2021).

METHODOLOGY

The study used a qualitative research method. The Limpopo Province was the study area. The purpose-sampling method was used to select ICT workers at the Limpopo Department of Transport and Community Safety, and stakeholders from community members, including business people and ordinary members of the community who also benefit from the services of the department. Interviews were conducted to gather data from participants. The questions in the interview guide were designed to ask relevant questions that inform the objectives of the study. Data collected by interviews were analyzed through thematic data analysis. Thematic data analysis was used because it allows for the interpretation of the data in identifying, analyzing and describing patterns and themes from the data. The themes that emerged from the data were used to guide the presentation and analysis of the data.

The findings of this study revealed the challenges faced with the implementation of technologies for the delivery of public services. The results reveal the patterns of access to e-Government among the identified employees at the DTCS and the community stakeholders.

Factors Impacting e-Governance Readiness in the DTCS

The findings of this study revealed that most of the respondents (64%) agree that DTCS has an online e-Government platform where DTCS shares information and communicates with the people, as shown in Figure 1. However, it is also interesting to note that a significant number of respondents (18%) disagree that DTCS does not have an online e-Government platform where information is communicated to stakeholders. There were no respondents who strongly disagreed with Limpopo DTCS having online e-Government platforms, compared to 9% of respondents who strongly agreed.

The findings of this study revealed that most of the respondents (36%) agree that the Limpopo DTCS is ready for the introduction and implementation of e-Government as shown in Figure 2. Only 9% of the respondents indicated that they are neutral about the readiness of the DTCS for e-Government. It is also interesting to note that 14% of the respondents indicated that they strongly disagree that the Limpopo DTCS is ready for e-Government compared to only 9% of the respondents who indicated that they strongly agree with the idea that the Limpopo DTCS is ready for e-Government. This indicates that Limpopo DTCS officials are largely unsure if the Department is prepared for e-Government services.

The findings of this study revealed that most of the participants (32%) strongly disagreed that the ICT personnel at the Limpopo DTCS Department have the necessary ICT skills and are ready to deliver on e-Government compared to only 9% of the participants who indicated that they strongly agree that the ICT personnel are equipped with the skills necessary to promote digitisation of public services. There were 13% of the participants who indicated that they are neutral in their perceptions of whether ICT officials at the DTCS are capable or incapable of meeting the expectations of the e-Government. The general findings of this study indicated that the participants in this study are of the idea that the current characteristics of the participants display high levels of uncertainty and that they are not sure of the ability of the ICT officials to deliver Department e-Government services effectively. However, this cannot only be attributed to the individual skill set and capability but also to the failure of e-Government in terms of resource constraints and technological innovations (Blom & Uwizeyimana, 2020; Nyansiro, Mtebe & Kissaka, 2021).

The findings of this study indicated that most participants (41%) believe that Limpopo DTCS was ready to respond to the circumstances of COVID-19 and to adjust to ensure that people continue



to receive public services. However, the second-highest participants (36%) indicated that they strongly disagreed with the notion that the Department was ready for the e-Government during the COVID-19 pandemic, compared to only 18% of the participants who strongly agreed. This aligns with the literature that indicated that most governments in developing countries struggled to function and provide basic services and information to communities during COVID-19 (Jakoet-Salie, 2020).

E-Government and stakeholder engagement

This article also examined the usability of e-Government by stakeholders. The results showed that a small percentage (9%) of the participants strongly disagreed that e-Government is efficient and user-friendly. Perhaps this is explained by the challenges that most participants mentioned as the key barriers to the implementation and adoption of e-Government, as learned from the results below. The findings of this study revealed that most of the participants (36%) agree with the view that the Limpopo DTCS e-Government platforms are useful and user-friendly for stakeholders. This was followed by 32% of the participants who also disagreed with the notion that the Limpopo DTCS e-Government platforms are user-friendly. Nine percent of the participants indicated that they strongly agree that the e-Government platforms and initiatives are useful and user-friendly.

E-Government and Cybersecurity

E-Government is essential for timely and cost-effective services and the security associated with Departmental information security and individuals accessing these government services online (Shah, 2022). Perceptions of this study revealed a much moderate appreciation of the security of the e-Government system at the Limpopo DTCS. The study findings revealed that 82% of the participants believe that e-Government services are moderately secure. This is followed by 9% of the participants who indicated that the e-Government services by the Limpopo DTCS are not secured. Only 5% of the participants noted that the e-Government services at the Limpopo DTCS are highly secured. The least (4%) of the participants indicated that they are not sure if the e-Government system at Limpopo DTCS is secure or not. The findings suggest that the e-Government system in Limpopo DTCS needs improved security measures, and the general idea is that the system is not highly secure.

Availability of e-Government website online

The study findings indicated that most of the participants in the Department believe that customers have access to Departmental e-Government services. Since these perceptions are from the officials of the Department, there is a possibility that the perception itself is driven simply by the idea of having the Departmental website online. However, the accessibility of the website does not guarantee its accessibility to users (Gonçalves, Rocha, Martins, Branco & Au-Yong-



Oliveira, 2018). The findings of this study revealed that most participants (54%) are of the view that target stakeholders have access to Departmental e-Government services. This is followed by 23% who indicated that they disagree with the notion that target customers have access to Departmental e-Government services. Only 4% of the participants indicated that they were strongly agreed compared to 14% who acknowledged that they were strongly disagreed with the fact that stakeholders have access to Departmental e-Government services.

Personnel skills capacity for e-Government services

The study was also established to investigate the skills in ICT and the human resource capacity of the DTCS employees of Limpopo. The findings indicated that there is a general neutrality in perceptions regarding the availability of capacity to adopt the e-Government system. The findings of this study revealed that most of the participants (50%) in this study are neutral on the view that the ICT personnel at Limpopo DTCS are adequate to ensure the successful implementation and adoption of e-Government. Only 9% of the participants indicated that they agree adequately that ICT officials are adequate for the successful implementation and adopt e-Government at Limpopo DTCS. Second, the highest was 41% of the participants who indicated that they were not adequate. This is interesting to note especially when the workers are of the express doubt and unsatisfactory towards the services that the co-workers are providing. The findings highlight the importance of ICT staff in public governance towards attaining effective e-Government services.

ICT Staff complement adequate to successfully implement and adopt e-Government at Limpopo DTCS

The findings of this study revealed that most participants (41%) disagree that ICT officials are responsive to the ICT challenges facing stakeholders in the e-Government system. Participants who were neutral towards the notion that ICT officials are responsive to ICT challenges experienced by stakeholders were 14%. The least recorded response rate was 4% of the participants who indicated that they strongly agree that ICT officials respond to the challenges faced by stakeholders and prospective customers compared to 9% of the participants who indicated that they strongly disagree with the fact that ICT officials respond to the challenges faced by stakeholders. This is similar to the findings of other previous studies that indicated that ICT officials are hardly responsive to ICT challenges in public government departments in most developing countries. The reasons were attributed to the lack of resources (Abdullahi, Emeribe, Akande, Ghamba, Adekola, Ibrahim & Dangana, 2020).



Perceptions of the participants regarding whether ICT staff responds to ICT challenges faced by stakeholders

The findings of this study indicated that most of the participants (45%) indicated that they are satisfied that the customers are satisfied with the e-Government services offered by the Limpopo DTCS. However, equally important is that 45% of the participants also indicated that they are not satisfied with the level of satisfaction that customers display when using the e-Government system. Only 5% of the participants indicated that they were very satisfied with the e-Government service provided to customers, and 5% equally indicated that they were neutral. Customer satisfaction is the key indicator of the effectiveness of the e-Government.

Factors Impacting e-Government Readiness and Implementation by the Limpopo DTCS

The findings of this study revealed that there are several factors that officials at Limpopo DTCS indicate are affecting the readiness of the electronic government. For example, factors such as poor network coverage (78%) were among the factors that were rated the highest as the barrier to effective implementation of e-Government. The other factor that received the highest rating was the affordability aspect. Most of the officials (80%) of the participants indicated that mobile Internet data is highly expensive for stakeholders to interact with Limpopo DTCS using online platforms.

Factors affecting e-Government readiness in the Limpopo DTCS.

The findings of this study also indicated that there are several factors that Limpopo DTCS officials need to address to ensure the implementation of the e-Government by Limpopo DTCS. For example, most of the official participants in this study (80%) are of the idea that proper planning is needed as an institutional arrangement. Some of the participants also indicated that there is a need to ensure that there are sufficient resources to support the implementation and management of e-Government. Some of the participants (60%) are of the opinion that IT officials may need more training in e-Government and have a clear policy on ICT structures and strategies.

Institutional arrangements needed to implement e-Government at Limpopo DTCS

The issues relating to the affordability of mobile Internet data are not a new phenomenon, previous studies in most developing countries also indicated that e-Government initiatives are hindered by the affordability factor that is linked to socioeconomic issues (Adam and Alhassan, 2023). Perhaps this explains why most participants (76%) indicated that they are neutral on whether the resistance to change factor could be a hindrance towards e-Government readiness in Limpopo DTCS because the affordability, skills, and network coverage factors are dominant.

ICTs and digital technologies through the Internet are linked to developmental opportunities resulting from adopting and implementing e-Government. For example, e-Government is projected to advance Limpopo DTCS information to historically disadvantaged rural communities. This is not a new phenomenon; previous studies have also indicated that e-Government initiatives are essential for advancing government and governance information to all stakeholders regardless of geographical location (Mosehlana, 2019; Enaifoghe, Dlamini, Jili, and Mthethwa, 2023). The advancement of e-Government also helps reduce inequality gaps between the rich and poor with respect to access to information (Lytras and Urban, 2020; Seljan, Miloloa, and Peji Bach, 2020; Chukwudi, Bello, and Adesemowo, 2023). However, the benefits of e-Government are not fully realized due to the digital divide in terms of socioeconomic challenges, digital literacy skills, and education (Mosehlana, 2019; Seljan et al., 2020).

The findings of this study revealed troubling findings regarding perceptions of the competence of digital skills among personnel in Information and Communication Technology at the Limpopo DTCS Department, indicating that they do not think that the personnel are competent and have the necessary digital skills to ensure effective e-Government. This is indicative that there is a possibility of certain aspects that are being noticed by the employees at DTCS that reflect a proportional level of incompetence among the officials responsible for e-Governments in their respective working frameworks. The level of uncertainty is derived from noticeable aspects that are perceived to be below expectations. Similarly, the study by Blom and Uwizeyimana (2020) revealed that e-Government initiatives must be led by knowledgeable individuals capable of critical understanding of e-Government objectives and primary expectations of individuals. However, other factors can contribute to the challenges experienced in ensuring effective e-Government. For example, Nyansiro, Mtebe, and Kissaka (2021) attributed some of the failures to both the individual skill set and capability and resource constraints and technological innovations.

Resource constraints are critical to the success of e-Government. The findings of this study indicated that while there was a noticeable achievement of the Limpopo DTCS in providing e-Government services that responded to the demands of COVID-19 and continued to provide services to people, restrictions on infrastructure resources hindered the effectiveness of this transition. This was not the only research indicator of the idea of restricted resources that hinder the provision of public services by the government. Previous research also showed that most governments in the developing world struggled to cope with Covid-19 and restrictions on providing public services. For example, the study by Jakoet-Salie (2020) confirms that most governments in developing nations struggled to function and supply basic services through the use of Information and Communication Technologies to communities during COVID-19. This was confirmed by many other scholars to be linked to the constraints of technological



Infrastructure resources (Batmetan, Nur, Turang & Sumampouw, 2022; Hazineh, Eleyan & Alkhateeb, 2022).

The user-friendliness aspect of technological applications or developments that is intended to be used by the subscribers, in the case of this study the public, is an important feature that is key towards the success or failure of a technology. Park and Samijadi (2021) described the importance of the usability of e-Government as an important performance analysis on user satisfaction, motivation, and behavioural intention. For Ndire (2020) user-friendliness, the influence of usability, accessibility, and compliance is critical and forms the e-Government development index for most developing countries. Gupta and Maurya (2020) indicated that the role of accessibility and convenience of public services on e-Government platforms is critical towards the adoption and the actual uses of e-Government services.

The idea of having IT infrastructure development in place towards attaining effective e-Government has been emphasised (Othman, Razali, & Nasrudin, 2020). Integration of e-Government into the public service stream is governed information technology and communication technology from many organisations that provide services to users and are available on electronic and online services. eGovernment aims to provide public services to all stakeholders in citizens with one data access point to obtain the services needed (Apleni and Smuts, 2020). This achievement is achieved by having a structure that integrates all services in an application that is accessible for government information and communication and user-friendly to all stakeholders (Doran, Puiu, Bădîrcea, Pirtea, Doran, Ciobanu, & Mihit, 2023). How users access and use e-Government services is important towards effective uses and is based on the systems and structures supporting e-Government. Most of the participants in this study indicated that the Limpopo DTCS has a structure in place for the development of IT infrastructure. However, the analysis and interpretation of what constitutes an IT infrastructure can differ, resulting in different ideas about what constitutes an IT infrastructure system. Malodia, Dhir, Mishra and Bhatti (2021) revealed that agreeing and disagreeing may not fully capture the theoretical understanding of IT infrastructure development initiatives as broadly understood.

CONCLUSION

It is clear from the findings that the general population and different categories of participants in this study are of the view that e-Governance is the future trend to ensure effective governance in South Africa, especially targeting historically disadvantaged local communities. However, the findings revealed that various projected barriers portend negative implications for the adoption and implementation of e-Government both to Limpopo DTCS and among stakeholders (end users). There are software issues that were identified to be problematic, ICT resource constraints at Limpopo DTCS, lack of sufficient human resources, and cyber security measures to protect the e-Government system. From a community and business perspective, challenges related to the digital divide, socioeconomic circumstances, digital illiteracy, and the shift from traditional forms



of access to government services to digital technologies seem problematic. The recommendations provided were central to improving the efficiency of the Limpopo DTCS in digital technology and the accessibility of digital technology among prospective stakeholders.

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