



The e-Municipality in South Africa as a Panacea for Adopting and Implementing Sustainable Online Services: A Case of the City of Tshwane

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Abstract

Since municipalist praxis has increased, so has the use of electronic municipality (e-Municipality) with multiple political motives and municipalist monikers springing up across public administration. All this typological creativity in digital governance suggests a new and pre-paradigmatic way of empirical inquiry aimed at improving service delivery and enhancing good governance through means of Information and Communication Technology (ICT). However, there is an ongoing problematic issue signifying a misconception jostling for academic attention in the understanding of e-Municipality within the context of political settings, particularly in South African municipalities. From this perspective, it is necessary to clarify the confusion and obscuring of what's at stake in relation to service delivery within municipalities. This study uses the adoption and implementation models for effective e-Municipality and the Public Value theory to position e-Municipality services in a sustainable context. Methodologically, the study adopted the qualitative research approach with the aid of secondary data gathered from scholarly journal articles, books, trusted websites, municipal databases (City of Tshwane), government legislations and peer-reviewed articles. With the City of Tshwane adopted as a case study, the researcher analysed data using online content analysis techniques to present e-Municipality (e-Tshwane) results. The findings reveal that

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the e-Tshwane system's failure to automatically update or reflect changes made by customers in relation to home addresses and payments made to municipal accounts often results in a large number of disgruntled customers. To address this issue, this study recommends that the City of Tshwane find alternative online mechanisms to identify system faults to reduce the number of disgruntled customers and improve the level of usefulness of the e-Tshwane system. This study offers policy-makers in government some insights concerning the adoption and implementation of sustainable online services by addressing issues aimed at improving online mechanisms to eliminate physical contact at municipal offices to access services.

Keywords: e-Municipality, e-Tshwane, Politics, online services, Public Value, ICT.

Introduction

Since municipalist praxis has proliferated, so too has the use of e-municipality with multiple political motives and municipalist monikers springing up across public administration. Simply put, Molobela (2023) asserts that all this typological creativity in digital governance suggests a new and pre-paradigmatic way of empirical inquiry aimed at improving service delivery and enhancing good governance through means of Information and Communication Technology (ICT). However, there seems to be an ongoing problematic issue signifying a misconception jostling for academic attention in providing an understanding of e-Municipality within the context of political settings, particularly in South Africa (Nel-Sander and Malomane, 2022). This is necessary for clarifying the confusion and obscuring of what's at stake in relation to service delivery within municipalities.

The ideology of e-Municipality is considered a reflection of electronic government (e-Government) with a shift of focus to the local government to provide local communities with valuable and relevant information through means of ICTs and the Internet (Nel-Sander and Malomane, 2022, p. 2). Conceptually, e-Municipality has been derived from both international and local contexts (Hazineh, Eleyan and Alkhateeb, 2022, p. 97; Nel-Sander and Malomane, 2022,

p.2). Both the global and local contexts involve the political proximity to set the administrative tasks to ensure sustainable e-Municipality services. To achieve this, the use of the Internet and ICTs are incorporated to improve the standard of living by employing online services (Hazineh et al., 2022, p.97). This automatically reduces high human resources and general costs that could be avoided through the application and use of the Internet to offer access to municipal services beyond regular working hours (Molobela, 2023, p.116).

In South Africa, the adoption and use of e-Municipality services remain a big digital within the municipal context (Molobela, 2023, p.109). The issue of the digital divide amongst local communities and poorly designed and offered e-Municipality services seems to deprive people of reaping the benefits of accessing online municipal services (Trung and Toan, 2020). Although the issue of digital divide may be avoidable, if appropriate measures were to be rapidly taken when initiating e-Municipality projects, South African municipalities would be able to reach more customers and expand participation from various stakeholders in e-Municipality activities (Nel-Sander and Malomane, 2022). Considering the complexity and enormity of e-Municipality projects, the local government politics should signify a higher level of maturity to cement the strategic plans to deploy e-Municipality projects without any political-administration friction (Davis, et.al, 2021).

The sustainability of e-Municipality could be achieved through sound and proper planning in terms of reducing human and financial costs, time and effort in implementing e-Municipality services while considering and accommodating various interests of stakeholders (Davis et al., 2021). However, the most apparent and problematic issue, particularly within local municipalities in South Africa, is associated with the progress of e-Municipality, which its implementation has remained very slow and has brought several limitations (such as the digital divide) in improving service delivery (Mawela, et.al, 2017). There is a serious less zeal and commitment to adopt e-Municipality technology, partly due to a lack of detailed stages or processes on how to implement e-Municipality services seems to hinder the progress and improvement of shifting several municipal services to online services (Mawela et al., 2017; Nel-

Sander and Malomane, 2022). Therefore, based on these issues, this study generates the following research questions:

- What is e-Municipality in the context of the South African public administration?
- Which theoretical framework could be adopted by South African municipalities in adopting and implementing sustainable e-Municipality services?
- What is the position of e-Municipality in the City of Tshwane?
- What are the challenges confronting the City of Tshwane in adopting and implementing sustainable e-Municipality services?

In an attempt to answer the abovementioned research questions, the study synthesizes the existing adoption and implementation model for e-Municipality growth and the Public Value theory to contextualise the problem statement of the South African municipalities in their attempt to improve service delivery while considering the standing orders and precepts of both the political and administrative spheres. Providing a better understanding of the concept of e-Municipality and its context is key to finding and designing strategic plans and ways to adopt, implement and execute sustainable e-Municipality services (Molobela, 2023). To contribute towards the theoretical and empirical knowledge, this study sets the scene by first discussing the theoretical foundations of e-Municipality through the application of the adoption and implementation model for e-Municipality and the Public Value theory; secondly, the concept of e-Municipality is defined with a proposed framework describe the actual e-Municipal activities, and lastly empirical results were generated from the e-Tshwane system implemented by the City of Tshwane to trace its e-Municipality progress by analysing the e-Tshwane website and digital plans to report on the City's commitment on adopting and implementing e-Municipality services.

Literature Review

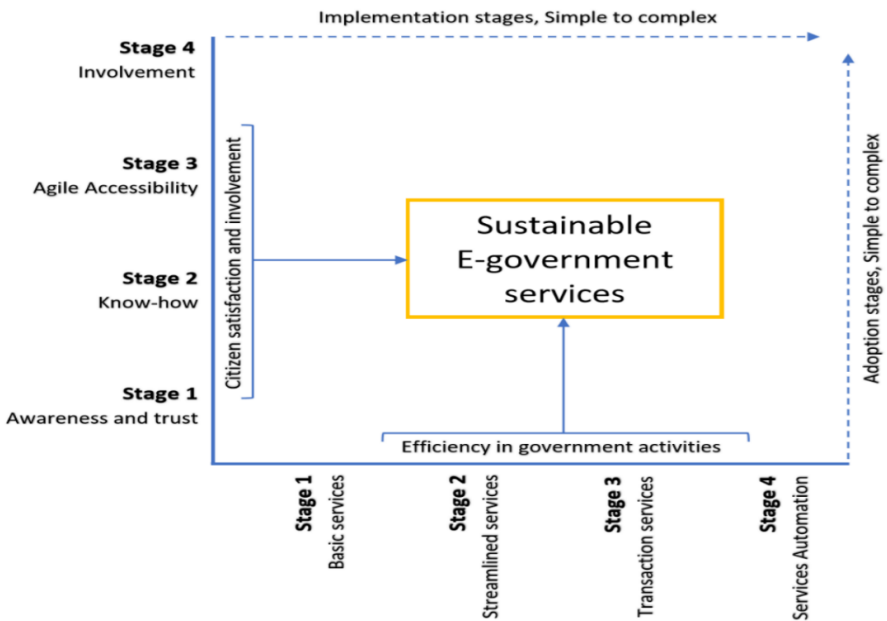
In South Africa, the adoption and use of e-Municipality services remains a big digital issue, particularly within the local government (Molobela, 2023, p.109). There seems to be an ongoing problematic issue signifying a misconception jostling for academic attention in

providing an understanding of e-Municipality within the context of political settings, particularly in South African municipalities. It is therefore necessary to clear the confusion and obscuring of what is at stake concerning service delivery within the application and implementation of e-Municipality. The following section addresses the theoretical framework adopted, the concept of e-Municipality, and the challenges confronting South African municipalities in adopting and implementing sustainable e-Municipality services:

Theoretical Framework

In an attempt to address the abovementioned research questions and deepen the understanding of the concept of e-Municipality, the adoption and implementation model for e-Municipality and the Public Value theory are applied. The figure below describes both the adoption stages and implementation stages of sustainable e-Municipality services:

Figure 1: The adoption and implementation model for e-Municipality



Source: Joshi and Islam (2018)

Amid the technological advancements in the 21st century, the abovementioned model was proposed for the development,

adoption, and implementation of electronic government for municipalities to achieve sustainable e-Municipality services (Joshi and Islam, 2018). In this study, sustainable e-Municipality services require municipal services to be wholly citizen-centric and streamlined for better accessibility (Joshi and Islam, 2018). Based on the adoption perspectives, the model comprises Four (04) stages as follows:

Stage I: Awareness and Trust

To achieve sustainable e-Municipal services, municipal stakeholders ought to be made aware and prepared for e-Municipality adoption for the delivery of online services (Zwane and Matsiliza, 2022). The channels and changes of communication/interaction must be made known to the local communities. Moreover, the municipality must express its intentions and make an effort to educate and prepare stakeholders to be ready for the change (Zwane and Matsiliza, 2022). Politicians such as ward councillors can actively raise awareness in their respective wards and mentally prepare community members for the changes within the municipality (Joshi and Islam, 2018).

Stage II: Know-how

The importance of adopting e-Municipality technologies requires technical and practical knowledge to offer e-Municipality services (Joshi and Islam, 2018). As municipalities begin to streamline several services, the knowledge, understanding, and application thereof are to be enhanced to ensure sustainable e-Municipality services (Tejedo-Romero, et.al, 2022). Appropriate and adequate development and training of the municipal staff becomes a prerequisite as the municipality would be required to invest in workshops, sessions, seminars, programmes and other meaningful training methods to enhance the knowledge and understanding of implementing e-Municipality services (Tejedo-Romero et al., 2022). These tend to benefit the community and the municipality in reducing costs for rendering service delivery.

Stage III: Agile Accessibility

Multiple factors such as access to e-Municipality technology and infrastructure, social/cultural influence, personal circumstances, availability of e-Municipality services, and issues of trust and

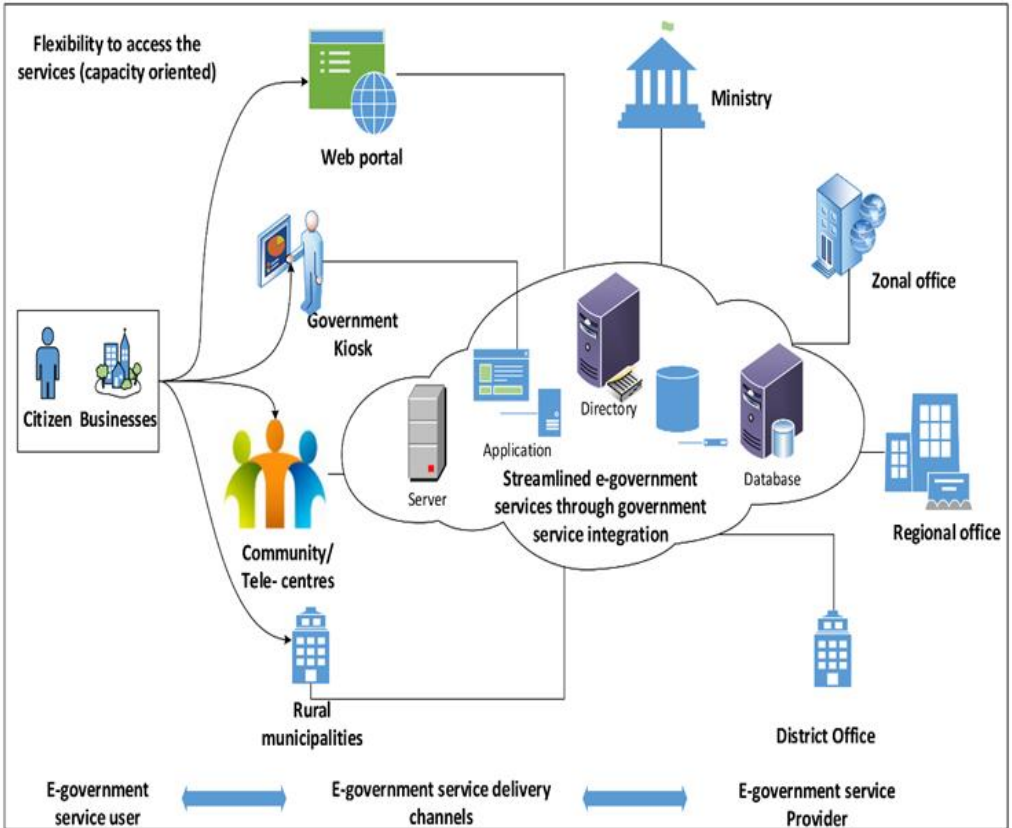
security are likely going to affect how stakeholders and users would adapt toward the adoption and implementation of e-Municipality services (Bao, Shen, Talukder, and Talukder, 2019). To address this, accessibility is to be singled out as the most problematic concern for most local municipalities due to the gap in digital connectivity among communities (Bao et al., 2019). This is whereby agile accessibility becomes crucial in the sense that it could be achieved through the development of various channels to deliver services (Tejedo-Romero et al., 2022). Amongst others, this could include municipal kiosks, and social media platforms, and collaborate with private businesses to offer their unused computers to help connect the nearby communities.

Stage IV: Involvement

According to Zwane and Matsiliza (2022), the sustainability of e-Municipality services depends upon the involvement of stakeholders. Developing a sense of belonging and involvement of stakeholders in municipal affairs and the decision-making process would actively allow maximum participation (Joshi and Islam, 2018). Various channels such as social media platforms, online consultations, public lectures, live chats, YouTube, and public polls could be used to ensure the involvement of the community (Joshi and Islam, 2018). The figure below describes the way in which involvement activities could be affected:

The e-Municipality involvement activities comprise stakeholders from all spheres of government (Zwane and Matsiliza, 2022). The national government plays a crucial role in formulating e-Government laws and regulations, which ought to be implemented through the entire government spectrum including municipalities. The provincial government ought to capacitate district and local municipalities with the requisite skills to ensure the sustainability of e-Municipality services. Political office bearers also play a vital role in ensuring that apart from political contestation, e-Municipality services are adopted and implemented to improve overall service delivery (Davis et al., 2021). In addition, the private sector could play a fundamental role in helping municipalities enhance networking and connectivity of e-Municipality services by establishing an effective and sustainable network and connectivity sites.

Figure 2: E-municipality involvement activities



Source: Joshi and Islam (2018).

Based on the implementation perspective, the adoption and implementation model for e-Municipality comprises Four (04) stages as follows:

Stage I: Basic Services

One of the main reasons municipalities were established was so that they could provide basic services to communities (Bekink, 2006). As such, municipalities can still fulfill their constitutional obligation by implementing e-Municipality services to cut down on several costs (Glasser and Wright, 2020). In utilising the model, municipalities can use social media platforms and websites to provide services, ensure communication and provide feedback to local communities beyond

the normal working hours (Joshi and Islam, 2018). Facebook, WhatsApp, Twitter, YouTube, LinkedIn, online news, radio and television can be an active way to reach and interact with various community members and provide feedback on existing basic service delivery issues. With regard to active municipal websites, computerising and cataloguing current data and information would help ensure the sustainability of e-Municipality services (Joshi and Islam, 2018).

Stage II: Streamlined Services

The sustainability of e-Municipality depends on streamlined services (Joshi and Islam, 2018; Nel-Sander and Malomane, 2022). This implies that a municipality ought to integrate services online whereby people could acquire several municipal services without visiting the municipal offices to access such services (Nel-Sander and Malomane, 2022). This automatically reduces the financial stress and overcrowded municipal offices with little human resources to attend to community needs (Molobela, 2023). Therefore, the municipality could focus on establishing and investing in more e-Municipality infrastructure to save resources and avoid the problem of printing similar information on multiple pages. Additionally, the funds used to purchase and fix printing machines, etc. can be used to improve access to ICT tools and municipal databases (Glasser and Wright, 2020).

Stage III: Transaction Services

For e-Municipality to become more efficient, the integration of municipal departments must be prioritised and online services ought to be accessible online in order to allow transactions to take place (Tejedo-Romero et al., 2022). Sustainable online transactions require that the municipality avoid delays in the processing of payments for services (Bao et al., 2019). Therefore, this stage requires the municipality to establish a payment system to allow stakeholders/customers to access or acquire e-Municipality services while establishing a sustainable and effective communication mechanism (Joshi and Islam, 2018; Tejedo-Romero et al., 2022). This allows the municipality to become more responsive and interactive with local communities (Molobela, 2023). Furthermore, for active and sustainable transactions on municipal services, the municipality

is required to adhere to government legislations and regulations for electronic data processing, establish a verification mechanism and a payment system that would integrate online banking or mobile banking for e-Municipality services (Jacobs, 2019).

Stage IV: Automated Services

The digital government systems require that government services allow customers/users to proactively get involved in government affairs (Zwane and Matsiliza, 2022). In the context of e-Municipality, services are to be transformed to become smarter and synchronised with automated systems to allow customers to track their business transactions such as payment of municipal bills, various licenses or permits renewals, e-passports, visas, Identity Documents (ID) application and renewals (Joshi and Islam, 2018).

The proposed Figure 1 and Figure 2 are requisite in this study to assess the readiness of the South African municipalities to adopt and implement sustainable e-Municipality services. The readiness in e-Municipality refers to the level of commitment and readiness in terms of both technological and organisational capacity to adopt, implement and execute e-Municipality projects (Joshi and Islam, 2018). Organisational readiness means that the municipality has equipped staff members with legal frameworks and prescripts for adopting and implementing e-Municipality projects and having adequate human and financial resources to undertake e-Municipality tasks (Joshi and Islam, 2018). While technological readiness means that the municipality has acquired the necessary technological infrastructure or information and communication technologies to implement e-Municipality projects and does not neglect the capacity, skill, sustainable connectivity and expertise of the employees and public awareness required to adopt and access the offered e-Municipality services (Molobela, 2023).

This study also adopts the Public Value theory as an alternative to promote e-Municipality within the context of the New Public Management (NPM). The NPM promotes government services to become more efficient and effective, while public value management underscores the municipality to create value through the adoption and implementation of e-Municipality to reach and interact with citizens beyond normal working hours. Public value theory is

known as the recent Public Administration approach. Moore (1995) first introduced the Public value theory by stating that public managers are to be tasked with the responsibility to create public value beyond the delivery of services and attending to the needs of the citizenry. Although there is no universal definition of public value, Strathoff (2016, p.16) asserts that Public value theory was created as a management approach for the government or public sector. In this sense, it means that the public is being considered the appropriate mediator of public value, intended to influence the government to create effective and efficient public management instead of prioritising economic individualism (Strathoff, 2016, p.17; Benington and Moore, 2011, p.10).

In the context of e-Municipality, the Public value theory can be applied to promote democratic, cooperative and good governance, bearing in mind the importance of creating value that customers and the public require with regard to e-Municipality services rather than ensuring mere efficiency and effectiveness of online services (Gil-Garcia, et.al , 2016, p.527; Turkel and Turkel, 2016, p.7).

The Concept of e-Municipality

According to Nel-Sander and Malomane (2022), electronic municipality also known as e-Municipality is a subfield of electronic government (e-Government). The ultimate aim of e-Municipality is to wholly focus on transforming the local government in relation to interaction with municipal constituents (Mawela et al., 2017). The interaction between municipalities and communities is, therefore, transformed through the application and use of information and communication technologies (Mawela et al., 2017). The term e-Municipality as a reflection of e-Government can be defined as the adoption, application and use of information and communication technologies including but not limited to the internet, mobile devices, computers, telephones, wireless devices or terminals, and any other communication portals and systems in order to interact and promote a more efficient government to facilitate access to government services beyond normal working hours to allow greater public outreach and access to electronic data and information and also to foster transparency and make the local government more accountable to the public (Working Group on e-Government in the Developing World, 2002:1 cited in Nel-Sanders and Malomane,

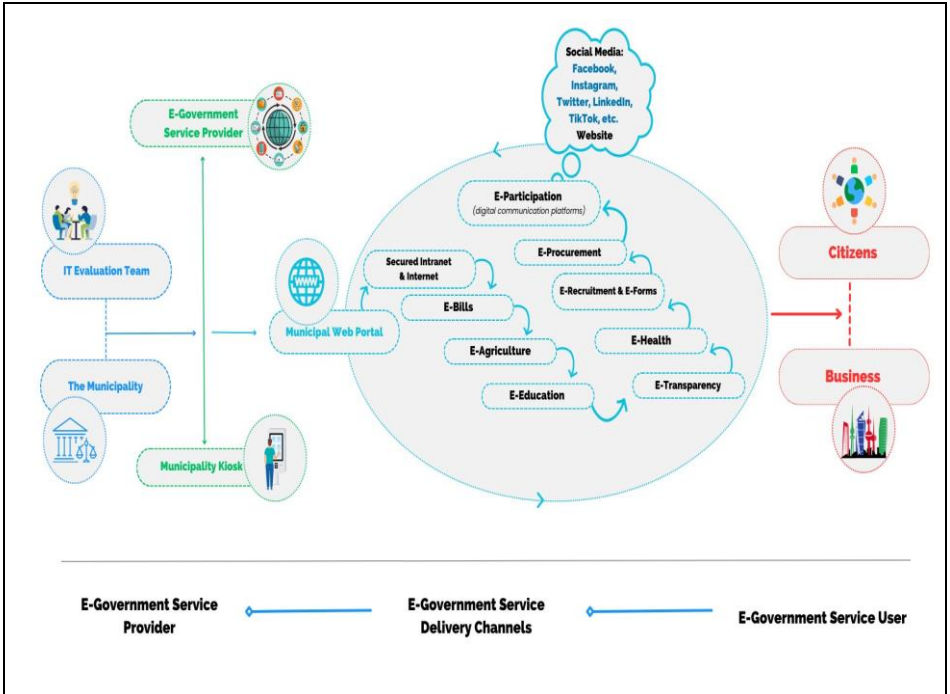
2022). Although no universal definition exists for both e-Government and e-Municipality, the main and apparent element is that they both involve the use of the Internet and ICTs in delivering services to public servants, citizens and businesses.

Nel-Sanders and Malomane (2022:1) further indicate that e-Municipality has to do with the way local municipalities produce and provide useful data and information to citizens through the means of ICTs. From this view, e-Municipality forms an integral part of the delivery of online services in an efficient manner to local communities. In actual terms, e-Municipality involves a municipality realising the importance and all kinds of communication, services, and business transactions offered in an electronic environment (Murenzi and Oliver, 2017). Additionally, e-Municipality comprises a collection of multiple operations made accessible through the application and use of ICT interface in order to allow users to invoke a service. For instance, e-Municipality allows a user to request data and information or perform a particular transaction online like paying municipal bills using an auto-control service or software that uses a self-contained and self-describing application made accessible online (Joshi and Islam, 2018). An e-Municipality model may be useful to describe the actual e-Municipal activities:

Based on the above-proposed e-Municipality model, users, citizens and businesses can access multiple online services such as general health records, online education, and agricultural information, apply for vacancies, check and pay municipal bills either online or at the municipal kiosk. In fostering transparency and making municipalities accountable, the external IT evaluation team performs a rapid verification and evaluation of online services provided by a municipality. The importance of verifying and evaluating e-Municipality services is to ensure the quality of services, their relevance, and availability to help and support the livelihood of local communities. To dispel e-Municipality using the proposed model, Four (04) activities ought to be performed. First, the municipality must establish its online services based on government legislation and community needs. Community needs and preferences hold the key to determining the usefulness and readiness to use e-Municipality system. This means that the municipality introduces

by-laws and regulations associated with accessing online services and performing any transaction to make online transactions legitimate and reliable to build public trust. Secondly, the municipality ought to establish an evaluation and verification

Figure 3: A proposed Model for e-Municipality activities



Source: Own Design (2023).

mechanism aimed at providing real-time e-Municipality services. Every municipality should have in place reliable mechanisms to verify and evaluate data, information and users' identities so that users can be protected against any online manipulation and crimes. Both verification and evaluation may be completely automated or even manually automated if it would be very costly and also deal with complex information. For instance, voting online could be a problem since the verification requirements ought to be done manually and physically, suggesting that registering to vote online is less complicated as compared to actually voting for any political party in South Africa. Thirdly, the municipality must design and establish a payment gateway or municipal kiosk to facilitate payments of services. In addition, a municipality may partner with

another private business to handle payment processing, verification and integration in relation to customers who would opt to use online banking services to facilitate transactions. Fourthly, the municipality ought to roll out online services, meaning that once a municipality introduces and establishes electronic documents, verification mechanisms and payment methods or gateway are to be secure to offer municipal services online. Lastly, social media platforms can be used to communicate new updates and information on municipal websites. This may attract more customers as more people seem to be more active on social media platforms than municipal web portals.

Challenges confronting South African municipalities in adopting and implementing sustainable e-Municipality services

- Digital divide

One of the most apparent challenges confronting various municipalities is the gap between communities with access to ICT infrastructure and internet connectivity and communities with little or no access to ICT infrastructure and reliable internet access (Mawela et al., 2017; Murenzi and Oliver, 2017, p.146). In some municipalities, the challenge is far beyond poor physical access to e-Municipality technologies, internet connectivity, or ICT infrastructure but there is still a lack of public awareness and high illiteracy in the knowledge and understanding of e-Government or e-Municipality implementation and services (Mawela et al., 2017; Molobela, 2023; Murenzi and Oliver, 2017, p.146). Therefore, the digital divide deprives local communities of full participation in municipal affairs. To contextualise the digital divide, it means there is a serious failure to involve citizens to effectively participate in the decision-making process through the use and application of ICTs (Nel-Sanders and Malomane, 2022).

- Privacy and security

Privacy and security issues are a major threat to effective e-Municipality services for several municipalities (Murenzi and Oliver, 2017, p.153). The willingness to access e-Municipal services may be scant amongst citizens due to poor laws regulating and protecting electronic data processing (Molobela, 2023). It is not surprising that

there is still a large number of citizens who have not yet fully accepted the adoption and utilisation of e-Municipality services due to issues of privacy and security (Murenzi and Oliver, 2017, p.153). Establishing a strong verification system may be a way to preserve the privacy and security of users. This would promote the ease of sharing personal information with the municipality when paying bills. As such, security of personal data protection against unauthorised persons must be at the forefront of the e-Municipality system. Passwords must not be leaked nor shared with anyone to promote public trust and for citizens to interact with municipal officials without fear of being exposed or manipulated online.

- Social, economic and technological issues

Since the introduction of the digital government, social gatherings, community meetings, public lectures, and physical interaction with various communities have been shifted to online interaction (Nel-Sanders and Malomane, 2022). As much as e-Municipality can be a better way to interact and deliver services, the passion and commitment to view physical community problems as urgent to address has become minimal (Molobela, 2023, p.99). Again, moving from traditional methods to digital methods such as e-Municipality have raised serious technical problems whereby traditionalists in public administration remain reluctant to shift into the digital ways of doing things (Nel-Sanders and Malomane, 2022). In addition, issues of costs associated with ICT infrastructure, data processing, internet portals, municipal websites, data bundle prices and ICT experts have resulted in unavoidable economic challenges (Trung and Toan, 2020). This means, that if people lack resources to access online services, they would be left out of any valuable online engagements.

- Inadequate ICT skills

Lack of ICT skills and expertise is a deterrent for local communities to accessing e-Municipal services (Awosanya, 2019). For most local communities, inadequate ICT infrastructure and skills are an impediment for citizens to access online services and as e-Municipality activities become more complex and complicated due to its digital language, fewer citizens often undertake these activities leaving the majority deprived of reaping e-Municipality services

(Awosanya, 2019). The cost of Internet subscriptions may be one of the factors discouraging the majority of citizens not to investing in educating themselves on how to use the Internet and access valuable e-Municipal services (Trung and Toan, 2020). Some municipalities may be reluctant due to inadequate funds to host ICT workshops, training and development for their respective communities to be well-equipped to use available ICT infrastructures (Trung and Toan, 2020). This tends to not only add to the lack of ICT skills, experience and proficiency within a community, but several municipal officials may also experience problems in accessing e-Municipality services due to inadequate ICT skills and experiences (Murenzi and Oliver, 2017).

Methodology

Methodologically, the study adopted the qualitative research approach with the aid of secondary data gathered from scholarly journal articles, books, trusted websites, a municipal database of the City of Tshwane, and peer-reviewed articles. With the City of Tshwane adopted as a case study, the researcher analysed data using online content analysis techniques to present e-Tshwane results. This study is conceptual by nature and its claims and justifications heavily depend on secondary data. With the additional aid of unobtrusive research, techniques were used to analyse and present empirical results on how e-Tshwane helps in providing sustainable online services to municipal constituents (Esterberg, 2002). Unobtrusive research techniques mean the researcher was able to gather data from the e-Tshwane system without interacting and interfering with the City of Tshwane and its residents (Weiner, 2010). In addition, online content analysis was done by presenting the e-Tshwane data in a descriptive format.

Findings And Discussions

Based on the study area, the City of Tshwane is a Metropolitan Municipality. The structure of the City of Tshwane is premised on category (A) municipality in terms of the Constitution of the Republic of South Africa (1996) and the Local Government: Municipal Structures Act, 117 of 1998 (Davis et al., 2021). Currently, there are 105 wards and 210 councillors within the City of Tshwane, making it the largest metropolitan municipality and the capital city

(Pretoria) of South Africa with the second-largest number of embassies in the world after Washington DC. The following findings were gathered from an online assessment of the e-Tshwane system:

- e-Services

According to the City of Tshwane, e-Municipality services mean access to municipal services in a faster, easier and convenient manner for residents, customers and visitors. Based on the online analysis, customers can be able to request several services online via the use of e-Tshwane and can perform various transactions online. Moreover, customers can manage their municipal accounts, make payments and request services without contacting or visiting the customer care centre.

- e-Tshwane

As part of the Smart City strategy and The Vision 2055, the City of Tshwane designed the e-Tshwane system to facilitate easy interaction between the City and customers. The goal of e-Tshwane is to improve customer service by shifting municipal services to make them electronically available beyond normal working hours. The e-Tshwane is considered the best system that increases capacity and it is a way of commitment towards adopting and implementing ICT projects. As such, the City plays a critical role in improving knowledge, information and understanding of ICT activities. Because of adopting and implementing e-Tshwane, interaction among citizens, businesses, and various arms of government has improved within the City. In support of e-Tshwane, homeowners, property managing agents, companies and tenants are able to interact with the City 24 hours a day and 7 days a week.

In striving towards sustainable online services, e-Tshwane allows ratepayers to interact with the City through mobile devices and the Internet. To facilitate payment, both Standard Bank and ABSA customers can view and pay their municipal bills using the 'MyBills' tab on the system. In order to pay traffic fines, upload meter readings, lodge queries, view statements, apply for services and make payments users' have to be registered on the e-Tshwane system. Case in point, the registration process is free of charge and once validated, users can immediately access their services and accounts.

Based on the analysis, e-Tshwane is the best and safest system for making payments to the City. After payment of any bill, customers receive immediate payment confirmation indicating that their account is being settled and updated.

- e-Service Security

Privacy and security are among the biggest concerns in e-government and e-municipality. To address this problem, the City of Tshwane uses the SSL certification system to ensure that users' personal and business information is protected by allowing security certificates to be generated by the e-Tshwane site to validate and secure any access made. In practical terms, this means that whenever a user accesses the e-Tshwane website a completely encrypted connection is initiated between the user's browser and the e-Tshwane servers. This is the highest form of ensuring that users' personal and business information is safe and secure. Additionally, the City of Tshwane indicates that they do not send any communication that would require personal or business information as such information is required on the secure site (<https://www.e-tshwane.co.za>).

- Challenges associated with the e-Tshwane system

The City of Tshwane is not exempted from challenges associated with the e-Tshwane system. There has been a growing outcry concerning the inaccurate bills reflected on several customers, including but not limited to electricity and water consumption. Other customers have even attempted to report the City to the Office of the Public Protector of South Africa (Mthethwa, 2021). The City is often accused of charging abnormal and huge electricity and water bills due to failure to capture meter readings regularly. To support this claim, between 2018 and 2021, the Office of the Public Protector received approximately 70 complaint cases. Reporting on an extreme case, a particular resident named 'E Van Wyk' was sent to settle an R1.6 million due to incorrect and erroneous updating of the City's new meters system implemented in 2019 (Mthethwa, 2021). In remedying the situation, the City has shown effort and commitment by reviewing and updating its credit control and debt collection policy and strategy. Based on the users' reviews accessible on

‘Helicopter’ the following challenges were experienced by certain users of the e-Tshwane system:

“I updated my address a few months ago, but the old address still reflects on the statement of account. I also lodged a query, however, an email was sent indicating that the matter was forwarded to an agent with no response. Again, their phones were not answered as I was holding for over 45 minutes. I got irritated because of the 10-second voice stating that I was next in line”.

-Complaint No.1 (05 January 2023, 06:57).

“I would like to compliment the City of Tshwane for its best, user-friendly and efficient e-Tshwane website. It is a great pleasure to use”.

-Complaint No.2 (12 October 2021).

“According to news reports, clearance certificate backlogs have been sorted out. What a joke I still receive messages from the City of Tshwane stating that I must visit the walk-in centre as e-Tshwane is often offline for days. This is the 6 months with my clearance certificate. Again, the e-Tshwane system does not reflect the updated status on my account. There are only two individuals who can authorize transactions, however, they’re often not reachable”.

-Complaint No.3 (02 February 2021, 15:52).

“On the 16th of November 2020, I made a payment to my account via the e-Tshwane website. This was done the day before the settlement of my municipal account. Two days later, a new account was issued on the 18th of November 2020, the e-Tshwane was not reflecting the payment I made. However, my bank statement confirmed that payment was made to the e-Tshwane on the 16th of November 2020. But, I keep receiving messages warning me to make payment on the outstanding with interests of which I have already made payment and the e-Tshwane already received”

-Complaint No.4 (07 December 2020, 20:51).

The findings of this study reveal the most important progress of e-Municipality adoption and implementation made by the City of Tshwane. It is evident that the system of e-Tshwane has remained one of the most successful systems within the country. However, there are apparent situations whereby customers would receive incorrect bills on their estimated water and electricity consumption. Often, the e-Tshwane system is found to be experiencing connectivity problems on the site of customers, whereby they would be forced to do walk-ins to report certain cases. With that being said, the e-Tshwane remains one of the fastest, easiest, and most convenient systems ever introduced in South Africa. The City uses social media platforms to address the public when faced with service challenges, ensuring that interaction with the public is not affected when the e-Tshwane system is often affected.

Conclusion

In today's world, adopting and implementing relevant technologies such as e-Government and e-Municipality systems have become a way to enhance service delivery. The City of Tshwane is one of the municipalities in South Africa committed to improving and expanding service delivery channels by eliminating the dependency on physical visits or walk-ins at municipal offices. Over the years, this has increased the speed and efficiency in the delivery of services and active interaction between the City and citizens. The e-Tshwane system serves as an aid in the payment of municipal bills, the capture of meter readings, and the debt collection method, and it has improved the city's turnaround strategy timeframe. However, customers have raised various challenges, including but not limited to the e-Tshwane system's failure to automatically update or reflect changes made by customers concerning home addresses and payments made to municipal accounts. Although ratepayers can make payments online and receive account statements, the e-Tshwane system is not exempted from challenges. Therefore, the City still has to find ways to identify system faults to reduce the number of disgruntled customers.

Recommendations

- Based on the e-Tshwane system findings, it is recommended that the City reinforce its capacity to identify, manage and

monitor the payments of bills made daily by customers to avoid customer dissatisfaction.

- The e-Tshwane system must be rapidly improved by providing advanced mechanisms to preserve transparency, accountability and active responsiveness to avoid issues of erroneous municipal bills to be reported to the Office of the Public Protector.
- Developing additional business partnerships with all South African banks to sustain funding and allow all customers to use their preferred banking system to facilitate payment of municipal bills must be at the forefront of the City, even though some ratepayers can make payment online and receive account statements.
- The e-Tshwane system is not exempted from challenges, therefore, the City still has to find innovative ways to identify system faults to reduce the number of disgruntled customers.
- From a practical perspective, achieving sustainable online services within South African municipalities requires an intentional effort and commitment to adopt and implement e-Municipality initiatives that promote the involvement of municipal constituents. Developing channels to improve citizens' interaction and participation in municipal affairs is key to sustainable e-Municipality services.
- This study offers researchers, policy-makers, local managers, ICT personnel, and regulators in government some insights in relation to the adoption and implementation of sustainable online services by addressing issues related to political administration roles without friction in order to enhance online mechanisms to eliminate unnecessary physical contact at municipal offices for accessing services.
- Policy-makers need to pay candid attention to e-Municipality tools in order to transition from traditional ways of providing services to modern ways of delivering services through the adoption and implementation of e-Municipality systems.

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