



The COVID-19 pandemic and e-governance innovations in Ngwathe Local Municipality

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DECLARATION

The study presented in this document represents the original work conducted by the author and contains information not previously submitted for degree purposes at any university.

The author, with the help of the supervisors, was involved in the conceptualisation, data collection and analysis in the study. All the data and information that was extracted from any other sources were duly acknowledged. The referencing style of this study follows the guidelines of the “North-West University Referencing Guide”.

DEDICATION

I dedicate my respect to Ngwathe Local Municipality for allowing me an opportunity to carry out this research.

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I would like to thank the almighty God for keeping me sustained in faith. Special thanks are dedicated to my Prof. Hofisi for his patience and encouragement throughout the process. I extend my gratitude to the editor, examiners and the committee for their feedback. The inspiration from my parents and siblings, and the love from my wife and kids, kept me focused and determined on the course. Whenever things got difficult, I was motivated by my children, Katleho and Kearabetswe Mokoena, to endure the challenges and push to the finish line. Their names, implying “Success” and “God’s answers”, would remind me of my purpose in life and why I ought to complete every project put before me.

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ABSTRACT

The adoption of e-Governance in local municipalities is important as it improves internal operations, service delivery, customer services and accountability. The South African local government is still facing challenges in the absolute implementation of the use of the internet and communications technology to provide improved and transparent public services. The study aimed to explore the implementation of e-government innovations in Ngwathe Local Municipality in response to the COVID-19 pandemic. This study employed the qualitative approach, and data was generated from twenty semi-structured interviews. Findings from literature revealed that modern organisations rely on information and communication technology platforms to survive and accomplish their objectives in a dynamic and complicated environment. The study results confirm existing literature which shows that e-procurement, social media and digital payments are the e-government innovations implemented in response to the COVID-19 pandemic. The main challenges in the implementation of e-Government innovations are human resource issues, poor coordination and cooperation, resistance to change, inadequate infrastructure and security concerns. In order to improve governance, it has been recommended that the municipality should also invest more in training, awareness campaigns, Private Public Partnerships and data encryption to mitigate against security breaches. Future studies can expand the scope of this research by including more municipalities to allow for comparative analysis of e-government implementation across different local government in South Africa.

Key terms: COVID-19 pandemic, e-Governance, Innovation, Private Public Partnerships and local municipalities.

LIST OF ABBREVIATIONS

4IR	Fourth Industrial Revolution
ATMs	Automated teller machines
CAFRAD	Africa Training and Research Centre in Administration for Development
DPME	Department of Planning, Monitoring and Evaluation
EGDI	E-Government Development Index
ENaTIS	electronic National Traffic Information System
G2B	Government-to-Business
G2C	Government-to-Citizen
G2G	Government-to-Government
GDS	Growth and Development Strategies
HCI	Human Capital Index
ICT	Information and Communication Technology
IDP	Integrated Development Plans
ITU	International Telecommunication Union
OSI	Online Service Index
PCs	Personal Computers
SDGs	Sustainable Development Goals
TII	Telecommunication Infrastructure Index
TIR	Third Industrial Revolution
UK	United Kingdom
UN	United Nations
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
WHO	World Health Organisation

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CHAPTER 1 INTRODUCTION AND BACKGROUND

1.1 Introduction

This chapter provides the overall introduction to the study and outlines the structure of the research. It presents the background to the study, the problem statement, the aim and objectives of the study, and the research questions. It further highlights the significance and contribution of the study, as well as its limitations. Finally, the chapter concludes by providing an outline of the structure of the study.

1.2 Background

Over the past years, one of the most revolutionary discoveries has been the advent of the internet, which has changed the operations in both the public and private sectors (Prabhu, 2013; Mergel, 2019). In the dynamic and complex environment, modern-day organisations utilise Information and Communication Technology (ICT) platforms in order to survive and achieve their goals (Thabit & Jasim, 2019). The quality of service and value derived by stakeholders from services has significantly improved due to the utilisation of ICT infrastructure (Islam & Ehsan, 2015). In response to the growing need for the provision of superior service to stakeholders, organisations have invested in ICT systems (Prabhu, 2013).

In the public sector, ICT investments manifest as electronic governance (e-governance) and electronic government (e-government) (Kalsi & Kiran, 2013; Milakovich, 2021). The utilisation of technology for communication, integration of stand-alone systems and services and facilitation of government services is referred to as e-governance (Bannister & Connelly, 2012; Mbambang, 2024). The major objective of adopting e-governance is to promote transparency and accountability as well as improve service provision in the public sector (Kalsi & Kiran, 2013; Zhang & Bhattacharjee, 2024). The concept of e-governance goes beyond digitalisation of operations, as it also includes providing solutions to the problems affecting society (Hooda & Singla, 2020). Thus, e-governance is aligned with the achievement of Sustainable Development Goals (SDGs).

E-government has improved globally, and this is attributed to three linked dimensions; service delivery modernisation, citizen participation and the institutional conditions that make digital transformation durable and inclusive (Manoharan et al., 2022; Mbambang, 2024). E-governance trends and best practices from Countries like Singapore, Estonia, and the United Kingdom (UK) demonstrate how strategic digital transformation can overcome infrastructure gaps, enhance service delivery, build public trust, and drive inclusive growth (Mbambang, 2024).

Singapore is presented as a clear digital-government exemplar built on user-centric design, agile delivery, cybersecurity, and cross-sector collaboration. A single secure digital identity (SingPass) provides seamless access across systems, supported by strong backend integration, process re-engineering, widespread broadband infrastructure, and active public-private collaboration. (Perdana & Mokhtar 2025).

Estonia, meanwhile, has transformed itself from a post-Soviet state into a global digital leader, with nearly all public services available online. Estonia's model is anchored in secure digital identity and X-Road interoperability, which reduce bureaucratic friction while supporting accountability and trust. This emphasises proactive, anticipatory services, transparency, and a strong legal framework that underpins digitalisation (Hardy, 2024; Nguyen, 2025).

The UK follows clear government design principles that prioritise user needs, simplicity, iterative development, and accessibility for all citizens. Continuous emphasis on data security, open standards, and user research has helped the UK maintain high rankings in global digital government indices (Déchamps et al., 2025).

E-governance projects have been launched around Africa, and many countries have highlighted their manifestos on the implementation of these strategies (Chima & Kasim, 2018). Many scholars have argued that the rate of adoption of e-governance and technology in Africa is poor, which has hindered development (Kyem, 2016). It is estimated that 45 per cent of South Africa's population lives in rural areas, which have much less developed ICT infrastructure than urban areas (Kademeteme & Twinomurizi, 2019). Lack of fair access to all people, particularly in terms of the rural-urban divide in the allocation of national capital, long distances travelled, lack of skills required to use the internet, read, or comprehend content; long waiting times to use the internet; and high access costs (Mathu & Tlare, 2017).

In South Africa, there has been a steady development of internet service, which has allowed the government to adopt the National e-government Strategy and Road Map (Osah & Pade-Khene, 2020). The National e-government Strategy and Road Map was crafted so as to guide the utilisation of technology in transforming the public sector in providing quality service to the citizens (South Africa, 2017). Guided by the National e-government Strategy and Road Map (DTPS, 2017), various municipalities have adopted e-governance in service delivery and contained in the Integrated Development Plans (IDP) as well as Growth and Development Strategies (GDS) (Osah & Pade-Khene, 2020).

However, there have been protests by citizens across the country due to poor service delivery by municipalities (Netswera, 2014; Mamokhere, 2020). Municipalities in South Africa have slow

responses to customer inquiries, long waiting queues and poor customer service by the municipal staff (Kanyane, 2014; Mamokhere, J. (2020). According to the South African Local Government Association (2014) and substantiated by Vyas-Doorgapersad (2025), it is the primary obligation of municipalities to ensure that there is equitable provision of services to all citizens, especially in the underdeveloped regions. Although there is e-governance in the municipalities, it is not reaping the intended results as evidenced by widespread service delivery protests (Chima & Kasim, 2018). The Covid-19 altered the way municipalities operate and the quality of service delivery.

The Coronavirus disease 2019 (COVID-19) pandemic highlighted the world's reliance on the Internet. Digitalisation arose as a critical force in the maintenance of intimate connections, working conditions, and day-to-day operations in the face of travel bans and lockdowns (Ullah, Pinglu, Ullah, Abbas & Khan, 2021). Governments and public health agencies took advantage of these channels to keep the public updated about the new trends in the pandemic war.

Global leaders in e-governance responded swiftly and effectively. Singapore is directly described as one of the countries that acted quickly in implementing firm measures within days (Das & Zhang, 2020; Abdou, 2021), while Estonia offered timely and high service levels and innovative electronic communication in healthcare during the pandemic (Dreshpak et al., 2022). In the United Kingdom, the Government Digital Service (GDS) and GOV.UK platform enabled ...agile delivery of new services, such as furlough schemes and testing registrations, guided by user-centred design principles and shared digital components (Eom & Lee 2022).

South Africa's digital revolution during this period acts as a strong indicator of the continent's potential for e-government to other African countries (Costa & Peixoto, 2020). While some practices may have been restricted or prohibited during COVID-19 lockdowns, in South Africa, government agencies – especially those in charge of public service delivery, public healthcare, and economic development – were required to operate at full capacity. Continuation of operations resulted in a resurgence of e-governance since public service delivery could not be suspended because of the pandemic (Burlacu, Patarlageanu, Diaconu & Ciobanu, 2021).

Governments had long recognised the value of having a clear online presence, which could be achieved through traditional website formats as well as social media. Governments were able to improve their COVID-19 responses thanks to the use of social media and mobile penetration. Governments would exchange details about the pandemic with people through social media apps on smartphones (Ullah, Pinglu, Ullah, Abbas & Khan, 2021).

In South Africa, the major services which were reported to function inefficiently during the pandemic were water and waste treatment, sanitation and road maintenance (Nyasulu & Pandya,

2020). In Makhanda, Eastern Cape, residents had no water supply for five days due to a plant failure in May 2020 (Munzhedzi, 2021). The report by the Department of Planning, Monitoring and Evaluation (DPME) (2020) showed that only 63% of the infrastructure in municipalities was suitable for remote working. The report highlights that e-governance had not been fully embraced in municipalities in the presence of the Covid-19 pandemic.

DPME (2020) acknowledged that poor service delivery was attributed to poor revenue collection, limited staffing and cancellation of staff meetings. Masiya, Davids and Mangai (2019) posited that failures in service delivery by municipalities were due to organisational weaknesses. The reasons mentioned by DPME (2020) highlight that although mechanisms were in place, e-governance could not promote quality service delivery. This study seeks to explore the implementation of e-government innovations in Ngwathe local municipality in response to the COVID-19 pandemic.

1.3 Problem statement

Several scholars have expressed worry about the success rate of e-government efforts, with the majority of them failing to meet stakeholder expectations (Anthopoulos et al., 2015; Malodia et al., 2021; Nchofoung & Asongu, 2022). Researchers have looked at the failure rates of numerous ICT-led public-sector programs, and some have questioned the true influence of ICT on the country's development.

South Africa faces a host of obstacles despite its substantial investment in ICT, regulation, and regulatory systems to successfully carry out e-government services. In terms of service delivery, South Africa faces a host of issues, including hunger, injustice, corruption, unemployment, illiteracy, and a skills gap, to name a few. Because of the poor performance rate, many customers are unable to use these facilities designed to improve service quality, resulting in customer frustration (Muridzi, Meyer & Masengu, 2021).

Service delivery during the period of the pandemic was poor, especially regarding water and waste management and sanitation. Poor service delivery continues to be recorded in municipalities, which has been attributed to organisational failures despite the existence of e-governance. The major questions pertain to the challenges in the implementation of e-governance innovations in municipalities in response to the Covid-19 pandemic and why these innovations have not produced the desired effect of improved service delivery (Kariuki, Goyayi & Ofusori, 2021). Against this background, the study was motivated by the need to examine how e-governance innovations were implemented in Ngwathe Local Municipality in response to the COVID-19 pandemic and the challenges that affected their effectiveness in improving service delivery.

1.4 Aim of the study

The aim of the study is to explore the implementation of e-government innovations in Ngwathe local municipality in response to the COVID-19 pandemic.

1.5 Objectives of the study

The study's specific objectives are as follows:

1. To determine e-governance innovations being implemented in Ngwathe Local Municipality in response to the COVID-19 pandemic.
2. To identify challenges being faced in implementing e-governance innovations in Ngwathe Local Municipality.
3. To provide recommendations to enhance the implementation of e-governance innovations in Ngwathe Local Municipality.

1.6 Research Questions

1.6.1 Main Research Question

How are e-government innovations being implemented in Ngwathe Local Municipality in response to the COVID-19 pandemic?

1.6.2 Primary Research Questions

The corresponding research questions are as follows:

1. What are the e-government innovations being implemented in Ngwathe Local Municipality in response to the COVID-19 pandemic?
2. What are the challenges being faced in implementing e-government innovations in Ngwathe Local Municipality?
3. What are the recommendations to enhance the implementation of e-government innovations in Ngwathe Local Municipality?

1.7 Significance of the study

Digital Transformation of e-governance has the potential to be administered systematically. It is an instrument used to run a government for its citizens. The services can be provided to citizens on time and on demand. According to DPME (2020), there have been a few studies on the service delivery by municipalities during the Covid-19 pandemic to aid planning in South Africa. In

addition, Munzhedzi (2021) noted that in Africa, a few studies have been conducted focusing on the impact of e-governance on service delivery and crisis response in the public sector. Through exploration of the implementation of e-government innovations in Ngwathe Local Municipality in response to the COVID-19 pandemic, the study adds to the limited existing body of literature on the concept of e-governance. In addition, the study will be utilised by future academics as a reference. Moreover, the recommendations that the study will offer can be used to guide policy makers on how to effectively and efficiently implement e-governance innovations in response to crisis such as the Covid-19 pandemic.

1.8 Contribution of the Study

This study contributes to the existing body of knowledge on e-governance implementation in local government by providing practical insights from Ngwathe Local Municipality. It adds value by describing the experiences and views of ward committee members, IDP management committee members, and municipal employees regarding the implementation of e-governance initiatives. The study further contributes to understanding how e-governance is operationalised at the local government level, particularly in relation to service delivery processes, stakeholder engagement, and administrative efficiency.

1.9 Limitations of the Study

This study is limited by its small sample size of twenty participants, which restricts the generalisability of the findings to other municipalities. In addition, the study focused only on selected stakeholders within Ngwathe Local Municipality, meaning that the views of other relevant actors, such as community members and higher-level provincial officials, were not included. The qualitative nature of the study also means that findings are based on subjective experiences and perceptions, which may not be statistically generalisable. Furthermore, the study was constrained by time and accessibility, which limited the scope of data collection.

1.10 Study Outline

The study will be divided into five distinct chapters as follows:

Chapter 1 of the study provides an introduction to the study. This encompasses the introduction and background, problem statement, objectives, research questions and significance of the study.

Chapter 2 provides a literature review on the implementation of e-government innovations in response to the COVID-19 pandemic.

Chapter 3 provides the methodology adopted in the conduct of this study.

Chapter 4 presents the findings of the study and a detailed analysis of the study findings.

Chapter 5 provides a conclusion, general summary and recommendations of the study

1.11 Chapter conclusion

This chapter provided a foundational background and context on the intersection of e-governance and municipal service delivery. In as much as the global advent of the internet and ICT platforms has transformed public sector operations by enhancing transparency, accountability, and efficiency, the implementation rate within the African continent and South Africa specifically remains intermittent. This discrepancy is extremely visible along the rural-urban divide, where underdeveloped areas continue to contend with severe infrastructure shortages, high access costs, and an evident digital skills gap. The structural divide in South African local governance is defined by a constitutional mandate to ensure equitable service provision combined with systemic operational failures. Despite national frameworks like the National e-Government Strategy, local municipalities continue to experience widespread citizen protests driven by slow response times, extensive backlogs, and poor customer care.

This service delivery crisis was significantly intensified by the COVID-19 pandemic. Although the pandemic acted as a medium for a digital revolution that required public agencies to leverage mobile and social media channels, it simultaneously exposed profound institutional vulnerabilities. As highlighted by the Department of Planning, Monitoring, and Evaluation (DPME), most of the municipal infrastructure was poorly equipped for remote continuity, meaning that organisational weaknesses, constrained revenue collection, and limited staffing ultimately impeded the success of digital interventions.

Consequently, a critical gap persists between the deployment of e-governance tools and the actual realisation of improved, equitable service delivery during and after a public health crisis. To address this breakdown, this study transitioned from theoretical assumptions to an empirical investigation. By focusing on a specific local landscape, this study explored the implementation, systemic barriers, and operational realities of fulfilling e-government innovations in the Ngwathe Local Municipality in response to the COVID-19 pandemic. The next chapter discusses literature review in relation to the subject under investigation.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

Literature review is a search and assessment of the existing literature in your selected topic area or subject. It establishes the current state of knowledge in the field of the issue or topic you're writing about (Ridley, 2012). This chapter provides a literature review on the implementation of e-government innovations in response to the COVID-19 pandemic.

2.2 Theoretical Framework

This study is guided by a dual theoretical framework; The Technology Acceptance Model (TAM) and Institutional Theory. Together, these two theories provide a comprehensive lens to investigate both the technical adoption and the systemic institutional factors that can influence the implementation of e-government within municipalities.

2.2.1 The Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is a prominent theory for understanding how users accept and use information technologies (Silva, 2015). Originally developed by Davis (1989), the Technology Acceptance Model (TAM) suggests that an individual's or organisation's intention to adopt and use a new technology is mainly determined by two main cognitive factors: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). PU refers to the degree to which users believe that using a specific digital application will increase their performance or service delivery, while PEOU measures the extent to which using that system is perceived to be free of physical or mental effort (Lee *et al*, 2024; O'Dea, 2025).

TAM is directly relevant to this study as it helps to explain why municipal staff and citizens of Ngwathe either embraced or resisted newly introduced digital channels during the pandemic lockdown. As established in the introduction, South African municipalities face an extensive rural-urban divide, marked by high access costs, structural internet backlogs, and severe digital literacy gaps (Mathu & Tlare, 2017). TAM allows this study to investigate whether the technical design, ease of navigation, and apparent utility of Ngwathe's e-government responses influenced their overall success rate and user adoption.

2.2.2 Institutional Theory

While TAM focuses on technical adoption, Institutional Theory, rooted in the work of Meyer and Rowan (1977) and DiMaggio and Powell (1983) shifts the focus to environmental, cultural, and

political constraints. This theory argues that organisational actions and structures are not driven solely by technical efficiency, but are strongly shaped by institutional rules, driven by regulatory cultures, and socio-economic pressures to adapt to external dictates (Amenta & Ramsey, 2010; Kelly, 2019)

E-governance is not merely a technical project; it is deeply embedded within institutional governance. The introduction highlights that despite progressive statutory guidelines like the National e-Government Strategy and Road Map, South African local governments suffer from profound organisational weaknesses, poor revenue collection models, and inadequate infrastructure (Masiya, Davids & Mangai, 2019; DPME, 2020). Institutional Theory, therefore, provides the theoretical tools required to analyse why Ngwathe Local Municipality's internal organisational culture, staffing capacities, and bureaucratic friction might prevent these digital innovations from achieving their intended goal of improved, equitable service delivery.

2.3 Conceptualising e-government and e-governance

While the terms e-governance and e-government are often used interchangeably in literature, they have distinct definitions. According to Chen, Dawes, and Chen (2017:330), e-government refers to the government's use of information and communication technologies (ICTs) and electronic devices to provide services to the people and other stakeholders securely and efficiently, both inside and beyond the country's borders. Government-to-Citizen (G2C), Government-to-Government (G2G), and Government-to-Business (G2B) electronic networks are the product of these connections (G2B). While ICT infrastructures differ from department to department and sector to sector, the key goal is to provide services in a timely and efficient manner. The government must properly prepare for e-government so that it can be adopted efficiently to improve service quality, reduce costs, and increase public engagement and involvement (Costa & Peixoto, 2020).

E-government is a tool for changing the way the government works, interacts with people, and delivers services to them (Uwizeyimana, 2015:152; Mbambang, 2024). To encourage people to participate in policy decisions, e-governance includes e-democracy, e-service, and e-citizen. People may use online platforms to access government services and records, thanks to e-government (Rimjhim & Kumar, 2018). The term "e-service" refers to the process of providing services over the internet. Since most poor people live in rural areas of developed countries like South Africa, the opportunity to offer e-services to residents is especially relevant. People in rural areas of developed countries face many obstacles, including a shortage of transportation facilities, which makes travelling to government offices daunting and costly because they are

situated far from the villages where the majority of the population reside (Uwizeyimana, 2015:153; Mseke *et al*, 2024).

Since the beginning of the last decade, we have been living in the "age of e-government," which is described as "the use of information and communications technology to improve government efficiency" (PSA, 2019:1). E-government, according to Uwizeyimana (2015:151) and Camarero, & Oliva (2019), is about "using technology to increase the ease of communication between the government and its citizens." E-government has strengthened government procedures and the government-citizen relationship. The successful delivery of public services has been strengthened as the government and citizens' relationship improves (Nalubega & Uwizeyimana, 2019). People are able to access public services electronically through mobile devices such as smartphones, regardless of where they live in the region, thanks to e-government, which has eliminated the divide between rural and urban areas (Uwizeyimana, 2015, Mseke *et al*, 2024). It is widely assumed that e-government is the product of the digital transition that began during the Third Industrial Revolution (TIR) (early 1950s to early 2000s) and progressed into the Fourth Industrial Revolution (4IR) (early 2000s to present day) (PSA, 2019:1; Uwizeyimana, 2020a:4).

According to Jain and Sharma (2007) as supported by Milakovich (2021), "e-governance is the use of information and communication technology by the public sector to improve information and service delivery, encourage citizen involvement in decision-making, and make government more responsible, transparent, and effective." E-governance, according to Jain and Sharma (2007) and Uwizeyimana and Andersson (2024), entails new leadership styles, new methods of discussing and making policies and investment decisions, new ways of accessing education, new ways of listening to the people, and new ways of organising and distributing information and services. E-governance is a broader notion than e-government since it may alter how people interact with governments and each other (Jain & Sharma, 2007; Sheikh Abdul Kader *et al.*, 2025). "E-governance has the potential to introduce new ideas of citizenship, both in terms of citizen demands and duties, and its goal is to engage, enable, and empower the people" (Jain and Sharma, 2007; Lee-Geiller & Lee, 2022). According to Mukonza (2014), the concept encompasses a wide variety of elements of public sector governance, with a focus on how the use of ICTs improves governance. The concept, according to Mukonza (2014) and Lazor *et al.* (2024), omits the fact that e-governance has resulted in significant changes in the way government provides products and services.

According to Muhammad and Abu-Momtaaz (2007) as supported by Milakovich (2021), the use of ICT in governance has resulted in the information and knowledge replacing two recognised components of production, labour and capital. Furthermore, it is said that the internet has

achieved the same breakthrough that the printing press did in the fourteenth century (Muhammad & Abu-Momtaz, 2007; Twizeyimana & Andersson, 2024). It should be noted, however, that Muhammad and Abu-Momtaz (2007) use the words e-governance and e-government interchangeably in their book, understanding e-governance: A theoretical approach, as if they imply the same thing. As a result, it is claimed in this study that the two are separate and that any meaningful conceptualisation of either word requires a clear difference between the two.

E-government is further described as the use and application of information technologies in government to streamline and integrate workflows and processes, effectively manage data and information, improve public service delivery, and expand communication channels for citizen engagement and empowerment (United Nations, 2014, UNDP, 2026). Delivering services through the internet, telephone, community centres (self-service or assisted by others), wireless devices, or other communication networks is referred to as e-government (Pacific Council, 2012; Twizeyimana & Andersson, 2024). Van der Vyver (2007) distinguished e-governance from e-government by stating that the former extends beyond the boundaries of the latter, and e-governance does not just relate to a website and e-mail. Van der Vyver (2007) as supported by Lee-Geiller & Lee, 2022, went on to say that e-governance is essentially a shift in how government institutions interact with the outside world, which includes business and civil society.

E-government, according to Van der Vyver (2007) and Sheikh Abdul Kader *et al.*, 2025, is a type of e-business in governance that refers to the processes and structures required to provide electronic services to the public (citizens and businesses), collaborate with business partners, and conduct electronic transactions within an organisation. E-government, according to Mukonza (2014) and Milakovich, 2021, should be considered a subset of e-governance. E-government, according to Lal and Haleem (2002) and Twizeyimana & Andersson, 2024, provides an opportunity to improve user satisfaction by providing access to government information and services 24 hours a day, 365 days a year, in a rapidly evolving space where static information is being replaced by online transactions and integrated government solutions. According to Lal and Haleem (2002), Lee-Geiller and Lee, 2022 and UNDP, 2026, "e-governance is defined as the use of electronic methods in (1) government-to-government and government-to-business interactions, as well as (2) internal government processes to simplify and enhance democratic, government, and business elements of governance."

According to Mukherjee and Roy (2016), the words e-government and e-governance are closely linked since both terms are used to describe the government's usage of ICT services available to the people. Although there is a debate among researchers about the proper use of the two terms, Visser and Hossana (2008) and Lazor *et al.*, 2024 defined e-governance as the use of ICT to

support government administration or management, whereas e-government is the use of ICT to provide services in maintaining government operations correctly. According to Visser and Hossana (2008), the phrase e-government refers to the use of ICT to concentrate on government or public services. According to Mukherjee and Roy (2016), e-governance is a way for developing nations to achieve “Good Governance” by reducing corruption and providing efficient and effective quality services to their people. According to Reilly (2002) and Lee-Geiller & Lee, 2022, e-governance is defined as “processes and mechanisms for harnessing the potentialities of ICTs at different levels of government, the public sector, and beyond, with the goal of improving good governance.”

Misurace (2007) and UNDP, 2026 defended a working definition of e-governance for Africa, which was also developed by the Africa Training and Research Centre in Administration for Development (CAFRAD) within the framework of the e-Africa Initiative for Good Governance, namely, “the use of ICTs, particularly the internet, to adopt a new conception and attitude of governing and managing where participation? As a result, e-governance is a new method of coordinating, planning, articulating, and executing decisions and activities linked to governance issues. Within the framework of national and international development objectives, governments may use e-governance to reinvent themselves, become closer to citizens, and form tighter alliances as well as collaborations with different communities of interest, practice, knowledge, conviction, and interdependence” (Misurace, 2007; UNDP, 2026). E-government is therefore just a new name for procedures that have been in government for decades (Gil-Garcia, 2012, Milakovich, 2021; Twizeyimana & Andersson, 2024).

According to Roman (2015), the meaning of e-government will be determined by the study setting, which is influenced by the researchers' backgrounds, preconceptions, and the function being highlighted. E-government is generally described as the use of information and communication technologies (ICTs) in government (Dawes, 2008; Fountain, 2001; Maureen-Brown, 2007). Some scholars distinguish between e-government and e-governance (Calista & Melitski, 2007; D'agostino, Schwester, Carrizales & Melitski, 2011); others distinguish between e-government and e-democracy; and still others simply break down e-government into functions like e-service, e-organisation, e-democracy, and e-partnering (Carrizales, 2008). In current scholarship, this multi-functional division has expanded to include e-participation and digital co-production, reflecting a highly integrated, citizen-centric approach to state administration (Lee-Geiller & Lee, 2022; Twizeyimana & Andersson, 2024). The difficulty in establishing an agreement on the concept of e-government, according to Roman (2015) and Sheikh Abdul Kader *et al.*, 2025, indicates, among other things, the underlying battle for affirmation and indemnification within the area of research.

According to Misurace (2007), the Common Wealth Centre for e-governance notes that e-governance differs from e-government in the sense that e-government refers to how public sector institutions use technology to apply public administration principles and conduct e-government business: it is government using new tools to improve the delivery of existing services (Misurace, 2007). Misurace (2007) went on to say that e-governance encompasses the vision, tactics, planning, leadership, and resources required to carry it out: it is the organisation and use of political and social power. This systemic, macro-level perspective is highly resounding with modern digital public administration frameworks, which maintain that while e-government manages the internal mechanical systems, e-governance drives the broader political ecosystems and cross-sector partnerships required to bridge socio-economic divides and secure sustainable digital equity (Milakovich, 2021; UNDP, 2026).

This study has adopted Jain and Sharma's (2007) definition of e-governance, which states that e-governance is the use of information and communication technologies by the public sector to improve information and service delivery, encourage citizen participation in decision-making, and make government more accountable, transparent, and effective. The study also used the United Nations' (2014) definition of e-government, which states that e-government refers to the use and application of information technologies in government to streamline and integrate workflows and processes, effectively manage data and information, improve public service delivery, and expand communication channels for engagement and empowerment. These criteria were utilised to create an e-governance framework that is appropriate for enhancing service delivery in the South African local governments.

Context-specific public service delivery, according to Tavares, Soares, and Estevez (2016), refers to particular efforts made by national, regional, and local governments in providing public services in order to achieve specific public policy and sustainable development objectives. According to Janowski (2015), public service delivery refers to tailoring digital government initiatives, including their objectives, design, operations, and outcomes, to different local, sectoral, and local-sectoral contexts in order to ensure that the outcomes of public service delivery contribute significantly to public policy and development. Service delivery, according to Ntetha and Mostert (2011), is an activity or action that meets a person's requirements. To put it another way, it's how a customer's requirements are fulfilled. However, this study utilised Janowski (2015) and Ntetha and Mostert's (2015) definitions of service delivery to better understand the elements of service delivery and how they may be improved via the use of ICTs as part of e-governance.

2.4 Evolution of E-governance

Information processing is a big component of government work, whether it's for health records administration, school curriculum material availability, birth registrations, or procurement. Inaccuracy and data loss in data storage, restricted availability of necessary information, and a lack of openness in government operations have all been issues in the past for each of these complicated sets of tasks. As a result, governments began to use electronic information systems to solve these and other problems.

The idea of e-governance extends the use of ICT beyond the computerisation of administrative activities to provide people and companies with access to information. It particularly mentions the use of ICT to solve development issues. The worldwide move toward government use of ICTs as a significant resource began in the mid-1990s, with governments first building their own big information systems and data repositories, and subsequently with government-to-government (G2G) communication facilitated by email and the Internet. Many governments created agencies to purchase and supply network infrastructure, while government departments concentrated on providing the content layer for services. The UNDP runs an ICT for Development Observatory that produces a variety of research and insights on topics such as e-governance, business development, and poverty reduction.

As e-governance develops, people have been able to engage with government via a variety of channels and methods, including information kiosks and so-called one-stop centres, but most importantly, Internet-based information and services. Because information can be quickly updated and new services introduced, the government or services website has become a key element of e-governance throughout the globe. Residents may interact with municipalities online about the efficiency and efficacy of services in the case of municipalities. Advances in Internet information security have resulted in increased confidence and, as a result, increased use of Internet payment engines. The goal of e-governance ranges from improving citizen-state engagement by publishing government information on the internet and inviting input, comment, and feedback to using ICT to improve social and economic conditions by providing community access centres and encouraging ICT use among small businesses, the urban, poor, and rural communities.

Singapore, for example, was a pioneer in sophisticated ICT usage, creating an electronic court system, while India was a pioneer in rural applications such as community-owned information kiosks and computerised rural land registration systems.

The application and influence of ICT in governance systems is referred to as e-governance. It entails new ways to interact with government, new leadership styles, new ways to transact, and new systems for organising and distributing information and services.

2.5 Overview of global e-governance in municipalities

Rutgers conducted a global e-governance study from 100 major municipalities globally in 2013–2014, according to Holzer, Zheng, Manoharan, and Shark (2014). The study rated municipal websites on a worldwide scale and evaluated them in terms of digital governance. Simply said, digital governance includes both digital government (public service delivery) and digital democracy (citizen participation in governance). The survey's instrument for assessing city and municipal websites was made up of five parts:

- Personal privacy and security,
- Usability',
- Content,
- Products and
- Citizen and Social Participation

The study focused on worldwide cities based on their population size and the overall number of Internet users in each country (Holzer *et al.*, 2014). The top 100 most connected countries were determined using statistics from a United Nations-affiliated agency, according to Holzer *et al.* (2014). The biggest city by population in each of these 100 International Telecommunication Union (ITU) countries was then chosen for the research and utilised as a proxy for all cities in that country, according to Holzer *et al.* (2014). According to Holzer *et al.* (2014), the research examined the official websites of each of these major cities in their original languages in order to investigate how local people view their governments online. According to Holzer *et al.* (2014), all of the 100 cities chosen had official municipal websites, which were assessed between August and December of 2013. In the 2005 study, 81 of the 100 cities had official websites, which rose to 86 in the 2007 survey, 87 in 2009, 92 in 2011–12, and 100 in the 2013–14 survey (Holzer *et al.*, 2014). This reflects a substantial rise in e-governance adoption among municipalities across the globe (Holzer *et al.*, 2014). Seoul, New York, Hong Kong, Singapore, and Yerevan had the highest assessment ratings out of 100 cities evaluated in 2013–14. (Holzer *et al.*, 2014).

When compared to the 2011–12 research, Holzer *et al.* (2014) found that there were significant changes in the top five cities, with Seoul being the highest-ranked city and the distance between first and second cities widening. Table 2-1 shows the top 20 municipalities in terms of digital governance from 2009 to 2013–14. Only one African municipal nation, the City of Johannesburg,

was in the top 20 in 2009. As a result, it is evident that the continent as a whole is still trailing behind in terms of e-governance adoption.

The table further shows that cities in Asia, Europe, and North America consistently occupy most top positions, indicating that advanced digital governance is closely associated with strong institutional capacity, long-term ICT investment, and well-developed urban governance systems. Cities such as Singapore, New York, London, and Toronto remain recurring performers, highlighting their continuous efforts in leveraging technology to improve public service delivery and citizen engagement.

An important observation is the limited representation of African cities in the rankings. Johannesburg appears only in the 2015 list (ranked 20th) and does not feature in the top twenty in succeeding periods. This absence suggests sustained challenges in digital revolution across many African urban centres, including inadequate ICT infrastructure, limited financial resources, and uneven institutional capacity to implement and sustain e-governance initiatives.

Generally, the ranking suggest that digital governance performance is greatly influenced by persistent technological investment, institutional readiness, and strategic policy implementation. These inequalities highlight the expanding digital divide between developed and developing regions and provide a strong validation for strengthening e-governance implementation in South African municipalities.

Table 2-1: Top cities in digital governance 2015-2020.

	2015		2017–2018		2019–2020	
Rank	City	Score	City	Score	City	Score
1	Seoul	84.74	Seoul	82.23	Seoul	85.80
2	Prague	72.84	Toronto	64.31	New York	66.15
3	Hong Kong	62.83	Madrid	63.63	Hong Kong	60.32
4	New York	61.10	Prague	61.72	Singapore	59.82
5	Singapore	58.81	Hong Kong	60.81	Yerevan	59.61
6	Shanghai	57.41	New York	60.49	Bratislava	58.31
7	Madrid	55.59	Stockholm	60.26	Toronto	58.05
8	Vienna	55.48	Bratislava	56.74	Shanghai	56.02
9	Auckland	55.28	London	56.19	Dubai	55.89
10	Toronto	52.87	Shanghai	55.49	Prague	54.88
11	Paris	52.65	Vilnius	55.35	Vilnius	53.83
12	Bratislava	52.51	Vienna	54.79	Oslo	53.40

13	London	51.96	Helsinki	54.22	Stockholm	52.52
14	Jerusalem	50.64	Auckland	53.19	London	52.25
15	Tokyo	50.59	Dubai	53.18	Helsinki	51.90
16	Zagreb	50.16	Singapore	52.21	Vienna	51.27
17	Ljubljana	49.39	Moscow	51.77	Macao	48.69
18	Lisbon	48.82	Copenhagen	50.06	Mexico City	47.01
19	Brussels	48.01	Yerevan	49.97	Kuala Lumpur	46.16
20	Johannesburg	47.68	Paris	48.65	Zurich	45.36

Source (Holzer *et al.*, 2014).

2.6 Overview of the 2016 United Nations e-government survey

In the United Nations (UN) Survey (UN, 2016), 29 nations got a “very high” rating, with EGDI scores ranging from 0.75 to 1.00, compared to just 10 countries in 2003. Since 2014, all 193 United Nations Member States have provided some kind of internet presence (UN, 2016). E-government is now widespread in many more nations, in striking contrast to 2003, when 18 countries, or about 10% of the world's countries, lacked an online presence. In 2016, 51 per cent of nations had “low EGDI” or “medium EGDI” ratings, compared to nearly 73 per cent in 2003. (UN, 2016).

Table 2-2 provides a list of nations that are in the forefront of e-government development, together with their EGDI values and three components: the Online Service Index (OSI), the Telecommunication Infrastructure Index (TII), and the Human Capital Index (HCI). The United Kingdom (UK), which was placed fifth in the 2003 Survey and has been in the top ten for the previous seven editions of the Survey, takes the top spot for the first time (UN, 2016).

These aspects were therefore taken into account while answering the research objectives raised in Chapter 1 and creating an e-governance framework for enhancing service delivery in South African local governments. The UK has also been at the forefront of the worldwide trend of adopting new web technologies such as HTML5 as part of its goal to make its national site gov.uk “available to the broadest possible audience, but this does not imply working to the lowest common denominator” (Berriman, 2012).

According to the United Nations Survey (2016), Australia remains in second place, while the Republic of Korea dropped from first place in the 2014 Survey to third place. The Australian government was one of the first to implement a comprehensive one-stop national portal, providing citizens with a secure single sign-on for a variety of interactive services at the federal and local

levels, ranging from birth certificates to Medicare, taxation, job search, aged care, and child support, among others (Government of Australia, 2015).

By the end of 2016, the Republic of Korea planned to transfer over 750 e-government services to the cloud, demonstrating its commitment to e-government innovation. More than 60% of e-government services would have been moved to cloud computing by 2017, according to estimates (2015, Iglauer).

Table 2-2: World leaders in e-government.

Rank	Country	Index
1	United Kingdom	0.9193
2	Australia	0.9143
3	Republic of Korea	0.8915
4	Singapore	0.8828
5	Finland	0.8817
6	Sweden	0.8704
7	Netherland	0.8659
8	New Zealand	0.8653
9	Denmark	0.8510
10	France	0.8456

Source (UN, 2016).

Table 2-3, on the contrary, lists the worst ten nations in terms of e-government, with Somalia placed 193rd with a score of 0.0270. (UN, 2016). These e-government dimensions, according to the United Nations e-government survey (UN, 2014), aim to improve service delivery by simplifying bureaucratic procedures, increasing efficiency and transparency, improving information sharing and service innovation, and increasing citizen empowerment.

As a result, the study examines how the goals of e-government in rich nations may be implemented in developing countries like South Africa, as well as how it can aid this research in creating an e-governance framework that enhances service delivery for local governments in South Africa.

Table 2-3: The lowest-ranked 10 countries in e-government.

Rank	Country	Index
184	Mauritania	0.1734
185	Burkina Faso	0.1598

186	Sierra Leone	0.1594
187	Djibouti	0.1337
188	Chad	0.1256
189	Guinea	0.1226
190	Eritrea	0.0902
191	Central African Republic	0.0789
192	Niger	0.0593
193	Somalia	0.0270

Source (UN, 2016).

2.7 Digital divide in Africa

When Mutula (2005) assessed the digital gap in developing nations in general, and Africa in particular, he found a strong link to the individual countries' economic situation. By virtue of its diaspora of many cultural groups and values, Mutula (2005) stated that Africa poses complicated issues of digital divide, citing the fact that Africa has numerous languages, with practically none forming the language of the internet and computers. According to research conducted in the United States (Tomas Rivera Policy Institute, 2002), individuals with poor English skills fall behind their English-speaking counterparts in terms of access to computers and the internet. In 2002, it was projected that the use of English in computer-based communication reached an all-time high of 80%. (Warschauer, 2001). Warschauer (2001) further argue that a significant percentage of indigenous people in Sub-Saharan Africa cannot read or write in English, putting them at a disadvantage as prospective computer users. In addition, there are resource limitations on the African continent, such as a lack of access to Personal Computers (PCs), limited internet connections, and insufficient phone lines, to name a few. The high cost of access, unsuitable or weak regulatory regimes, poor communications services, and a lack of locally produced content aggravate the issue (Acacia, 1997; Digital-Dividends, 2001).

The literature, according to Fink and Kenny (2003), lists four "gaps" that make up the digital divide. These are the following:

- i. "a lack of access to ICTs, as assessed by the number of people who utilise them, with the widespread use of phones and laptops with internet access,
- ii. a gap in ICT capability, as assessed by skills and the availability of many complementary assets,

- iii. a chasm in real usage – the intricacies of telecommunications for different purposes, the quantity and length of time users spend online, the number of Internet hosts, and the degree of electronic commerce; and, lastly,
- iv. a difference in the effect of usage as assessed by financial and economic returns.”

Fink and Kenny (2003) went on to say that academics either group these four views together or concentrate only on one of them.

Norris (2001) identified three aspects of the digital divide:

- the worldwide split between developed and developing nations, ii. the global gap between developed and developing countries, iii. the global divide between developed and developing
- in highly industrialised nations, the socio-economic gap between the information wealthy and the information poor,
- and the democratic gap in the online community between those who utilise digital tools to engage, mobilise, and participate in public life and those who do not (Norris, 2001).

Keniston (2004) expanded on the idea of digital divide by distinguishing four types:

- the type that exists in any country, whether developed or developing, between the wealthy, educated, and powerful and the rest of the population,
- the linguistic and cultural divide that exists between those who speak English or another Western European language and those who do not,
- the widening digital divide between wealthy and poor countries and
- the development of a new elite group known as the digerati, which refers to the beneficiaries of the tremendously successful information technology industry, as well as other knowledge-based industries like biotechnology and pharmacology (Ohemeng & Grant, 2014).

South Africa is similarly impacted by the digital divide, which is a significant issue in this study. According to the United Nations Survey (UN, 2014), the digital divide is caused by broad socio-economic inequality, with economic and social disparities between countries, groups, and individuals affecting their ability to access and use ICT to promote well-being and prosperity at the root of both. As a result, the digital divide impacts individuals in both developed and poor nations in some way. Despite significant success in offering a portfolio of e-services and online information, attempts to bridge the digital divide in any meaningful manner have not yielded substantial rewards, according to the United Nations Survey (UN, 2014). Although meaningful

access to ICT has progressed beyond connectivity issues, the United Nations Survey (UN, 2014) concluded that e-government has yet to adequately embrace human, economic, and social resources, institutional structures, and governance networks, all of which are critical to developmental outcomes. Policy makers have increasingly emphasised on the connection between the use of new technologies, education, and social inclusion, especially for poor and vulnerable populations, in recent years (UN, 2014).

South Africa, like other developing nations, has established a series of strategic programs aimed at benefiting the whole population and combating poverty, illiteracy, and unemployment since its foundation as a democracy. (Mawela, 2016) and Verdegem (2011) emphasised the need to eliminate digital disparities while encouraging all people, especially those who are presently socially disadvantaged, to participate in the information society. This is especially true in emerging nations like South Africa, where 45.5 per cent of the population is classified as poor (Statistics South Africa, 2014), with a 25.5 per cent unemployment rate. As a result, the goal of this research is to create an e-governance framework that will serve the poor who cannot pay to access municipal services online.

2.8 Usage of social media by the government

The government's use of social media, which is defined as "a group of Web 2.0 14 technologies that facilitate user interactions," is represented as "a group of Web 2.0 14 technologies that facilitate user interactions." – is part of a broader set of e-government activities, which are described as "the delivery of government information and services to people through the Internet and other digital media." The right to navigate government websites and the services they offer is generally referred to as e-government. E-government channels have grown in popularity as new developments have progressed to incorporate social media, which has become a "significant development in e-government" (Bosman, 2021).

The provision of "complementary information dissemination, networking, and engagement networks" that effectively cross the gap between governments and people is a common motivation for governments to use them. Social media can be used by governments in two ways: indirectly or directly. When governments react positively to public pressure across social media platforms, they depend on social media in an indirect way, drawing on "crowd-based campaigns, on government actions" (Burlacu, Patarlageanu, Diaconu & Ciobanu, 2021). Indeed, social media can be seen as a "way to diffuse viewpoints and build a critical mass to put topics on decision-makers' agendas." Governments use social media in a direct way as they run institutional accounts, sharing information with people or providing for open contact, potentially leading to

greater citizen participation in governance. Furthermore, amid health emergencies and other disasters, policymakers will use data obtained from social media (Costa & Peixoto, 2020).

Interactions with the people via social media support governments the most in terms of confidence and accountability. This occurs as technology is used to "actively change policy-making, decision-making, or service delivery systems" an achievement that only a few policymakers have accomplished in reality. According to an analysis of government use of social media in Organisation for Economic Cooperation and Development countries, although government use of social media has become more widespread, it has not been especially revolutionary. Government agencies mostly utilise social networking "with a very conventional messaging context," failing to capitalise on any of its advantages (Burlacu, Patarlageanu, Diaconu & Ciobanu, 2021). Social media not only improves political accountability and citizen confidence, but it also encourages policymakers to reach out to people through generational boundaries, increasing representation and engagement (Dwivedi *et al*, 2020).

Governments, health agencies, and foreign organisations such as the United Nations and the World Health Organisation (WHO) are primarily dependent on these "usual" methods of disseminating accurate and up-to-date information about the pandemic to the general public. Since there was no previous understanding of the illness, the existence of such information was critical in the current situation, despite the fact that social media has proven to be an effective medium for disseminating content; messaging has been inconsistent (Thani, 2020).

More than just posting content, social media is beneficial. It may also be used to resolve disasters and crisis', especially in the case of a public health emergency. On November 21, 2016, hospitals in Melbourne, Australia, were flooded by thousands of people seeking care for 'thunderstorm asthma,' which was caused by an increase in 'pollen levels and a specific kind of thunderstorm.' The authors of a report on the use of Twitter during this case concluded that their "methods... could be used to track early warnings for other health incidents such as epidemics, which have a longer lead time" in the wake of the event (Dwivedi *et al*, 2020). Furthermore, 'open-source information, such as social media, can be used to automatically alert health officials to a possible incident prior to official notification'. According to the research, social media may be an important instrument in the battle against disease outbreaks. This has been apparent throughout the recent pandemic, indicating that a shift in the role of social media in e-governance is taking place (Bosman, 2021).

2.9 Social media as an e-governance platform during COVID-19

Before the relevant government branches devised solutions to public health emergencies, they had to collect as much evidence on an epidemic outbreak as quickly as possible. The data collection, referred to as epidemic intelligence is concerned with the systemic identification of disease outbreaks from formal and informal sources (Dagba, 2020). Formal sources (such as medical records) would include case counts, but informal sources (such as social media) could be used to identify outbreaks until they became visible in formal sources (Dwivedi *et al*, 2020).'

Building from the example of Australia, social media messages related to COVID-19 had been tracked in order to track and forecast disease outbreak trends. In the United States, data research firm Dataminr was harvesting reports pertaining to "firsthand accounts of [COVID-19] symptoms" on social media in order to build predictive maps indicating where disease outbreaks were likely to become more serious. Prior flare-ups of COVID-19 were followed by a surge in Facebook messages in the infected countries, according to Dataminr analysis, making social media a valuable method in forecasting the course of the disease epidemic. Dataminr would provide much-needed insight on possible "virus hot spots" one to two weeks before any "exponential increase in official COVID-19 case counts" occurred, based on its results (Tabuga, Domingo, Diokno-Sicat & Ulep, 2020).

South Korea and Taiwan were cited as leading indicators of how policymakers used new communications technology to respond to COVID-19 and potential health emergencies. These countries successfully used communications technology to "understand what their people were saying and deter the dissemination of health misinformation." South Korea used its pre-existing 'secure emergency text messaging scheme,' while the Central Epidemics Command Control in Taiwan used 'broadcast radio, YouTube, memes, and even free cartoon stickers of the health minister' to connect with the people. To specifically answer concerns from interested people, the Taiwan Centres for Disease Control used Facebook, Thread, and a phone hotline (Sharma *et al*, 2021).

The Data for Good Network, for example, is a Facebook program that collects data from publicly accessible databases in order to generate reliable 'movement charts, population density maps, [and] disease prevention maps,' among other things. Various humanitarian, scientific, and scholarly organisations are participants in the initiative. Governments may benefit from data sets that are freely accessible. This software, according to the expert, could help researchers and the government to manage COVID-19 by monitoring opinion, patterns, hotspots, as well as handling disinformation and fake news. Some African governments had already signed up for this program (Tabuga, Domingo, Diokno-Sicat & Ulep, 2020).

Furthermore, Facebook has developed Crisis Response, an in-app service that can be useful in the event of natural or man-made disasters. This service helps survivors of such disasters to "label themselves "clean," as well as seek assistance, send money, and access information. Customised strategies that are tailored to each unique situation are particularly valuable. The expert went on to say that this was an often-overlooked aspect, emphasising the importance of governments and people being well-informed about the resources and goods available to them (Tabuga, Domingo, Diokno-Sicat & Ulep, 2020).

2.10 E-governance and innovations in South Africa

ICT may be utilised to enhance service quality, improve the efficiency of public institutions, reach vast numbers of people, promote openness and accountability, encourage electronic engagement and participation, and prevent corruption, according to a general agreement (United Nations, 2020). According to the United Nations (2020), there are projects in Africa to promote urban administration via the use of ICT and the internet as part of e-government. Increased usage of ICT has spawned new forms of urban government in Africa, resulting in improved service delivery to its inhabitants. Digital government is a tool intended to improve public service delivery, increase the people's involvement, improve transparency, accountability, inclusivity, and make life better for everyone (UN, 2020). Municipalities should ensure that services for underprivileged populations are enhanced, according to Mawela, Ochara, and Twinomurinzi (2017).

According to the United Nations, local governments are quickly using digital technology for a range of purposes (2020). ICT is used by many individuals to exchange and communicate public information. Municipalities may communicate information about their goals and objectives, as well as their day-to-day operations and service offers (including mechanisms for interacting with local government). According to Habib (2004), the influence of ICTs on the connection between governments and people is most successful at the local level. Furthermore, incorporating ICTs into local/municipal government may result in educated populations serving as the foundation for successful participatory governance and a well-informed community (UN, 2020). The problem, according to Habib (2004), is to figure out how to employ ICTs in municipalities in a way that benefits all stakeholders while preventing a digital gap among municipality members.

According to the United Nations (2020), towns could participate in creative marketing to promote local tourism to a broader (and sometimes specially targeted) audience. ICT plays a critical role in promoting communication and consultation, allowing a diverse variety of stakeholders to connect with and participate in local government, as well as directly or indirectly contribute to decision-making. Using ICT for service delivery assists local governments in streamlining operations and reducing administrative burdens, facilitating remote interaction with the public and

more efficient internal communication and collaboration, and increasing overall efficiency in an environmentally friendly manner (UN, 2020). According to Thompson (2016), this omnipresent and more real-time Information Technology (IT) has developed into the Internet of Things during the previous 20 years (IT). IoT allows for more connections in the built and natural environments, as well as a large, linked database. Many various sorts of data are collected by city governments all around the globe (Thompson, 2016). Cities have attempted to share these statistics with their inhabitants throughout time, according to Thompson (2016). Local governments began using information technology in the 1980s not just to speed up data processing, but also to enhance service delivery, facilitate public connection with local government, and perhaps boost political involvement (Thompson, 2016).

2.11 Public Sector Reform, Good Governance and ICT for Development

In order for e Government to thrive, it needs a supportive institutional environment. Public sector reform to enhance service delivery, effective governance, and the use of ICTs for development are all important components of an enabling environment.

From the 'reinventing government' ideas in the United States to the 'computerisation of the public service' in Malaysia, public sector reform was a prominent topic in the literature on managing public institutions in the 1990s. These ideas were based on research and analysis of the many changes that occurred in public services across the globe during the early stages of 'globalisation via technology.' The necessity of public sector reform is still relevant today in South Africa, which is still burdened by a rule-driven bureaucracy rather than a flexible bureaucracy fuelled by managerial excellence.

Good governance covers the state's, private sectors, and civil society's roles in creating an environment in which human endeavour may benefit society. It concentrates on the aspects of governance that are political, economic, and administrative. "Good governance guarantees that political, social, and economic objectives are founded on broad societal agreement, and that the poorest and most vulnerable people's voices are heard in development resource allocation decisions.

ICTs, such as telephones, computers, and broadcasting, may help to achieve long-term human development and poverty eradication by making social communication more accessible and cheaper, as well as allowing quick and safe commercial transactions. In the twenty-first century, "ICTs are strong if not essential instruments in the enormous scaling up and interlinkage of development interventions and outcomes" as an accelerator, driver, multiplier, and innovator.

In the context of governance, ICTs may also play a crucial role in accelerating information and knowledge exchanges between the government, people, and businesses. The task for all nations, according to the United Nations Development Programme (UNDP), is to create a governance structure that promotes, supports, and maintains human development. This implies frequent contact and input, as required by the local Integrated Development Plans' community involvement standards (South Africa). Many governments across the globe have made significant ICT investments in order to improve governance procedures. E-governance is defined as the use of information and communication technology (ICT) in governance processes and decision-making in such a manner that people and communities may get frequent updates on government operations and participate in government decision-making at a low cost. Increased efficiency of government operations (information and communications flows across institutions of government), strengthening democracy (through citizen participation in decision-making), enhancing transparency (by publishing government information), and providing better services to citizens are among the expected benefits of such public sector reforms (through virtual, but direct interaction).

2.12 Challenges of e-governance in South Africa

Local governments in South Africa are not completely adopting and integrating e-governance tools of ICT as a new way forward for public management in enhancing service delivery, according to Akula, Narasimha, and Chandrashekar (2014). According to Akula *et al.* (2014), the South African government has made significant investments in both physical resources and contemporary ICT infrastructure, but the public is still sceptical that they have benefited to the degree that the government intended. For example, on April 11, 2016, the Gauteng Department of Education introduced online school registration to facilitate planning and equitable allocation of students to schools. However, owing to stress, the system collapsed shortly after its debut, since it could not manage more than 6000 hits per second (Times Live, 2016).

According to Thakur and Singh (2012), the eThekweni Municipality introduced the eThekweni Revenue Management System at a cost of R250 million, but the expenses have now risen to R474 million. The city manager said that the municipality would hire an independent risk assessor to test the system for a fee since they could not guarantee that the new billing method would function (Thakur & Singh, 2012). According to Thakur and Singh (2012), Johannesburg City Council is facing similar problems with its ICT services, leading to legal action by both businesses and residents over inadequate services such as inconsistent invoices and interrupted services. In South Africa's North-West Province, a series of touch-screen kiosks was built for distant rural

areas, according to Heeks (2002). The kiosks' lack of current or local information, as well as their lack of interaction, led to their removal less than a year later (Heeks, 2002).

The electronic National Traffic Information System (eNaTIS) was established in 2007. (Rajapakse, Van-Der-Vyver & Hommes, 2012). According to Rajapakse *et al.* (2012), the Auditor General informed the Department of Transport one month after its installation that the eNaTIS system was faulty and that there was an 80% probability of it failing. According to Rajapakse, *et al.* (2012), the department moved ahead and implemented the R408 million systems, halting the country's seven vehicle licensing processes. In the same year, a High Court ruled that eNaTIS presented a security risk in terms of the confidentiality of citizens' data, according to Rajapakse *et al.* (2012). Passwords were not properly managed, and security updates were not properly deployed, according to Rajapakse *et al.* (2012). Despite the fact that the eNaTIS system had been in place for five years, it still did not provide full customer satisfaction (Rajapakse *et al.*, 2012). In light of this, the goal of this study is to create a safe e-governance framework that supports better service delivery for South African municipal governments.

2.13 E-government and COVID-19

The designation of COVID-19 as a worldwide pandemic by the World Health Organisation (WHO) was unique in world history and a watershed point in our generation, with a similar event happening approximately a hundred (100) years earlier (UN, 2020). Over 1.7 million people died as a result of the outbreak, with an estimated 80 million individuals afflicted as of December 26, 2020. (WHO, 2020b). COVID-19 has had a worldwide effect like no other public health problem (UN, 2020; WHO, 2020b). Although vaccinations had been produced and were being utilised in many countries, it was unknown when the epidemic would end, causing economic, health, and social uncertainty in many countries. The epidemic has had such an effect that the World Bank estimated that one-third of businesses across the world would have adopted or expanded their usage of ICT-enhanced platforms to manage their business processes and operations during the crisis (Paul & Wadhwa, 2020). The phenomenon is expected to result in long-term changes and redefinitions of what constitutes a workplace, the nature of employment, and how different tasks are carried out. Many companies, according to Dwivedi *et al.* (2020), have redesigned and implemented systems that allow workers to work from home permanently.

Controlling the spread of infectious illnesses like COVID-19, according to Hellewell *et al.* (2020), necessitates the deployment of mechanisms for early case detection. The efficacy of such interventions is generally determined by two factors: the degree of transmission at the time of onset of symptoms and the number of secondary illnesses caused by each new infection. As a result, governments in many countries implemented WHO-recommended measures such as

contact tracking, social/physical distancing, isolation, and quarantine to minimise COVID-19 transmission and, as a result, mortality. In many areas, however, the difficulties of identifying contacts led in broad community transmission and mass infection due to the difficulty of tracing contacts (Whaiduzzaman *et al.*, 2020). However, adoption and use of e-government are increasing around the world in order to provide efficient and effective service to key stakeholders at all levels (Heeks, 2001; Pagani & Pasinetti, 2008; Ntulo & Otike, 2013; UNDESA, 2018, 2020). In addition, numerous e-government solutions were established in response to the worldwide epidemic (Danquah *et al.*, 2019; Goh & Arenas, 2020).

Many IT-based systems incorporated cell phones or mobile apps, which were used not just to gather data but also to educate citizens about pandemic safety measures and precautions (Steinhubl *et al.*, 2015; Danquah *et al.*, 2019). IT applications such as mobile apps and social networks, according to Goh & Arenas (2020), were needed in the management of the COVID-19 crisis's major stages before, during, and after phases. The emphasis of government agencies during the early stages of the illness was on information control, which is disseminated in such a way as to regulate people's behaviour and guarantee compliance (Coombs, 2014; Rowe *et al.*, 2020; Bavel *et al.*, 2020; Walton, 2013). Preventive and preparation actions were typically taken during the pre-crisis period. Citizens were given information via a variety of IT-based methods. The adoption of steps to prepare institutions and people to cope with the aftermath of a crisis, as well as future crises, is part of the post-crisis stage (Institute of Public Relations, 2007). IT technologies are now being utilised to increase capacity, evaluate the epidemic, and forecast future events.

When it comes to the employment of different IT systems in the battle against COVID-19, privacy concerns were often highlighted. For example, (Sharma & Bashir, 2020) investigated the usage of fifty (50) COVID-19-related applications and how they accessed users' personally identifiable information to determine compliance with the right to privacy and civil liberties protection. Similarly, the Australian Department of Health, with the help of the Digital Transformation Agency, developed COVID-Safe, a system that allowed government entities to perform contact tracing in order to prevent the spread of COVID-19 (Watts, 2020). Similarly, Siriwardhana *et al.* (2020) suggested using 5G and Internet of Things-related technologies to offer government solutions to the COVID-19 pandemic, such as telemedicine, contact tracking, and citizen education.

2.14 Chapter Summary

This chapter began with an introduction to e-governance and e-government. E-governance as customer satisfaction, e-governance as a process and interaction, and e-governance as a tool are all addressed. The main pillars of e-governance, upon which this research is based, are defined. The importance of e-governance efforts in providing high-quality online services is emphasised. Municipal service delivery in South Africa is addressed in terms of the general services provided by municipalities. The research technique used in this study are discussed in the next chapter.

CHAPTER 3 METHODOLOGICAL FRAMEWORK

3.1 Introduction

Research methodology is a crucial section in a research study as it outlines the step by step processes that are followed in conducting a research about a particular phenomenon. Research methodology can be defined as the general approach or framework that the researcher uses when carrying out the research project (Leedy and Ormrod, 2010; 12). The aim of this section is to provide a detailed description of the research design, the research methods and sampling procedures applied.

3.2 Research Methodology

According to Brynard and Hanekom (2006:36), research methodology involves the collection of data, a reflection on the planning, structuring and execution of the research in order to meet the requirements of truth, objectivity and validity. Research methodology focuses on the process of research and the decisions that the researcher has to make in order to achieve the research goals (Bryman, 2012:105). According to Fox and Bayat (2008:37), research methodology is the systematic, theoretical analysis of the methods applied in a field of study. It consists of the theoretical analysis of the group of methods and principles related to a branch of knowledge (Bryman, 2012:105).

It can, therefore, be argued that research methodology focuses on the process of research and the decisions that the researcher must make to carry out the research project. The research methodology must fit in with the framework outlined by the research design and be guided by it. The research design and research methodology used attempted to make this study more than a mere bibliographic study.

This research used an interpretivist research paradigm for the following reasons: According to Gerrick (1999:150), interpretivism is associated with a philosophical position or idealism and is used to group diverse approaches, including constructivism, phenomenology and hermeneutics, which are the approaches which reject the objectivist's view that meaning exists independently of the conscious world. Denzin and Lincoln (2000:38) add that interpretivist studies focus on meaning and may use various methods to address the different aspects of the issue. According to Henning (2013:19) and Creswell (2013:25), interpretive research is fundamentally concerned with meaning and seeks to understand definitions and concepts of people in the meaning and situations of societies. In general, the interpretivist approach is based on the following beliefs:

- Relativistic ontology: this approach sees reality as inter-subjective, based on the meaning and understanding of social and experimental levels.
- Transactional or subjective epistemology: according to this approach, people cannot be distinguished from their knowledge, so there is a clear link between the researcher and the research topic.

Within the interpretivist research paradigm, interaction and interpretation are emphasised. Creswell (2013:25) argues that the interpretive paradigm is not concerned with the search for broadly applicable laws and rules, but rather with the aim of making deep descriptive analysis and bringing interpretative understandings of social phenomena to the fore. The study aims to explore the implementation of e-government innovations in Ngwathe local municipality in response to the COVID-19 pandemic, and it is necessary to derive meaning and interpretations from the perspective of the participants who experience the implementation of e-governance during the Covid-19 pandemic.

The fundamental assumption of interpretivism is that most knowledge is acquired, or at least refined, through social constructions such as language, consciousness, shared meanings and documents (Angen, 2000:378). Interpretive research seeks to understand phenomena through meaning that people assign to them (Trauth, 2001:219). The development of interpretivist philosophy is based on the critique of positivism in social science.

Angen (2000:378) mentions that the interpretive paradigm is an objective reality, independent of the frame of reference of perception, due to the emphasis on created or intentional reality. It focuses on discovering versatile perspectives of all participants in a social environment. Thus, interpretivist research is appropriate to explore the implementation of e-government innovations in Ngwathe local municipality in response to the COVID-19 pandemic. Using semi-structured interviews, rich descriptions was provided on the implementation of e-government innovations in Ngwathe local municipality in response to the COVID-19 pandemic.

The notion that the researcher is detached from the objects of research is not compatible with interpretive philosophy (Angen, 2000:380). The researcher also attempts to study individual perception and experience, and while the human mind is used to do so, it is impossible to separate the researcher from what is being investigated (Babbie & Mouton, 2001:60). Thus, the researcher can be seen as an outsider during the process of conducting the research.

The interpretative paradigm uses qualitative research methods, both in the collection and analysis of data. In this study, the approach was used specifically because it is suitable for carrying out the study. Qualitative methods specifically enabled the researcher to develop an understanding

of the implementation of e-government innovations in Ngwathe local municipality in response to the COVID-19 pandemic.

3.3 Research design

Bryman (2012) describes a research design as a framework for data collection and analysis. The choice of research design reflects decisions on the priority given to a variety of dimensions of the research process. According to Babbie and Mouton (2001: 52), the research design refers to the overall strategy chosen to integrate the various components of the study in a meaningful and logical way, thereby ensuring that the research problem is effectively addressed, and it also draws attention to the approach to data collection, measurement and analysis.

As mentioned above, this study was based on a qualitative research design. According to Babbie and Mouton (2001:45), this type of research is exploratory in nature and ideal for studies in the social sciences. It is used to understand underlying reasons, opinions and motives in the world (Bryman *et al.*, 2014:55). It provides insight into the problem and helps bring forth new ideas for qualitative research. According to Fox and Bayat (2007:10), qualitative research involves document research and a descriptive survey. According to Bryman *et al.* (2014:55), it is characteristic of qualitative research to carry out the research in a natural environment, where participants or objects are studied. It focuses on the process rather than the outcome, which emphasises the object's perspective, to understand in depth and to gain an explanation of the actions and events (Fox & Bayat, 2007:10). Furthermore, it seeks to understand the social actions in the specific context - rather than generalising to a population, which follows an inductive process and thus led to the generation of new hypotheses.

A case study approach was followed to address the identified problem. According to Neuman (2003:205), a case study approach includes the collection of data and analysis within the context of the phenomenon in a specific area, such as Ngwathe Municipality, so that the phenomenon can be studied in depth.

Semi-structured interviews were used for data collection for this study. These data collection techniques are often used in interpretivist studies and are a way of approaching participants physically and psychologically (Creswell, 2013:26). The questions raised in the interviews were derived from the literature study and research problem and eventually propose recommendations and solutions to the identified problem.

3.4 Population and sampling

According to Brynard and Hanekom (2006:55), the research population refers to all the objects, topics, events, phenomena or activities that the researcher wants to research in order to generate new knowledge. Welman, Kruger, and Mitchell (2011:52) also refer to the population as the study object, which may consist of individuals, groups, organisations, human products and events, or the conditions to which they are exposed. Sampling refers to the method of choosing elements to partake in a study from the population (Creswell, 2011). Sampling is conducted since it is not possible to establish contact with every member or unit of the population hence it is cost-effective (Taherdoost, 2015).

3.4.1 Target population

The target population refers to the actual elements with whom the study seeks to collect data from so as to meet study objectives (Wang *et al.*, 2020). The target population refers to the elements from which inferences and study conclusions were drawn from (Creswell, 2014). The target population of the study comprises all ward committee members (approximately 190 calculated at 10 members across 19 wards) and the employees of Ngwathe Municipality (the municipality maintains a baseline of around 740 total positions according to Municipalities of South Africa, (2025)).

3.4.2 Sampling methods

Purposive sampling was used to obtain the data from the ward committee members. Purposive sampling allows the researcher to include participants in the sample who have significant knowledge of the concept and implementation of e-governance at Ngwathe Local Municipality.

According to Neuman (2003:213), purposeful sampling is used to judge the opinion of an expert with the selection of cases with a specific purpose in mind. Therefore, it would make sense to use purposeful sampling to obtain cooperation from the IDP Management Committee members, as they are experts in their specific focus areas. In other words, these officials can indicate specifically their views with regard to e-government innovations implementation.

As purposive sampling was employed, no fixed inclusion or exclusion criteria were applied further than the requirement that participants possess knowledge relevant to the study objectives. Selection was therefore based on participants' ability to provide information on e-governance implementation, their availability during the data collection period, and their willingness to participate voluntarily and provide informed consent.

3.4.3 Sample size

For the purpose of this study, the sample consisted of ten ward committee members, five IDP management committees and five employees of the Ngwathe Municipality. Thus, a total of twenty participants is targeted.

3.5 Data collection Instrument/s

The study made use of an interview guide as the data collection instrument. An interview guide is a list of open-ended questions and key themes that the researcher uses to direct the interview process while allowing flexibility for probing and follow-up questions. The order of questions and the extent to which the researcher deviates from the guide may vary depending on the flow of the interview and the responses provided by participants. This approach is consistent with semi-structured interviews, which allow participants to express their views freely while ensuring that all relevant topics are covered (Kallio et al., 2016).

3.6 Data Collection Procedure

This study used in-depth interviews based on the interview guide. The interview and inside the in-depth interview are techniques for collecting qualitative information. It is based on the analysis of individual discourse, in which the ideas, opinions and evaluations of the participants are relevant to the research objectives. In the in-depth interview, the interviewer prove that the interviewee exposes his intimate feelings, experiences, motivations, perceptions and desires.

With the participants' consent, all interviews were audio-recorded to ensure that the information provided was captured accurately and comprehensively. In addition, field notes were taken during the interviews to record key statements, and contextual information that could support data interpretation.

In the process of in-depth interviewing, the interviewer must maintain interest, trust and deepen the discussion, so that the interview is always focused on the subject of the study (Johnston *et al.*, 2018). An in-depth interview can cover a wide range of situations, from a brief informal speech to a structured interview regulated in space and time. According to Legard *et al.* (2003), different types of in-depth interviews are structured, semi-structured and unstructured interviews.

The study adopted a semi-structured interview. Semi-structured interviews are characterised by having a less fixed structure, in which there is the possibility of altering the order of questions, the discursive route, as well as the timing of the interview (Newcomer, Hatry & Wholey, 2015). Semi-structured interviews allow the research to derive quality data as they allow for probing and further

commenting without losing focus of the study objectives (Pathak & Intratat, 2012). Semi-structured interviews were adopted so as to ensure rich data to be collected which has a positive impact on the quality of the study.

The main advantages of the in-depth interview are that it allows obtaining very valuable information regarding complex behaviour, sensitive issues or susceptible to high reactivity, as well as situations subject to rigid social regulations. Similarly, it implies a high level of consciousness since the interviewee is the continuous focus of attention; it also eliminates the pressure and much of the burden of social desirability inherent in the group interaction.

The conclusions are attributable to the person, although the role of the interviewer is very important, since he does not have to intervene by cutting free speech, he has to control that there are not too many or too few questions and interpret the non-verbal communication of the individual. The main drawbacks are inherent to most qualitative techniques, mainly the high need for personal resources and time.

3.7 Data Analysis

During this stage, the researcher takes care to build the reality of the interviewees. The analysis is a reflection process where "the researchers go beyond the data" to access the essence of the phenomenon of study (González & Canon, 2010) by means of which "the researcher expands the data beyond the descriptive narration" (Dicks *et al.*, 2005) and develops modifications according to the results (Dey, 1993). To begin this process, some authors make pertinent recommendations: Hernández (2003), "proposes that all materials be examined before beginning; label them, organise them and classify them according to logical criteria, and evaluate them as complete, legible and clear as they are". Ratcliff (2002) believes that the development would have optimal results if one work with codes, categories and subcategories; these should be verified and linked to the issues as the investigation progresses".

On the other hand, Taylor and Bogdan (1990) recommend "the analysis to be conducted in three levels: discovery, codification and relativisation. In the discovery phase, all recorded data were examined and sorted, and the related topics were searched". The researcher began by "carefully examining each recording, comparing it with the notes, comments and anecdotes that have been written during all the meetings, reviewing the course of the topics, because the important thing was to construct concepts and interpretations; If the researcher finds emerging issues, including them, all this information allowed the researcher to elaborate classifications and types, which helped the researcher to develop more solid arguments".

Coding consists of “concentrating all the data that refers to similar topics, ideas and concepts and analysing them. To do this, Hernández (2003), specifies two phases of coding, in the first, they are collected by categories of analysis and in the second, they are compared to each other, grouping them into themes and looking for possible linkages”.

Finally, “during the relativization stage of the data, the information was interpreted within the context in which they were obtained, specifying the direct and indirect data, describing the contexts, events, transcendental and significant situations for the interviewees”; to better understand and systematise information, the researcher can make use of diagrams, charts, drawings, matrices and all kinds of schemes that allow one to find patterns and categories to explain events and build solid arguments.

In this study, the results were presented using graphs to show the sample demographics, while direct quotations from participants were included to provide supporting evidence and to ensure that participants' perspectives were accurately represented.

3.8 Ethical Clearance/Considerations

According to Babbie and Mouton (2001:520), ethics is typically associated with morality and dealing with issues that are both right and wrong. Bryman (2012:135) points out that the collection of data and various methods of manipulating data to ensure the desired outcomes are subject to ethical considerations. Before the researcher began the study, permission was obtained from the Municipal Manager's office, as the Chief Executive Officer of the Ngwathe Local Municipality administration. Although the information used in this study is mainly available in the public domain, the following principles were maintained:

- Participants volunteered.
- Names of the respondents were not requested in order to protect their identity.
- Participants signed a consent form and agreed that their names would not be included in this study.
- Participants were not deceived in any way.

i. Permission to conduct research

Permission was obtained from the University Ethical Committee to register the study for ethical clearance due to the involvement of a gate guard in the person of the Municipal Manager as well as interviews conducted with identified respondents.

ii. Informed consent by participant

The ALRC (undated) refers to informed consent as “the researcher’s efforts to inform research respondents of the possible consequences, risks and benefits of the study before engaging them

in the study, including that at any point, they can choose to discontinue with the study, and no explanation would be sought from them. In this study, this process was done verbally”.

iii. Confidentiality, non-identification and non-traceability

The principle of confidentiality was observed. Schi and Tao (2008) discussed in depth the confidentiality principle. An important aspect, as per their discussion, is the issue of the relativity of confidentiality. According to them, this refers to “the fact that whilst respondents’ personal names may not be published, yet their collective contributions to the study form the larger part of the findings of a study without implicating them in any way. The researcher explained to the participants how confidentiality would be handled in the study, including that they could either opt out of the study or seek clarity where they feel the confidentiality of their responses and/or identity would be compromised”.

iv. Harm

The principle of no harm was observed. Strydom (2002) highlights that, “the researcher must ensure that no harm will come to the participants in any way as a result of their decision to participate in a study. Since the current study, the researcher strived to model questions in a way that protects the emotional and mental well-being of the participants and avoid trauma and or abuse”.

3.9 Conclusion

The chapter provided a detailed description of the research design, the research methods and sampling procedures applied. It outlined the step-by-step processes that were followed in conducting this research giving the general approach or framework that the researcher used in carrying out the research project. The following chapter provides the presentation and analysis of the data gathered.

CHAPTER 4 RESULTS AND DISCUSSION

4.1 Introduction

Chapter Four presents the findings of the empirical data that were collected and analysed based on the techniques contained in the research methodology. The data presentation and interpretation section links theory to empirical findings. The findings of the study are interpreted and discussed based on the literature.

4.2 Sample demographics

This section presents the sample demographics based on age, gender and education. The sample consisted of 20 participants who were coded from P_1 to P_{20} in line with the ethical principle of confidentiality and anonymity.

4.2.1 Age composition

The participants were prompted to provide information about their age. Figure 4.1 below shows the sample composition by age.

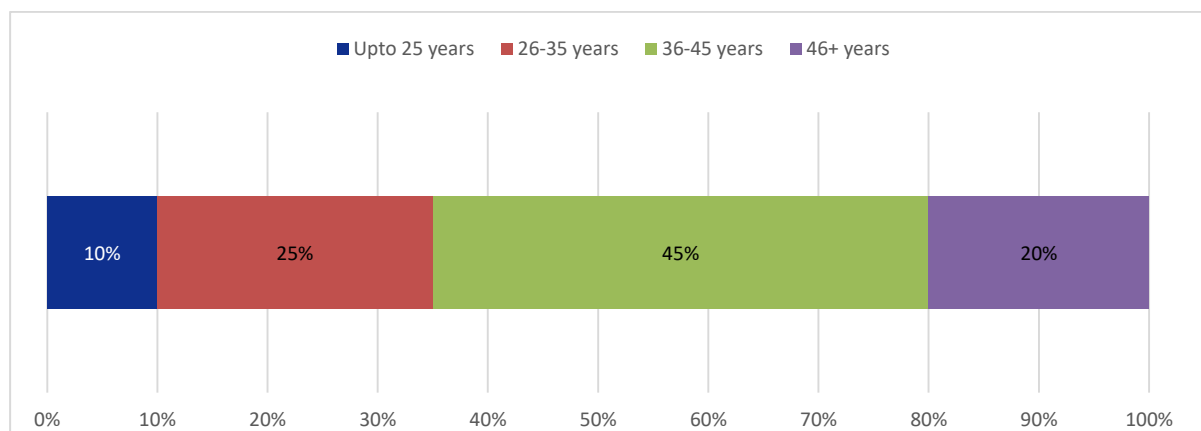


Figure 4-1. Age composition of the sample.

The results from Figure 4-1 show that the majority of the participants, constituting 45%, are between 36 and 45 years of age, followed by 25% who are in the 26 to 35 years age bracket and 20% who are 46 years and older. The remaining 10% are 25 years and younger. The study results show that 35% of the participants are youths (below 35 years). According to Phaswana (2016) youth participation in the local governance structure remains low despite various policies being in place. The study results are aligned with the findings by Phaswana (2016) as there are more adults than youths in the study sample.

4.2.2 Gender composition

The participants were prompted to provide information about their gender. Figure 4-2 below shows the sample composition by gender.

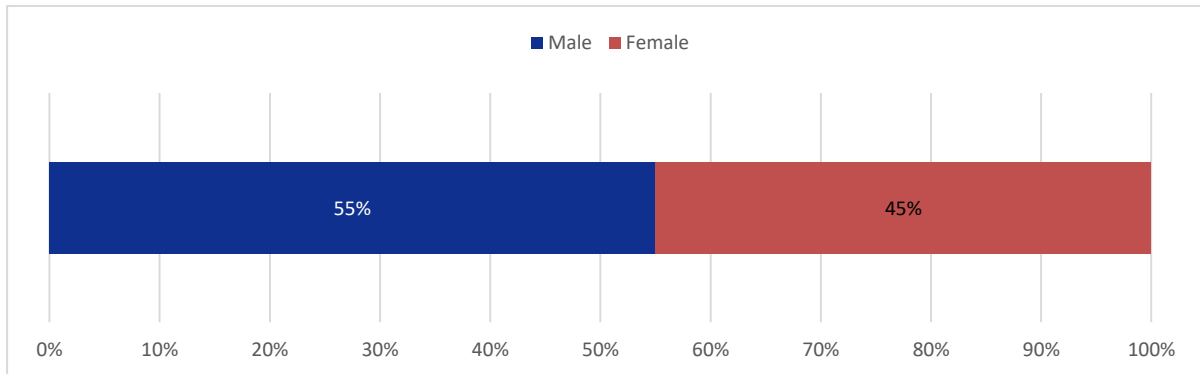


Figure 4-2. Sample composition by gender.

The study results from Figure 4-2 show that the majority of the participants, constituting 55%, are male, and the remaining 45% are female. A study by Selokela (2014) noted that female representation in municipalities across the country was inferior to male representation. According to Statistics South Africa (2021), female labour participation was lower than that of males. The study results are aligned with the findings by Selokela (2014) and Statistics South Africa (2021), as they show that there are more males in the sample compared to females.

4.2.3 Sample composition by education

The participants were prompted to provide information about the highest level of education qualification which they hold. Figure 4.3 below shows the sample composition by education.

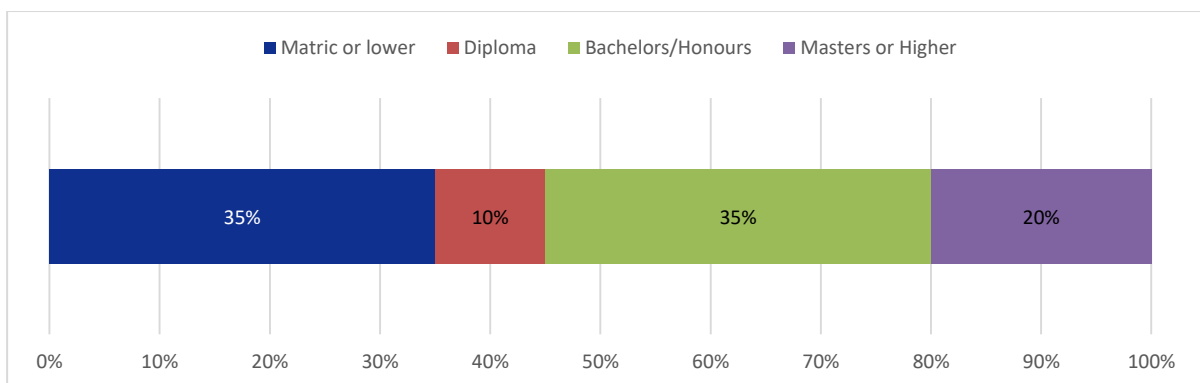


Figure 4-3. Sample composition by education.

The study results from Figure 4-3 show that 35% of the participants hold a Bachelor's/Honours degree, followed by 35% who have a Matric qualification or lower, and 20% have a Master's degree or higher. A further 10% of the participants are Diploma Holders. Tholen (2020) posited

that based on educational credentialism, tertiary education is the process through which individuals acquire the skills, knowledge, and competence necessary to perform their assigned tasks completely. The study findings indicate that the majority of participants have higher education credentials beyond Matric, indicating that they possess the necessary knowledge and skills on e-governance and municipal operations.

4.2.4 Sample composition by experience

The participants were prompted to provide information about the working experience they have in municipal operations. Figure 4-4 below shows the sample composition by experience.

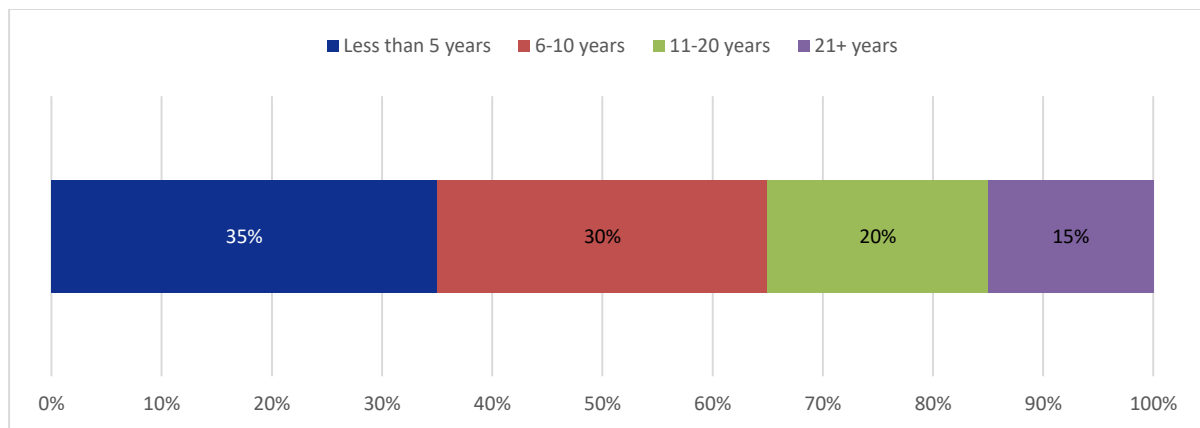


Figure 4-4. Sample composition by experience.

The study results from Figure 4-4 show that 35% of the participants have experience which ranges from 1 to 5 years, followed by 30% who have 6 to 10 years of experience and 20% who have 11 to 20 years of experience. The remaining 15% have experience of at least 21 years or more. According to Sloane (2011), a person with more than five years of experience in an area of speciality or industry is considered to have advanced knowledge. Based on the notion by Sloane (2011), more study participants have advanced knowledge on e-governance and municipal operations, as 65% of participants combined have more than five years of experience.

4.3 Understanding of e-governance

In modern governmental institutions, public officials should have thorough and detailed knowledge of e-government mechanisms so that superior service is delivered to the citizens. The participants were prompted to provide their understanding of e-government, and other participants noted that e-governance is enabled by the use of ICT:

“E-governance is concerned about the use of technology in delivering service to the citizens” (P₈).

“These days technology is everywhere, and the government has utilised it to make things better, it is basically applying ICTs to improve service delivery” (P₅).

“E-governance is the improvement of the service to the people by making use of the digital platforms. The internet of things has been the pivotal thing that has enabled the use of e-governance, without it I don’t think it would have existed” (P₃).

“I am not sure of the actual definition, but you use technology to manage your operations such as planning and other things” (P₁).

“It is the provision of government services over digital platforms” (P₁₆).

The use of ICT in governance processes has resulted in a paradigm change in the area of governance known as e-government (Holzer, Zheng, Manoharan & Shark, 2014). E-governance is the use of information and communication technology (ICT) to enhance the delivery of government services (Jain & Sharma, 2007). According to Mukonza (2014), e-governance makes specific reference to the use of information and communication technologies (ICT) to address development and public service challenges. Furthermore, the participants highlighted the platforms on which e-governance is implemented.

“With the advent of the social media, it has enabled the council to communicate with the residence, and this is part of e-governance” (P₁).

“The website has been the enabler of e-governance in this municipality, we have the resources section where you can access all the information, even the tender they are flagged on the website, and this is what we are doing” (P₇).

“We also communicate with the stakeholders via emails. Back then people used to write letters, and this delayed the whole processes of the municipality, but we email you can even get instantaneous feedback. Emails have enhanced e-governance, and this is good especially for the community” (P₁₆).

“e-governance is not concerned about the website, but it is all about the public service over the internet” (P₄).

The comments by the participants are supported by Prabhu (2013) who stated that one of the most revolutionary developments in recent years has been the introduction of the internet, which has altered the way in which business is conducted in both the public and private sectors.

The study results show that the participants are aware of the mechanism and the concept of e-governance. The participants noted that e-governance is the use of ICT in delivering public services to citizens. This is supported by Bannister and Connelly (2012), who stated that e-governance is a term that refers to the use of technology for communication, integration of stand-alone systems and services, and facilitation of government functions. According to Meijer (2015), in order for the citizens to get good public service, public officials must be cognisant and knowledgeable of the processes and mechanisms of delivering the service. The study results are aligned with the findings by Meijer (2015), as the participants are knowledgeable of e-governance in the municipality.

4.4 E-governance innovations implemented

According to Moon (2021) and Layne and Lee (2021), many governments around the globe have implemented e-government solutions ranging from basic websites to two-way communication, integrated websites with online transactions, and more. The participants noted that there is e-procurement, e-statement, social media and a digital payment channel.

4.4.1 Digital payment channel

Municipalities make every effort to maximise revenue collection by providing payment methods to their people (Yang, 2017). The participants highlighted that the municipality is implementing digital payment in response to the Covid-19 pandemic.

“Yes, so we have been trying to collect revenue through many ways during the pandemic. People are now making payments online” (P₁₀).

“COVID-19 has had an impact on everyone, and the municipality has been affected. Our revenues have been poor, and this has affected operations. We are collecting the revenue through digital platforms, and this has been helpful because we really need this money” (P₁₂).

“We accept the payments in various methods and these days we are mostly focusing on online payments because they are transparent and they do not involve need for the people to come here and make payments” (P₁₅).

“The banks have aided us in order to make sure that there are contactless payments. We have glitches here and there but most of the time it works just fine” (P₁₁).

“You do not need to go to the municipality offices these days to make payments. You can even buy your electricity over the phone all you need is the meter number. It is good to have technology” (P₁₄).

Linked to the payments, other participants highlighted that some residents are receiving bills and statements through emails.

“Some households are receiving their statements on the email” (P₁₉).

“The communication from the municipality has been improving over the past few years and you get to statements on your email. That is improved convenience there” (P₁₁).

The study findings show that digital payments were implemented in response to the Covid-19 pandemic. Digital payments encourage transparency in the system, and they bring the citizens closer to the public services. Many public sector organisations have been utilising digital payments in response on the Covid-19 pandemic. In the Covid-19 times, information and communication technology (ICT) have brought many changes in society and governance (Singh & Rana, 2017). Hence municipalities in South Africa are developing a variety of payment methods and applications that encourage people to pay their bills online rather than waiting in queues (Chemisto & Rivett, 2018).

4.4.2 E-procurement

E-procurement is the acquisition and selling of goods, work, and services between businesses, consumers, and governments through the Internet and other information and networking systems (Mélou, 2020). The participants noted that e-procurement has been used in response to the Covid-19 pandemic.

“The tender information is now available on the website, and anyone can access it” (P₈).

“The municipality has been putting its tenders on the website so that all the contractors can have the same information” (P₈).

“In the time of COVID-19 travelling was restricted so we have sent the documents once we had received the proof of payments. The tender documents were emailed to the prospective contractors” (P₁₇).

“It takes time to have a fully technologically based procurement unit but at the moment we are having to deal with the pandemic and we are using emails. They are fast and you do not have to do menial tasks such as printing many pages” (P₆).

“The municipality has done so well with its Supply Chain Unit. I hear the contractors are praising them for sending the documents via emails” (P₇).

The study results show that e-procurement was used in response to the COVID-19 pandemic. With public coffers strained and the epidemic disrupting established bureaucratic processes, there is a chance to innovate and include much-needed cost reductions (Mélou, 2020). As the epidemic affected supply chain networks and presented a danger to state functioning, governments were serving their constituents via digital procurement (Sanchez-Graells, 2020). E-Procurement enables the public sector organisation to have stocks of critical supplies to ensure the continuation of operations during the pandemic.

4.4.3 Social media

Social media are interactive technologies that enable the production and exchange of information through the use of virtual communities and networks (Levy, 2020). The participants highlighted that social media has been used in response to the Covid-19 pandemic.

“In this modern day, where almost everyone has phones, the municipality has capitalised on that to provide us with the information we need” (P₉).

“The municipality has been using Facebook during that difficult time” (P₂₀).

“Social media is now a powerful tool, people think that it is not used for business, but the pandemic has taught us to embrace any form of communication and the municipality embraced it” (P₁).

Social media allows users to produce and share information, as well as engage in social networking (Levy, 2020). Hua and Shaw (2020) conducted an examination of local governments' use of social media in the metropolises and found out that it increases citizen engagement and allows for citizen comments. The participants noted that the use of social media is interactive in response to the pandemic.

“If you look at the Facebook page of the municipality, it is very interactive. They reply to your concerns immediately” (P₁₂).

We have been using our Facebook page to keep the community informed, and they have also been reporting service delivery issues there (P₇).

“The pandemic has altered the way people operate, and we have been forced to change the communication channels, and now we use social media. You know, social media being social

media, a lot of information is exchanged, some useful, some is not. But the good thing is you get to interact with people” (P₁).

“When the consultative meetings notice was posted on Facebook, many people responded to it. It shows the power of social media in connecting with the masses” (P₈).

The study results show that social media was implemented in response to the Covid-19 pandemic by the municipality. Social networking is useful for more than simply publishing material, it is used to resolve catastrophes and emergencies, particularly those involving public health (Hua & Shaw, 2020). Numerous social media platforms enable its users to produce and share content on the web, as well as engage with others dynamically, making it simpler to discover and connect with one another online. A study by Mori, Barabaschi, Cantoni and Virtuani (2020) concluded that municipalities were promoting social media as an effective communication tool, which increases ICT adoption as well as promotes good practices in the fight against the Covid-19 pandemic.

4.5 Benefits of e-governance

The implementation of e-governance had benefits for the public sector institutions, citizens and other stakeholders. The participants highlighted that the benefits of the implementation of e-governance at the municipality are improved accountability, transparency, efficiency and communication with the stakeholders.

4.5.1 Transparency

Through the use of ICT, governance becomes more transparent as public sector institutions make information accessible on the internet (Dash & Pani, 2017). E-governance enables citizens to have access to information at their convenience.

“We had a challenge where citizens did not know where to access the municipal information about services offered. We needed to improve on communication with the residents, and this has been improved by the use of the internet” (P₁₈).

“The primary and most important goal of e-governance is to make the information available to the residents. This has given the platform for analysis of our operations, and they have become more transparent” (P₆).

“The primary focus is to make information accessible to all the people concerned. This improves transparency in the municipality. It shows that you are committed to dealing ethically and you do not have anything to hide from the stakeholders” (P₁₈).

According to Jain and Sharma (2017), transparency is one of the benefits of adopting e-governance. The comment by the participants shows that the implementation of e-governance in the municipality has enhanced transparency. Transparency is defined as functioning and operating in such a manner that it is clear to stakeholders about the activities are being taken (Han, 2020). Other participants highlighted that e-governance ensures transparency and fights corruption.

“With the internet, there is nowhere to hide; you can always be monitored, and people will know the activities that you will be doing. The good thing about e-governance is that it eliminates those illicit and corrupt behaviours” (P₂).

“Even today, the activities of the municipality are now viewed by anyone. The tenders, the procurement and the finances, it is a way to deal with corruption” (P₁₀).

The study results show that the implementation of e-governance enhanced transparency by making information accessible to stakeholders. However, Munzhedzi (2021) noted that the role of e-governance in improving is limited as corruption is still rife despite its implementation in the various countries. Internet access to information reduces the red tape and the governing process becomes transparent, removing any opportunity for the government to hide information from people (Dash & Pani, 2017). E-governance significantly improves government openness and promotes e-democracy through availing pertinent information available to the public.

4.5.2 Efficiency

The implementation of e-governance is meant to ensure that public sector service provision is efficient. Efficiency is the capacity to avoid wasting resources, energy, effort, money, and time when performing a task or achieving a desired outcome (Bhattacharya & Suri, 2017). The participants highlighted that the implementation of e-governance improves the efficiency of the municipality.

“It has greatly improved the efficiency of the municipality. The activities now are faster, even paying the bills, you no longer have to wait in the queues, and this is a good thing” (P₂₀).

“People can now easily access the services from the municipality. If they report, let us say, faults or leakages on the social media pages, the response is now swift” (P₂₀).

Paper-based communication requires a large amount of stationery, printers, and computers, among other things, necessitating ongoing high expense; hence, the internet and telephones

make communication more affordable, which saves the government money and time (Levy, 2020). Other participants stated that,

“We used to have a lot of papers, and this made us take time to make a decision which negatively affecting service delivery. But with e-governance, we have eliminated all this paperwork and we now respond in time” (P₁₆).

Poor record management is another impediment to efficient service provision in South Africa and e-Governance through ICT infrastructures improves record management (Ngoepe & Ngulube, 2016). Other participants noted that;

“With e-governance, you do not have to do those cumbersome jobs like filing and stuff, it does for you. All you just do is access the files, and this has helped us in doing our jobs” (P₁₃).

“It became difficult to manage and monitor these operations manually. Essentially, the departments were unable to manage the volume of work involved with manual processing and were forced to devise a solution, and e-governance came as a solution” (P₁).

E-governance entails reorganising the public sector to provide more effective public administration (Bhattacharya & Suri, 2017).

“Our organisation is now streamlined so that we can manage the municipal affairs better and deliver quality service to the residents” (P₄).

The study results show that the implementation of e-governance has improved efficiency. E-government adoption and usage are growing globally in order to offer efficient and effective service to important stakeholders at all levels (Ntulo & Otiye, 2013). E-government enables greater social efficiency and effectiveness, which results in a more efficient use of public resources in general. However, a study by Mamokhere (2019) noted that the major problem in South African municipalities is poor efficiency in service delivery, which has resulted in strikes. The study results contradict the findings by Mamokhere (2019) and show that the implementation of e-governance results in improved efficiency.

According to preliminary research, a lack of effective governance is the consequence of an insufficient use of the potential of information and communication technology (ICT) to solve service delivery problems (Bhattacharya & Suri, 2017). Without the use of ICT, local governments would have failed to provide the desired outcomes or meet established goals. E-governance results in efficiency, but poor implementation may lead to the benefits of e-governance not being fully realised (Ju, Liu & Feng, 2019).

4.5.3 Accountability

Accountability is synonymous with answerability, blameworthiness, responsibility, and the expectation of account-giving in terms of ethics and governance (Ju, Liu & Feng, 2019). The primary goal of implementing e-government is to increase accountability while also enhancing service delivery in the public sector (Kalsi & Kiran, 2015). The participants highlighted that e-governance improves accountability in the municipality.

“With everyone having the same information, your decisions are scrutinised and it improves the accountability of public officials” (P₉).

“We now post the annual reports on the website, where everyone can have them and we get asked often when people do not agree with the contents of the reports. Now you cannot do the things without thinking about the consequences it has on everyone involved” (P₁₄).

“It improves accountability because people will be monitoring you. It gives the people information, so the municipality's actions should be ethical. Back then, when there was no technology, the municipalities could do wrong things and hide them from the public, even from the government. These days, with these technologies used, the municipality has become more accountable” (P₁₄).

E-governance encourages citizens' participation, which fosters accountability and good governance. In addition, accompanied by accountability, e-governance builds trust in the system. The participants stated that;

“When you give people the information they need in an open manner, they will trust the municipality. Our relationship with the residents is based on trust; they trust us that we will provide good service and use their money wisely, and as the municipality, we trust that they will pay for the service. One good thing that e-governance does is build trust in the municipality” (P₁₅).

“People are now involved in the decision-making process through the digital platforms and their concerns are addressed, and this builds trust in us as the utility provider” (P₁₉).

By including people in the policy process through the internet, e-governance demonstrates openness and accountability, which contributes to the development of trust between governments and their populations, a necessary component of effective governance (Jameel, Asif & Hussain, 2019). One participant noted that for accountability to be fostered through e-governance, it should be supported by other mechanisms that promote accountability.

“Yes, I agree that e-governance results in accountability, but it should also be supported by other mechanisms. Availing information alone cannot build accountability because the citizens do not have the enforcement powers. So, to have accountability, there should also be good and adequate enforcement of the policies to demonstrate that accountability is a critical factor for good governance in local municipalities” (P₁₂).

Jameeel et al. (2019) contended that ICT is not a backroom job but is integral to achieving responsive and accountable local government. The study results show that the implementation of e-Governance improves accountability in the municipality. E-governance maps out what local governments are doing in terms of implementing different projects which may provide insight into municipalities' performance and improve their accountability (Kerr, 2018). Without information, accountability is difficult to achieve and equally essential, civil society and the general public cannot engage in, monitor or verify the quality of government.

4.5.4 Enhanced participation and communication

Jameeel et al. (2019) noted that e-governance is intended to take into consideration the requirements of society, the government's developmental objectives, and citizen empowerment. The participants noted that e-governance promotes citizen participation.

“There are now platforms provided which enable people to give us feedback about our service to them. I can say that the use of social media is a critical tool for collecting information about what they want, and people are now involved in municipal operations more than ever before” (P₃).

“Public participation is the hallmark of e-governance, for me, I think it has improved the level of involvement by the community in the issues affecting the municipality” (P₁₈).

“We adopted a people-centred approach to governance, and this means that we should interact with the people frequently. When we do our stakeholder meetings, there are various issues raised. People give us feedback on social media and the website, and this has been helpful in improving our service delivery” (P₆).

“South Africa's Constitution mandates that all sectors of government collaborate and contribute to the creation of poverty-relief programmes, and this means that people should be involved in our activities. We have been implementing this through e-governance technologies” (P₁₁).

“Another goal was to make information more accessible in terms of language, by avoiding official jargon and instead providing it in simple English that the ordinary person can read and comprehend” (P₈).

Government websites, as an e-governance innovation, serve a purpose greater than service delivery by affecting system-wide political change (Meijer, 2015). According to Muridzi (2019) evidence showed that Metro Municipalities in South Africa are reshaping the landscape by transitioning to e-governance from governance by enabling public engagement and participation via technology and partnering with the stakeholders to implement service delivery projects. The assertion by Muridzi (2019) is supported by one participant who highlighted that.

“We have some projects that we engage with the contractors and community members so that we improve service delivery. We include their views when planning the projects. Some have expertise in the area where we will be implementing projects, and their input is very useful. E-Governance ensures that we have all angles covered as all the sectors affected by the municipality have their say in the projects” (P₁₇).

The citizen's access to knowledge may help them become more educated and participate constructively to government via democratic engagement (Kumar, 2015).

“One aspect that has increased participation is because people now have information at their fingertips; they can request it on social media, download it from website or even send you an email requesting it. So, with this information, people are more interested in municipality affairs” (P₁₁).

“The residents did not know the actual services that were provided by the municipality. They did not have access to the information, but with technology, they now have it, and we interact with them on the website and social media. They are keener to know what is happening, and they are now responsive” (P₃).

“Information is beneficial because e-governance has provided a platform for people to comprehend and learn about what is happening in the municipality. The public will then be involved and express their opinions and demand that services be improved” (P₅).

By utilising technological services, the government may quickly address complaints made and monitor infrastructure projects in real time (Muridzi, 2019). This is supported by a participant who stated that,

“It allows us to respond in time and as it happens. Like in marketing where there is real time marketing, we now have real time operations and governance because we have the technology. We no longer sit on complaints by act on them as quick as possible” (P₁₉).

By using e-governance as a method for participatory democracy, it is possible to create powerful co-produced partnerships between the State and its citizens in order to solve governance deficiencies (Kumar, 2015). The study results show that e-governance has enhanced public participation in the service delivery by the municipality. Adoption of ICTs promotes collaborative governance, strengthens democracy, and guarantees effective, ethical, and good governance (Muridzi, 2019).

4.6 Challenges in the Implementation of e-governance

In South Africa, e-governance services are hampered by a number of factors (Mawela, Ochara & Twinomurinzi, 2017). The study participants highlighted that the implementation of e-governance is negatively affected by human resources challenges, resistance to change, inadequate infrastructure, security challenges and poor coordination.

4.6.1 Human Resources challenges

To ensure the effectiveness of e-governance, human aspects must be considered, since they manage information systems to address their problems (Thabit & Jasim, 2019). The participants noted that human resources practices were a challenge to the implementation of e-governance at the municipality.

“Similar to other municipalities, human resources have been a challenge. We do not have competent personnel to implement these innovations” (P₇).

“There is no capacity in the implementation of e-governance, and I am talking in terms of the skills of the employees. It is a very big challenge” (P₉).

There is a significant scarcity of training resources to assist workers in adjusting to changed e-governance in many municipalities in South Africa. The assertion is supported by participants who stated that.

“People did not get any form of training on how to use this. Only the IT department has knowledge of it. Some of us are lucky because we have been using these devices for a long time and we are now familiar with the emails, social media and the websites. I can tell you there are people in this municipality who cannot use them, and they have not been trained” (P₁₈).

“There has been no training on e-governance; even the new employees do not receive any kind of training. The orientation is just a formality, so it basically tells you that the skills level is low” (P₁).

“Personally, I do not think the municipal employees are well trained to handle e-governance because we still have delays in processes with it in place” (P₁₈).

Training is critical in easing the process of integrating new technologies with established practices and policies (Dwivedi et al., 2017). Additionally, Dash and Pani (2016) noted that if individuals are unable to utilise new technology, they would be unable to take advantage of it. According to Khan (2017), five kinds of skills are required for effective e-governance adoption: analytical skills, information management skills, technical skills, communication skills and leadership skills. One participant noted that the employees had poor computer literacy.

“The majority of the employees in this municipality are computer illiterate. I am not joking; they are not well-versed with computers, and some cannot even type or print a document. There is a massive need to educate and train them” (P₄).

Computer literacy is described as the knowledge and ability to effectively utilise computers and associated technologies, with skill levels ranging from basic usage to computer programming and sophisticated problem solving (Schmidt, 2016). One participant noted that top management of the municipality also needs leadership skills necessary for e-governance.

“We are mistaken when we think that e-governance is about the use of technology only. E-governance changes the way citizens participate and the leadership of the municipality. The leaders need to move with the times and also get the skills necessary for good e-governance. There are poor leadership skills in our management, and this translates into poor governance” (P₁₀).

Top management armed with leadership and ICT skills is able to make more informed decisions and allocate resources more efficiently, encourage workers to use e-governance technologies, and promote e-governance projects (Khan, 2017). The transition to e-governance also requires attention to training within the public sector, not only for ICT experts, but for all public employees, in order to allay the fears of individuals who may mistrust technology (Abasilim, 2015). All levels of the company should undertake basic and advanced computer training; this will allow workers to utilise new programmes and reorient themselves to new work procedures and methods (Abasilim, 2015). Other participants noted poor retention of talented personnel and stated that.

“We have been in a fight with the private sector. They offer more and better working condition. Any rational human being will move to the private sector. So, we are left with huge gaps in terms of the staff complement” (P₃).

“The major challenge that we face is that people always leave the municipality, and this affects continuity because when a new person comes, we have to do it all over again; there is no continuity” (P₁₄).

“We have limited personnel because of departures from the council. I know the IT guy is now working for a private company. Those who are left cannot work under pressure” (P₁₁).

The battle for recruiting and retaining the talents required to drive e-governance puts a strain on often rigid public sector employment procedures (Ashraf, 2017). The public sector is continually losing skilled employees to the private sector, and this has an adverse impact on the implementation of e-governance (Khan, 2017). The study results show that human resources practices are a challenge to the implementation of e-Governance. The study results show that there is poor training, and the employees do not have the prerequisite skills needed for the implementation of e-governance. The study results are aligned to the findings by Khan (2017), which showed that poor human resources practices are a hindrance to full implementation of e-governance initiatives.

4.6.2 Poor coordination and cooperation

The implementation of e-governance calls for all stakeholders to be actively involved in order for the benefits to be fully realised (Mahundu, 2016). E-governance initiatives are meant to derive benefits for all stakeholders, and there should be good coordination with internal and external stakeholders of a public institution (Jain & Sharma, 2007). According to the participants, there is poor coordination, which is a challenge in the implementation of e-governance.

“Some departments are keen, some are not, when it comes to the use of technology. They argue that we have been in this municipality for a long time, and we know how it works, and there is a poor team here” (P₁₄).

“People do not generally like to share information between departments, and with technology, this has been made possible. But you will find others dragging their feet in availing information, and it affects the whole municipality” (P₁₉).

“It starts within the organisation itself. There is no clear collaboration between departments such that one may find himself or herself not knowing what will be happening in another unit” (P₁₅).

The poor coordination in the municipality was attributed to lack of knowledge and understanding of the interconnectedness of the internal units of the municipality.

“The departmental demarcations have played a role in poor results from e-governance. Someone thinks he is in the engineering unit, and his work does not affect mine in the finance department. There is this internal competition among departments, and it is causing friction, and we have not achieved the intended results because of it” (P₈).

The implementation of e-governance has been less successful than anticipated due to poorly organised and coordinated public sector organisations (Abasilim, 2015). This is supported by a participant who stated that.

“We operate in silos and not as a network or a team, hence it has affected the implementation of e-governance. There is a need to review the hierarchy and organogram to reflect the new relationships brought by technology” (P₂).

“Even as ward committee members, we may not be aware of our role in governance, and this affects the implementation of innovations” (P₁₇).

E-governance is usually seen as a broader term than e-government, since it has the potential to alter people's relationships with governments and with one another (Jain & Sharma, 2007). The implementation of e-governance often requires the collaboration of many agencies and players. Additionally, the participation of many players both inside and across government institutions necessitates the capacity to coordinate those individuals (Mahundu, 2016). The participants also noted poor cooperation from the citizens and stated that.

“With the citizens, it's a different ball game; they like to be informed well in advance about the municipal programmes. Some we even post on the website, but we do not receive their support” (P₂₀).

“E-governance is targeted towards ensuring that society acts in a coherent manner. As we speak, they are not acting in a coherent manner, there is poor representation and reporting of issues by the community, even in the modern day with technology, where you can simply take a pic and send it” (P₅).

Other participants noted that there is poor cooperation between municipalities and stated that;

“Sometimes you will need help on something, and you know that this department or municipality has encountered such a challenge, and you would like to know how they contain it. You do not get feedback, and I think that is the bad thing about emails, because you cannot really force someone to reply” (P₄).

“We have not received any form of help from the provincial government in the implementation of e-governance. I think this is a flawed stance by the provincial government because we should be working towards the same goal, which is to improve the livelihoods of South Africans” (P₁₃).

The study results show that poor coordination and cooperation are a challenge faced in the implementation of e-governance at the municipality. Collaboration is critical in e-governance as there are many players involved (Mahundu, 2016). Coordination enables the actors' duties inside the public sector institutions to be clarified and result in job completion in a harmonious manner (Abasilim, 2015). Collaboration generates value and partnerships that assist governments in overcoming obstacles to achieving their objectives.

4.6.3 Resistance to change

Resistance to change refers to a person's aversion to changed conditions or a shift in the status quo (Akan, Ülker & Ünsar, 2016). According to Meijer (2015), while there are advantages to implementing e-governance, there is also the issue of resistance to change, since individuals generally oppose any new system. The participants state that resistance to change was a challenge in the implementation of e-governance in the municipality.

“I do not think everyone understands the necessity of e-government. You get asked questions like, is it necessary to, have it? This may even come from people who should be at the forefront of implementing e-governance” (P₁₉).

Generally, it is people who do not like to change who are detrimental to our efforts in improving service” (P₂).

“Some residents do not like these innovations; they prefer the traditional way of doing things, and present administration problems because you will have to handle things differently. Now you will be operating using two systems, the technology-based and the traditional-based system” (P₇).

“People are attached to old ways of doing things, it is plain and simple, they do not want to change, they always find excuses like I do not have data, my network is poor, all because they want to do things in a familiar way” (P₁₀).

Employees may reject change if they have not been informed of the rationale for the change or the decision-making process (Akan, Ülker & Ünsar, 2016). The resistance to change hypothesis describes resistance to change as people's unwillingness to adjust to changes and to adhere to pre-existing traditions and techniques, mostly out of fear of the unknown and its potential negative consequences (Akan, Ülker & Ünsar, 2016). Other participants stated that.

“Just like in banks where the (Automated teller machines) ATMs replaced the tellers, some of our colleagues think the technology is here to take away their jobs, but it's not, it is the other way round. E-governance is here to improve operations and not take people`s jobs. People fear this and are always reluctant to use it” (P₁₇).

‘I think now it is resolved, but back when it was introduced, people took it negatively. They thought we were violating their privacy by using social media. They thought we would publish their names. There are some who are still negative about it” (P₅).

“People do not see e-governance as an opportunity for us in terms of doing things better. All they are concerned about is their jobs” (P₁₄).

One participant noted that resistance to change in the implementation of e-governance is more common in older residents and employees.

“The youth are well aware of the benefits of the use of technology, but the challenge is with the older citizens. I do not have anything against them, but it is true. Even if you look at the employees here in the municipality, the older ones do not like doing jobs on social media. They think it is for fun and socialising and not doing work” (P₁₂).

The study results show that resistance to change is a challenge in the implementation of e-governance. Resistance to change is one of the most significant impediments to the execution of change efforts and new initiatives. According to Muridzi (2019), local governments have noted that their workers lack sufficient training in the use of information technologies, and that this lack of training is the consequence of resistance to change, resistance to usage, and an inability to use information technologies.

4.6.4 Infrastructure challenges

Without adequate ICT infrastructure, e-governance cannot be used effectively to achieve transparent and efficient service delivery in the public sector (Dash & Pani, 2016). The participants noted that poor infrastructure is a challenge in the implementation of e-governance.

“The biggest challenge is the lack of computers and smart devices needed for everyone at the municipality to work” (P₁₇).

“Better infrastructure is needed to enable full implementation of the e-governance. As a municipality, we have poor ICT infrastructure, especially for low-level workers” (P₆).

“Generally, the municipality is ill-equipped to implement e-governance; they do not have the equipment needed” (P₁₄).

Gupta, Muttoo and Pal (2017) noted that technologies are rapidly becoming outdated, causing developing nations to fall behind their developed counterparts on the global index. One participant noted that.

“The website is giving us problems; there is a need for modernisation. The current platform on which it is hosted is outdated and needs to be upgraded” (P₁₈).

The participants noted that infrastructure challenges were also felt by the citizens.

Another constraint, especially in underdeveloped parts of the area, is the lack of internet connectivity. There is poor broadband service there” (P₇).

“We know that some people do not have internet connections” (P₁₆).

“Remember, we have child-headed households in our communities, and if you look at most of them, they do not have these devices that connect to the internet; if they have it is not functioning well, and it impedes access to information. Then we have the elderly, who do not have these laptops, so it is a challenge because you also have to cater for them. So even if you post on the website, you still have to spread the word by traditional means, you are working twice on the same thing” (P₁₉).

“Some people do not have electricity, especially those in informal settlements. The municipality has to serve them as well. Even we, load shedding sometimes affects access to information because the network will be bad, and you cannot watch television or operate your computer” (P₁₃).

Muridzi (2019) noted that inadequate infrastructure is one of the primary challenges in developing countries where people lack access to the internet, electricity, or computers. Associated with internet access, the participants highlighted high internet expenses as a challenge in the implementation of e-governance.

“Generally, people do not have these bundles, which are expensive” (P₂).

The Internet is expensive, and we do not have control over it. Sometimes, even managers do not have the data and cannot work remotely. The telecom companies should do something about it” (P₁₅).

E-governance is enabled by digital platforms which require good internet access and connectivity (Bhattacharya & Suri, 2017). High internet charges are a form of digital divide that results in unequal access to information and hampers the successful implementation of e-governance in developing countries (Kumar, 2017). The study results show that infrastructural challenges are faced in the implementation of e-governance at the municipality. Adequate IT infrastructure is critical for the successful implementation of e-governance (Nielsen, 2016). The major consideration for e-governance is infrastructure availability, and around 80% of e-governance implementations in developing countries fail due to inadequate infrastructure (Bhattacharya & Suri, 2017).

4.6.5 Inadequate financial resources

In order to be effective, e-governance should be well funded, as setting up the infrastructure is expensive (Meijer, 2015). The participants noted that inadequate financial resources were a challenge in the implementation of e-governance.

“I think the government should be funding these works. Over the years there have been no funds from the government for beefing up ICT infrastructure, maybe it is because of this COVID-19 virus” (P₁₁).

“We should be building multi-purpose halls for people to access information. It was in one of the annual reports, I am not sure which one, but up to date, nothing has materialised. There is no funding for these developments” (P₉).

“Like everyone in the public sector, the mantra is the same: there are no funds for activities. Similarly, e-governance in the municipality is affected by a lack of financial resources” (P₃).

One participant noted that the costs of setting up e-governance are high and compete with other municipal priorities.

“You need to look at this issue from a broad perspective. There are no funds to further the implementation of e-governance because it competes with other urgent services like water delivery, sanitation, electricity and waste management. So the funds are not only unavailable for ICT equipment but for other services as well. You have to balance on which one is more urgent to the municipality” (P₁₆).

Mahundu (2016) acknowledged that it is a huge problem to fund the capital-intensive efforts like access basements and communication infrastructure which have crippled the implementation of e-governance in South Africa. A study by Thakur and Singh (2012) stated that funding challenges

bedevil municipalities in the implementation of e-governance initiatives in South Africa. The study results are aligned to the findings by Thakur and Singh (2012) and show that municipalities experience financial constraints which affect e-governance implementation. Mayr, Schmid, Trollip, Zeyringer and Schmidt (2015) noted that over 90% of municipal revenue is internally generated from sale of services and is recycled back into service delivery leaving little room for investments in ICT infrastructure to be made.

4.6.6 Security issues

The increase usage of ICT is accompanied by the increase in the risk of privacy breaches or security concerns (Basu, Tripathy & Chowdhury, 2015). The participants highlighted that the security issues are a challenge in the implementation of e-governance in the municipality.;

“At first people were sceptical because they did not want to have their information being in a database that can be viewed by people they do not know” (P₁₉).

“People are reluctant with their information in the digital world. I think it is justified because there have been a lot of scams and they did not want to migrate to digital platforms” (P₁₀).

“We are afraid of the fraud that may be committed over the internet” (P₁₂).

“Another big issue that was raised was how to protect the municipality’s information. There are other documents that are not for public dissemination for example the account details of the partners. So, this was an issue because it can always face a threat of being hacked” (P₈).

One participant noted that breaches in the security has negative consequences for the municipality.

“If the information is leaked or the security is breached, the municipality will face high legal and financial costs so every time they are always on the lookout for protecting the system than focusing on the core of e-governance” (P₁₂).

The study results shows that security concerns are a challenge in the implementation of e-governance. If adequate security measures are not in place, individuals' personal information is susceptible to security risks such as fraud (Basu *et al.*, 2015). Furthermore Shareef (2017) also noted that governments would need to safeguard their information and systems against computer security breaches that jeopardise not just the integrity and availability of services, but also the users' and general public's trust in the system.

4.7 Suggestions on overcoming implementation barriers

There is a need for developing countries to improve e-governance so as to realise efficiency, transparency and accountability (Mahundu, 2017). The participants provided suggestions on ways to improve the implementation of e-governance. The participants highlighted that to improve the implementation of e-governance, there is a need for training, improved funding, public-private partnerships and awareness campaigns.

4.7.1 Training

Effective human resources management is needed in the implementation of e-governance (Sithole, 2015). The participants noted that training is a mechanism for improving the implementation of e-governance. Training is the process of imparting or improving any skills, knowledge, or fitness related to particular valuable abilities to oneself or others (Kumar, 2015).

“As we all know, there are skills deficiencies in the municipality; there is a need to train the employees so that they get the necessary skills” (P₁₀).

“People need to have ICT skills, otherwise they will always be in the same boat in the next five years. People should be trained it is simple” (P₁₆).

“I think there should be training for the people to fill this implementation gap” (P₃).

Other participants noted that training should be provided to all employees.

“There has been no training in this municipality over the years, so I think it is long overdue to have these trainings starting from the management to the last workers” (P₁₁).

“Training should be made mandatory for everyone so that they get these ICT skills. All the people should be trained because the world that we live in requires that people have good computer literacy” (P₁).

In the modern and digitalised environment, people must have computer literacy and ICT skills (Kumar, 2015). Training is a term that refers to the teaching and learning activities that are conducted with the main goal of assisting members of an organisation in acquiring and applying the information, skills, abilities, and attitudes required by a certain job and organisation (Sithole, 2015). Training is a mechanism that is meant to ensure that there is effective implementation of e-governance.

4.7.2 Increased funding

The act of giving resources to support a need, programme, or initiative is referred to as funding. The participants noted that funding is needed in order to improve the implementation of e-governance at the municipality.

“It is simple; there should be more money towards ICT infrastructure. It should be a priority just like water treatment or paying for electricity from Eskom” (P₉).

“Our infrastructure is dilapidated, and I think it’s high time the government chips in and provides the money” (P₁₃).

“There should be more funding to support the existing infrastructure” (P₁₁).

“We have a financial crisis, and sometimes the payment of workers is difficult. There is a need for more funds for the computers, servers and other gadgets” (P₂₀).

“We should have the budget to buy the equipment and pay the workers without compromising on the service delivery” (P₁₁).

However, one participant noted that for funding to be effective, corruption has to be eradicated.

“Yes we may advocate for more funding, but as long as we are not transparent and corrupt tendencies are still present, then the funds will not reach their intended target. It should come hand in hand with enforcement against corruption” (P₁₈).

One of the major challenges faced by municipalities in the implementation of e-governance is a lack of funding (Thabit & Jasim, 2019). Funding enables the development and procurement of equipment necessary for e-governance. Teo’s model shows that the facilitating conditions, such as infrastructure, are necessary for the adoption and implementation of technology-based innovations (Teo, 2016). Bearfield and Bowman (2016) noted that despite increasing interest in openness, cities with fewer resources will place a lower premium on e-governance hence there is a need for funding and investment in ICT.

4.7.3 Awareness campaigns

Awareness campaigns are described as a continuous attempt to educate people and raise public awareness about a topic or problem supported by an organisation (Kedar, 2015). The participants highlighted that there should be awareness campaigns for the residents to raise awareness on the importance of cooperation.

“The poor coordination in the municipality is mainly due to a lack of awareness of the importance of coordination. There should be a massive awareness drive towards ensuring that everyone knows their role, I think this will help a lot” (P₁₄).

“The employees need to be educated that failure of one department is failure of another, so that we do not have these problems” (P₁₉).

Furthermore, other participants noted that awareness in order to reduce the resistance to change in the employees.

“When you do not give people the information they want, they will resist whatever efforts you have. So before implementing anything, people should be told of its importance and how they fit” (P₇).

Awareness campaigns target specific groups of individuals with the ultimate goal of effecting long-lasting behavioural changes. Individuals and organisations are educated through awareness campaigns (Kedar, 2015). Awareness campaigns are a good way to improve coherence in an organisation as they highlight the responsibilities and expected conduct from each person or unit.

4.7.4 Public-private partnerships

A public–private partnership is a long-term collaboration between two or more organisations in the public and private sectors (Chima & Kasim, 2018). The participants noted that public-private partnerships are needed in order to improve the implementation of e-governance.

“I believe we have so much to gain from the private sector, and we should forge beneficial partnerships with them” (P₁₇).

“We should have the private sector coming to build the infrastructure, especially in areas where the network is bad, and this is a starting point for making sure that the e-governance has enough coverage” (P₁₅).

E-governance is about ensuring that everyone participates, from the residents to NGOs and the business community. We should be collaborating with them so as to ease our woes” (P₂).

“We can access more resources by engaging other stakeholders other than the government” (P₆).

Typically, private capital finances government projects and services up front and then reap returns from taxpayers and/or customers over the life of the Public Private Partnership contract (Chima & Kasim, 2018). Public Private Partnerships create beneficial situations for both the private sector

organisations and the government. Governments benefit by gaining access to private-sector funding, technical expertise, innovation, and improved efficiency in the delivery of public services without bearing the full upfront costs of projects. Private sector organisations benefit through opportunities to generate revenue, expand their market presence, and secure long-term contractual returns on their investments. A study by Khan (2017) acknowledged the significance of public-private partnerships in ensuring the effective execution of ICT projects.

4.8 Chapter Summary

The Chapter presented the findings of the study which were collected and analysed based on the techniques contained in Chapter Three. The study results show that the participants have a good understanding of the concept of e-governance. In addition, the study results show that e-procurement, social media and digital payments are the e-governance innovations implemented in response to the COVID-19 pandemic. Furthermore, the study findings show that the benefits of implementing e-governance are increased transparency, efficiency, accountability and enhanced participation. Conversely, the study results show that the challenges in the implementation of e-governance are human resource issues, poor coordination and cooperation, resistance to change, inadequate infrastructure and security concerns. The study results show that training, awareness campaigns, increased funding and Public Private Partnership are ways to improve the implementation of e-governance innovations in the municipality.

CHAPTER 5 SUMMARY, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

Chapter Four presented the findings of the empirical study. This chapter contains the summary of the findings and the recommendations. The summary of the findings and the study recommendations are primarily guided by the results presented in Chapter Four. Furthermore, this chapter contains the conclusion, which provides an end note for the entire study.

5.2 Summary of findings

The summary of findings is categorised into key findings from the literature and key findings from the primary study.

5.2.1 Key findings from literature

Modern organisations rely on ICT platforms to survive and accomplish their objectives in a dynamic and complicated environment (Thabit & Jasim, 2019). ICT investments in the public sector appear as e-governance and e-government (Kalsi and Kiran, 2013). While the words e-governance and e-government are often used synonymously in the literature, they have different definitions and meanings. According to Chen, Dawes, and Chen (2017:330), e-government refers to the government's use of information and communication technologies (ICTs) and electronic devices to provide services safely and efficiently to citizens and other stakeholders both inside and beyond the country's boundaries.

According to Jain and Sharma (2007), e-governance is the public sector's use of information and communication technology to enhance information and service delivery, foster citizen participation in decision-making, and make government more accountable, transparent, and effective. The primary goal of implementing e-governance is to increase openness and accountability while also enhancing service delivery in the public sector (Kalsi & Kiran, 2013). The popularity of e-government channels has increased as new innovations integrate social media, which has become a "major development in e-government" (Bosman, 2021). During public health crises and other catastrophes, officials will rely on social media data (Costa & Peixoto, 2020).

5.2.2 Key findings from the primary study

The findings from the primary study are summarised according to the research questions as follows:

What e-government innovations being implemented in Ngwathe local municipality in response to the COVID-19 pandemic?

The study established that Ngwathe Local Municipality has implemented several e-government innovations in response to the COVID-19 pandemic, including e-procurement systems, social media platforms, and digital payment systems. These findings align with Thabit and Jasim (2019), who highlight that modern organisations are increasingly relying on ICT platforms to function effectively and efficiently in changing environments. Equally, Kalsi and Kiran (2013) perceive that ICT investments in the public sector manifest through e-government systems directed at improving service delivery efficiency.

The use of digital payment systems was found to improve transparency and reduce physical interaction between residents and municipal personnel, thus enhancing service accessibility during the pandemic period. This supports Chen, Dawes, and Chen (2017), who argue that e-government enables secure and efficient service delivery to citizens and stakeholders. In addition, the adoption of e-procurement systems was found to improve supply chain stability and ensure the availability of essential goods and services during disruptions. This reflects the broader purpose of e-governance, which is to improve operational efficiency and accountability in public sector management (Kalsi & Kiran, 2013).

Furthermore, the use of social media appeared as a key communication tool between the municipality and residents. This finding is consistent with Bosman (2021), who highlights social media as a significant development in e-government practice. Social media platforms were used to spread information quickly, promote public awareness, and support behavioural compliance during the COVID-19 pandemic. This aligns with Costa and Peixoto (2020), who emphasise the importance of social media data and platforms in managing communication during crises and disasters.

What are the challenges being faced in implementing e-government innovations in Ngwathe local municipality?

The study exposed numerous challenges affecting the implementation of e-government innovations in Ngwathe Local Municipality, including human resource constraints, poor coordination and cooperation, resistance to change, inadequate infrastructure, and security concerns. These findings are consistent with existing literature that highlights similar barriers in developing country contexts.

The deficiency of sufficient training and skills development among municipal employees was identified as a major limitation. This supports broader literature which suggests that many public sector institutions in developing countries struggle with insufficient capacity-building mechanisms to support ICT adoption. In addition, resistance to change among staff members further slowed the effective implementation of e-government systems, reflecting organisational behaviour challenges commonly associated with digital transformation processes.

Inadequate ICT infrastructure and financial limitations were also reported as significant obstacles. This finding aligns with Kalsi and Kiran (2013), who observed that ICT development in public institutions is often restrained by limited resources, resulting in uneven implementation of e-government systems. Furthermore, concerns regarding data security and system reliability were highlighted, emphasising Chen et al. (2017), who stress the importance of secure systems in ensuring trust in e-government services.

What are the recommendations to enhance the implementation of e-government innovations in Ngwathe local municipality?

The study results show that training, awareness campaigns, increased funding and Public Private Partnership are ways to improve the implementation of e-governance innovations in the municipality. The study recommendations are proffered in the next section of the study.

5.3 Study recommendations

Notwithstanding the findings of the study, measures that enhance the implementation of e-government innovations are valid. The study proffers the following recommendations:

Training: Training is the most effective way to impart skills and competencies necessary for performing given responsibilities. The study recommends that the employees be trained so that they can have improved computer literacy and ICT skills.

Awareness campaigns: The results show that poor coordination, as well as resistance to change, emanates from poor awareness by individuals. The study recommends that the municipality engage in awareness campaigns so as to inform all stakeholders about their responsibilities and roles in e-governance.

Funding: The study findings indicate that there is inadequate funding to support e-governance. The study recommends that the municipality fund more ICT projects to ensure that there is adequate equipment.

Public Private Partnerships: The study results show that infrastructure is required, yet there is a financial deficit connected with it. Public Private Partnerships may assist in meeting both needs and financial gaps. Oftentimes, Public Private Partnership initiatives include the private sector organising and financing them. The study recommends that the municipality should engage in Public Private Partnerships to cover the funding and infrastructure gaps.

Data encryption: Security in e-government includes safeguarding systems and data from hackers and viruses, guaranteeing the integrity of electronic records, preventing data interception or falsification, and exercising control over the authorised sharing and dissemination of information. The study recommends encryption of the information to mitigate against potential security breaches.

5.4 Conclusion

In the modern-day environment, public sector organisations around the globe are adopting ICT to improve the transparency and efficiency of their service delivery, hence the implementation of e-government. The aim of the study was to explore the implementation of e-government innovations in Ngwathe local municipality in response to the COVID-19 pandemic. One of the study objectives was to determine e-government innovations being implemented in Ngwathe local municipality in response to the COVID-19 pandemic. The study objective was achieved as the study highlighted that digital payments, e-procurement and social media communication were implemented in response to the pandemic. In addition, the study aimed at identifying challenges being faced in implementing e-government innovations in Ngwathe local municipality. The study objective was achieved hence the challenges faced are human resources issues, poor coordination, resistance to change, inadequate infrastructure, inadequate funding and security issues. The study proffered recommendations on improving the implementation of e-government, hence achieving the study objective, which aimed at providing recommendations to enhance the implementation of e-government innovations in Ngwathe local municipality.

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