



Towards the implementation of the South African
National e-Government Strategy and Roadmap
Framework in selected municipalities in the
Eastern Cape Province

Lukman 49771647

 **orcid.org/0000-0002-8344-8083**

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Promoter: Prof KG Phago

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DECLARATION

I, Yusuf Lukman, 49771647, declare that the research study titled “Towards Implementation of the South African National e-Government Strategy and Roadmap Framework: A Case of Selected Municipalities in the Eastern Cape Province, South Africa” represents my original work as I submit it to fulfil my Doctor of Philosophy (PhD) in Public Management and Governance at North West University. The reference list contains complete references for all sources that I used in my research. The research material exists as a complete work that has not been submitted to any other academic institution for the purpose of obtaining academic credentials.

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ABSTRACT

The discourse underpinning e-governance and digitisation to position governments for online systems remains evermore critical. This requires contributions to transformative tools that are essential for facilitating systems integration, training, and political and administrative support services. The South African National e-Government Strategy and Roadmap Framework (SANESR, 2017) established a plan to modernise public services through digital transformation and unified information systems and electronic platforms for citizen engagement. The implementation of digital government initiatives remains difficult for rural and peri-urban municipalities throughout South Africa. The study assesses SANESR's effectiveness in the OR Tambo District Municipality (ORTDM), which consists of 5 local municipalities (King Sabata Dalindyebo Local Municipality, Nyandeni, Port Saint Johns Local Municipality, Mhlontlo Local Municipality, and Ingquza Hill Local Municipality (formerly Ngquza Hill) by evaluating how officials experience, understand, and utilise the strategy in their administrative work and service delivery tasks. The research addresses current problems affecting South African municipalities, focusing on King Sabata Dalindyebo Local Municipality, Nyandeni, Port Saint Johns Local Municipality, including insufficient digital development, disconnected systems, inadequate ICT infrastructure, and low user acceptance of digital solutions. The research employs the Logical Framework Approach (LOGFRAME), the SERVQUAL Model, and the Theory of Change to examine municipal e-government implementation from multiple theoretical perspectives, evaluating system inputs and processes, outputs, service quality, and transformation pathways. The research design included semi-structured interviews with 25 participants and surveys administered to 68 municipal staff members. The researcher adopted thematic analysis for the qualitative data, while the quantitative data were analysed using descriptive statistics and reliability tests. The main research findings show that officials demonstrated variable understanding of the application of SANESR, despite their formal training for digital transformation processes. In some instances, the municipality utilises e-Portals such as Promun, PayDay, Electronic Support Service (ESS), Municipal e-tender portals or procurement platforms, and Electronic Document Management Systems (EDMS); however, these systems operate independently of citizen-accessible platforms. The study recommends the ENEGO-TRANSFORM Model as a customised framework to enhance digital governance operations in ORTDM. There is also a need to indicate that ORTDM needs to enhance its ICT infrastructure by integrating systems with public interfaces and providing digital tool training for officials and citizens to establish e-services that fulfil SANESR targets and support local development needs.

Keywords:

Government, e-Government, e-payments, e-events, e-information, e-government portals, Technology acceptance, e-services.

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Acronyms

BAS:	Basic Accounting System
BaSSREC:	Business and Social Sciences Research Ethics Committee
CRM:	Customer Relationship Management
DGPF:	Digital Government Policy Framework
DTPS:	Department of Telecommunications and Postal Services
ECT:	Electronic Communications and Transactions
ECTA:	Electronic Communications and Transactions
EDMS:	Electronic Document Management System
EDRS:	Electronic Document and Records System
EDRS:	Electronic Document and Records System
EGDI:	E-government Development Index
ENEGO:	Enhancing e-Government Effectiveness
ESS:	Employee Self-Service
FMS:	Financial Management System
GIS:	Geographic Information Systems
GRAP:	Generally Recognised Accounting Practice
ICT:	Information and communication technologies
ISAD:	Information Society and Development
IT:	Information Technology
KSDLML:	King Sabatha Dalindyebo Local Municipality
LED:	Local Economic Development

LOGFRAM:	Logical Framework
MFMA:	Municipal Finance Management Act
MIOS:	Minimum Interoperability Standards
mSCOA:	Municipal Standard Chart of Accounts
NCPF:	National Cybersecurity Policy Framework
NDP:	National Development Plan
NPM:	New Public Management
PAIA:	Promotion of Access to Information
SANESR:	South African National E-government Strategy and Roadmap
SCM:	Supply Chain Management
SERVQUAL:	Service Quality model
SITA:	State Information Technology Agency
SOLAR:	The Service Oriented Local Authority Resource
SPSS:	Statistical Package for Social Science
TOC:	Theory of Change
UDT:	Used-Diffusion of Theory
UN:	United Nation
UNESCO:	United Nations Educational, Scientific and Cultural
USAID:	United States Agency for International Development

1. Chapter One

1.1 Orientation of the Study

The proliferation of digital technology has catalysed a global imperative for governments to transition to electronic governance models. In the South African context, the South African National e-Government Strategy and Roadmap 2017 is a government initiative that aims to address electronic government (e-Government) in the public sector in South Africa. e-Government is information and communication technology that enables the free flow of information (Paul, 2023). It eliminates the barriers of the manual paper-and-pencil approach (Al-Ma'aitah, 2019), ensuring that government services that satisfy citizens' needs are synchronised (Umbach & Tkalec, 2022). In general terms, e-Government is about how governments use technology to interact with citizens, businesses, and other stakeholders through online channels, improving transparency, accountability, and collaboration. The provision of ICTs and the use of digital technology in the public sector to improve service delivery and increase citizens' participation in governance is known as e-Government. Most governments around the world have been dealing with numerous problems that hinder their ability to provide quality, efficient services to citizens (Abdulnabi, 2024). Effective service delivery is a benchmark for good governance in most countries. This study aimed to enhance understanding of the effectiveness and implementation of the South African National e-Government Strategy and Roadmap (SANESR) as a valuable institutional tool, while also assessing its positive impacts on public institutions.

Since the COVID-19 pandemic emerged, technology has transformed global governance systems and public service delivery methods worldwide due to its recognised transformative power. Digital initiatives have become possible through technological advancements, enabling governments to operate more efficiently while delivering better services to their citizens. New technological systems have increased transparency and accountability in government operations by enabling citizens to monitor public funds and verify official actions through user-friendly interfaces. The systems operate to support open government policies, which Astuti & Ayinde (2025) state enhance public trust and increase citizen participation. Public services evolve

through technological adoption, which helps institutions achieve operational excellence while providing enhanced community services (Fachridian et al., 2024; Hafel, 2023).

Multiple obstacles exist in South Africa and Sub-Saharan African nations that prevent digital transformation from achieving its maximum potential. The full implementation of digital governance initiatives faces obstacles due to insufficient administrative capacity, inadequate resources, and limited technological expertise (Fachridian et al., 2024). Digital adoption programmes need to reduce digital inequality by enabling all communities to access equal benefits. Smart governance development requires inclusive policy creation through information and communication technology that integrates citizen knowledge with expert input (Oktarina et al., 2023). Digital governance requires continuous educational initiatives that teach digital competencies to citizens, as this approach will help address present-day governance and service delivery problems while achieving maximum results and reducing existing social and economic inequalities (Firmansyah et al., 2021; Poiran et al., 2023). This framework was developed as part of the government modernisation agenda to make government services more accessible to citizens by providing effective online platforms (Mohale, 2024). This strategy was also developed to align with the South African national goals, emphasising ICT's role in enhancing economic growth, social inclusion, and good governance. The South African National e-Government Strategy's primary goal is to transform the delivery of public services by harnessing the full potential of ICTs. Critical aspects of the framework include:

- Improving citizen engagement: By offering online platforms to citizens to access government services, participate in decision-making, and receive and provide feedback.
- Improving efficiency: Implementing digital solutions to administrative operations and decision-making processes to minimise bureaucracy.

- Promoting transparency and accountability by using digital solutions to keep records and make data-driven decisions and ensuring accountability by e-reporting.
- Promoting innovation by developing innovative digital solutions that target various citizen groups and businesses.
- Building a connected government ecosystem where the framework applies to Local Government.

Jakoet-Salie (2020) highlighted that the SANESR framework was designed for use in public sector institutions, and municipalities can benefit from it to enhance service delivery to their communities. The OR Tambo District Municipality, situated in the Eastern Cape Province of South Africa, has an estimated population of approximately 1.36 million (Claassen et al., 2024).

Furthermore, the rising demand from citizens for better public services is the primary driver of this progress. As individuals recognise the importance of digital services provided by e-Government, their expectations grow in quantity and quality, with citizens wanting more complex and integrated services.

In a divergent study, Adnan et al. (2022) highlighted, in their assessment of e-participation within the Context of e-Government Initiatives, that technological advances and the adoption of e-government techniques have been remarkable, especially in promoting e-participation in the public sector. e-Government is gradually becoming a fundamental reform tool for improving public services, especially in developing countries such as Ghana, where public institutions often have limited resources to deliver services (Larkotey & Ifinedo, 2022).

The implementation of e-Government by district municipalities has the potential to improve the management and administration of these organisations. Hence, the South African government has a national plan and policy to advance ICT and provide transparent, improved services to its citizens (Maluleka *et al.*, 2023). The government

can communicate with the populace using information technology and provide services to individuals at their doorsteps (Mutula & Mostert, 2010).

The Department of Public Service and Administration is the primary organ responsible for developing and promoting the implementation of the e-Government agenda in South Africa. This department is mandated to facilitate the realisation of the government's digital transformation agenda. Therefore, all the policies, strategies, and frameworks that guide the implementation of e-Government initiatives in government departments are provided by this essential department (Mosehlana, 2018).

Similarly, the Department of Telecommunications and Postal Services ensure the telecommunication infrastructure to facilitate e-Government services. It collaborates with other institutions to ensure citizens are connected to the platform. Additionally, the Department of Communications and Digital Technologies plays a crucial role in promoting the use of digital platforms in public spaces. This department ensures that government services are accessible online through a secure, convenient platform. Therefore, integrating these departments is essential for developing and implementing e-government platforms in South Africa. The three departments will ensure that efficiency, accountability, and citizen engagement are integrated through digital platforms.

The departments coordinate their efforts in this respect with those of other public-sector agencies. Several government services are accessible online through the State Information Technology Agency to implement and support e-government technical solutions. The department needs to maintain institutional structures and stakeholder buy-in by engaging with information and communication technologies (ICT) industries, which will provide the necessary skills, technology, and related investments. The State Information Technology Agency (SITA) is the government's ICT agency that supports government departments in offering electronic services to South African residents (Albertus et al., 2021).

Moreover, the South African government has established e-services, including online portals and website services, as part of its e-Government initiative to connect people and provide services to residents. Before the implementation of E-government in

certain government offices, connecting residents was scarce and challenging. Consequently, e-service centres struggle to provide public services effectively because of numerous factors, including some employees' lack of IT skills (Moloto & Muchie, 2023). As a result, the e-service centres are insufficient to foster tight collaboration among various governmental agencies, corporate groups, or individual citizens to deliver the required services. According to Moloto and Muchie (2023), these flaws in public service delivery necessitate more comprehensive development of E-government services that benefit stakeholders and citizens. e-Government is the creative application of information and communication technology, including applications, websites, and other technological resources and platforms, to connect the public with the public sector and promote efficient, collaborative governance. The SANESR 2017 classifies the approach to e-Government as follows:

- **Government-to-Government** - Programmes and collaboration with government departments are examples of eGovernment.
- **Government to Citizen** - Programmes and interactions between the government and its constituents are examples of e-Government.
- **Government to Employee** - These programmes focus on the interaction between the government and its workers.
- **Government to Businesses** - These programmes focus on assisting business operations.

(SANESR, 2017)

This study is approached from the Government-to-Government (G2G) dimension of e-Government. The study focuses on municipal administration within the OR Tambo District Municipality. The G2G dimension of e-Government refers to government programmes, systems and processes that facilitate government-to-government interactions at all levels of government, within government departments and institutions and between government and other stakeholders (Ahmed, 2025). Unlike Government-to-Citizen (G2C), Government-to-Employee (G2E), and Government-to-Business (G2B), which focus on service delivery, employee relations, and business-to-government relations, respectively, this study focuses on how municipal governments utilise technology to improve communication, information sharing, and

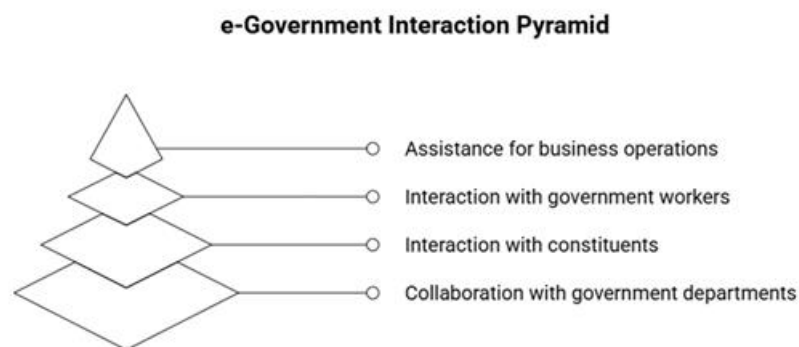
administrative coordination within and across departments at the local government level (Puentes-Poloché et al, 2023). The study, therefore, aims to explore how the South African National e-Government Strategy and Roadmap (SANESR) is being implemented to promote effective government and intergovernmental cooperation at the local government level, thereby delivering quality services to citizens.

The adoption of IT by government institutions is a key objective of e-Government, aiming to establish an information link between governmental organisations and service beneficiaries, which can only be accomplished through the utilisation of the Internet as a medium (Mensah & Mwakapesa, 2023). As a result, the usage of IT technology to provide citizens with public services expanded quickly and within a brief period (Li & Shang, 2023). The issue of employees' improper acculturation to internet services is a concern in the public sector. Despite the existence of a digital world, some managers still struggle to instil a desire to use electronic service delivery. On the other hand, some community members are reluctant to embrace technology, leading to wasted resources (Juma, 2016).

This study also considers the key barriers to technology adoption among citizens and certain employees. E-payments are a crucial component of e-Government, and their significance is growing as more people browse and make purchases online (Mishra, 2020). Another essential element of e-Government is e-event. E-events are gaining popularity as they offer several benefits over conventional face-to-face gatherings. With the development of modern technology, e-events are becoming increasingly complex and captivating. The study primarily sought to assess the implementation of the SANESR Framework in the OR Tambo District Municipality. The study's target group comprises public officials from the municipality involved in deploying and operating E-government services, as well as community members.

The figure below illustrates the pyramid of e-Government interactions

Figure 1: e-Government interactions pyramid



Source: Authors' Own Observation

The e-Government Interaction Pyramid illustrates that the value of e-Government systems increases as interaction development progresses. This concept begins with internal coordination and advances to optimising support for service delivery. The process starts with government departments collaborating, then expands to include interactions between public and government staff and finally culminates in government digital services that support business operations.

The South African Cabinet endorsed the National ICT Integrated White Paper Policy in September 2016 to create a digital society that serves people while promoting development and inclusiveness. The initiative created systems to enhance e-governance through the implementation of ICT, thereby improving public service delivery. The policy demonstrates how digital transformation improves service delivery in the education, healthcare, and trade sectors, aligning with research by Lipchanskaya et al. (2024). The policy focuses on ICT development to reduce social inequalities by providing digital competency training for citizens who will use these new digital services (Moodley & Adam, 2023; Zwolińska-Ligaj, 2021).

The National ICT Integrated White Paper Policy established ambitious goals, but its implementation faces various challenges due to persistent digital gaps and inadequate digital skills training programs. The digital gap, combined with inadequate ICT training and professional resistance to change, impedes the implementation of ICT across all sectors. The current public service delivery models need to overcome their

fragmentation by utilising technology more effectively to enhance operational performance and citizen participation (Azyze et al., 2022). South Africa requires comprehensive policy frameworks, along with dedicated funding, for digital literacy programmes and the distribution of technological resources, to establish an inclusive digital society (Zwolińska-Ligaj, 2021; Lanza, 2021).

This study was mainly guided by three evaluative theories: the Logical Framework Approach (LOGFRAME), the Service Quality model (SERVQUAL), and the Theory of Change (ToC), to examine the efficacy of SANERS within the OR Tambo Municipality. The LOGFRAME provides a framework for associating activities, outputs, and objectives, allowing easy measurement of progress towards achieving goals and milestones (or immediate results). Furthermore, SERVQUAL focuses on the quality of e-service delivery. Lastly, the Theory of Change works backwards from long-term changes to activities, creating a nexus between the current and previous state of services before the advent of the SANER.

To summarise, SANER aims to guide the digital transformation of South Africa's public sector toward an inclusive digital society, where all citizens can easily access services. It is an inclusive roadmap for implementing e-Government initiatives across various sectors, including local governments. Such a conceptualisation helps signify the strategic long-term vision, goals, and objectives, as well as pertinent information and communication technology deployment domains.

1.2 Problem statement

Like many countries, the South African public sector faces the challenge of providing communities with prompt access to effective and efficient online web services, also known as E-government online services (Maluleka et al., 2023). In a study of public administration and inclusive governance in South African local government, Galushi and Malatji (2022) highlight that communities are dissatisfied with the services provided by government websites. The broader issue is that some local government officials cannot efficiently integrate E-government services, resulting in low client satisfaction (Adam & Alhassan, 2021).

The implementation of e-Government within the South African public sector organs is facing numerous challenges. Public sector organisations are under immense pressure to deliver relevant, on-time and easily accessible online services to their communities. Although citizens use government digital channels to access public services, they are dissatisfied with the service quality. This is further worsened by some public officials who are unable to utilise technology effectively to deliver services that are relevant to citizens.

This challenge is further compounded by the significant gap between the government's e-Government policies and their effective implementation within public sector organs. While there are some implementations, the impact is limited. There is a generally poor understanding of the gaps and challenges in the utilisation of Information and Communication Technologies (ICTs), particularly within government. Certain socio-economic challenges, such as unequal access to the internet, low mobile internet adoption rates and uneven distribution of facilities and services across different geographic locations, continue to plague digital inclusion efforts within the country (Inamdar, 2025).

The National Government has placed considerable emphasis on digital transformation and the establishment of a knowledge-based economy (Mele, et al 2024). At the national government level, several policies and strategies have been put in place to build an information society and economy through an integrated information and communication technology (ICT) system that provides easy access to relevant digital services, such as e-payment systems, e-portals, and online information systems. However, the transition to e-Government at the local government level is being frustrated by a complex set of systemic barriers, including constrained ICT infrastructure at most local governments, financial constraints, limited digital literacy, and the inability to attract and retain critical ICT skills to support the management and sustainability of e-Government systems. Integration of systems within a department, as well as between departments and organs of state, is another challenge that continues to bedevil the sector and perpetuate the slow roll-out of e-Government systems, with attendant consequences for the slow transformation and modernisation of public service delivery systems.

While the national government is busy modernising and digitalising its systems and services for citizens, the local government is struggling to translate these efforts into meaningful e-services and e-communication systems at a local level. Municipalities face several challenges that impede the adoption and effective utilisation of ICTs. These challenges are further compounded by the lack of adequate ICT infrastructure and relevant technical skills within municipalities. Most ICT systems and applications are not integrated within departments and between departments to enable collaboration and optimal performance (Okharenia, 2023). Several challenges are inherent to rural municipalities, such as the OR Tambo District Municipality, due to resource constraints and limited institutional capacity.

The establishment of the SANESR could facilitate digital transformation and improve public-sector service delivery. While there is some research at the national or metropolitan level on officials' experiences with e-Government challenges (Pedersen, 2018; Ayodele et al, 2025), there is a lack of studies examining officials' experiences within local government, particularly in rural district municipalities. There is limited understanding of how institutional, technological, and socio-economic factors at the municipal level of government affect the effectiveness of e-Government initiatives within local government. This study attempts to address this research need.

Moreover, despite the abundance of studies on the SANESR and its potential to address development challenges, there remains a research gap regarding implementation in the municipal space. This study focuses on the SANESR implementation in the OR Tambo District Municipality, with the overall aim of identifying the challenges that hinder its effective and sustainable implementation. The findings of this study provide an empirical lens for developing a framework for effective e-Government implementation at the municipal level.

1.3 Research questions.

The study undertook to respond to the following questions, considering the problem statement:

1.3.1 General research questions

How are the South African National e-Government Strategy and Roadmap Framework being implemented in the OR Tambo District Municipality?

1. 3.2 Specific research questions

The following questions will be used to answer the central question of the study:

1. How is the SANESR currently being implemented in the selected municipalities in the Eastern Cape Province?
2. What level of awareness do government officials have regarding the SANESR in the selected municipalities?
3. What legislative and policy frameworks support the implementation of the SANESR at the municipal level?
4. What institutional and technological factors influence the implementation of the SANESR
5. What challenges hinder the implementation of the SANESR in the selected municipalities
6. How does the implementation of the SANESR affect public service delivery in the selected municipalities
7. What framework can be proposed to strengthen the implementation of SANESR in the selected municipalities in the Eastern Cape Province?

1.4 Aim of the study

The aim of this study is to examine the implementation of the South African National e-Government Strategy and Roadmap Framework in the OR Tambo District Municipality.

1.4.1 Research objectives

The following objectives were developed in line with the research questions.

1. To examine how the South African National e-Government Strategy and Roadmap (SANESR) is currently being implemented in the selected municipalities in the Eastern Cape Province.
2. To assess the level of awareness among government officials regarding the SANESR in the selected municipalities.
3. To analyse the legislative and policy frameworks that support the implementation of the SANESR at the municipal level.
4. Establish the institutional and technological factors that influence the implementation of the SANESR.
5. To determine the challenges that hinder the implementation of the SANESR in the selected municipalities.
6. To evaluate the effect of the implementation of the SANESR on public service delivery in the selected municipalities.
7. To develop a framework to strengthen the implementation of SANESR in the selected municipalities in the Eastern Cape Province.

1.5 Rationale of the Study

The research basis emerges from the need to assess the effectiveness of the South African National E-Government Strategy and Roadmap Framework through an evaluation of the OR Tambo District Municipality. The worldwide shift toward digital governance poses significant challenges for South African municipalities in adopting electronic systems to improve public service delivery. Research indicates that

inadequate e-government implementation perpetuates social inequalities, hindering the delivery of public services to disadvantaged areas. The research by Nkgapele demonstrates that the usability of e-government services directly affects citizen participation and satisfaction levels, making it essential to analyse how the National e-Government Strategy impacts service delivery systems in local government organisations (Nkgapele, 2024). The governance principles of transparency and accountability, which Mukonavanhu defines, require a systematic assessment of e-government frameworks to build public trust and enhance citizen-government interactions (Mukonavanhu, 2024)

The study incorporated relevant academic research to establish the validity of its measurement approach. Research into e-government practices helps scientists understand the complex problems in South Africa's specific political and social environment (Molobela & Uwizeyimana, 2023). The research investigates how an effective e-government framework can address South African public administration problems by analysing corruption and digital resource accessibility (Mukonavanhu, 2024; Latchu, 2022). The research draws on knowledge from other local governments with effective e-government systems to develop an improved model that will enhance current practices, achieve the objectives of the National e-Government Strategy, and strengthen the OR Tambo municipality's capabilities. The research contributes to validating theory in digital governance while delivering essential operational knowledge to enhance the effectiveness of e-Government strategies in South African settings. E-government has evolved into a dynamic and significant field of study as more government bodies invest heavily in it (Dias, 2019). It is worth investigating the role that e-services should play in providing services to communities at the immediate environments.

1.6 The Significance of the Study

The research holds significant value because it provides crucial insights into how the South African National e-Government Strategy and Roadmap Framework performs when applied to local municipalities, as illustrated by the OR Tambo District

Municipality. The rapid evolution of information and communication technologies requires that South African municipalities understand the existing challenges and opportunities to develop effective e-government strategies. The research results are expected to enhance academic knowledge while creating practical solutions to improve public service delivery, promote citizen participation, and enhance local government accountability. Ndzabela demonstrates that studying citizen trust in e-government strategies becomes essential for developing public service frameworks which meet citizen needs and expectations (Ndzabela et al., 2025). The research connects academic theories to real-world local government challenges, creating more effective improvement methods.

The research by Mkude and Peter (2024) supports a comprehensive governance framework that integrates digital citizen experiences with multiple governance elements. This is typically achieved through an effective system of collaborative governance, as highlighted in their study on the barriers to e-government implementation in developing countries (Mkude & Peter, 2024). The study examines the challenges of e-government adaptation in local governance and develops operational recommendations to enhance governance effectiveness and transparency. The SANESR implementation will achieve technological alignment while meeting community socioeconomic needs to establish an equitable public sector in South Africa.

1.7 Chapters Layout

Chapter 1: Introduction and Orientation

This chapter focuses on the general introduction of the study general introduction of the study, statement of the problem, the research question, aim of the study, objectives of the study, statement of the problem, the research question, objectives, rationale, significance, theoretical framework, conceptual framework, and definition of terms will be explored in this chapter.

Chapter 2: Theoretical framework and literature review

This chapter examines the theoretical framework and the literature on e-government. It relates the relevant literature to this research area and identifies the knowledge gap in the study.

Chapter 3: The nature and scope of adopting E-government strategies

The chapter focuses on the nature, scope, and implementation process of e-Government within selected local governments in South Africa by providing a comprehensive understanding of the current state and potential of the e-Government strategic framework.

Chapter 4: Research Methodology

This chapter entails the research design, paradigm, and methodology. This included the research methodology, the population and sample, the research instrument, the data collection procedure, the research design, ethical aspects, trustworthiness, validity, reliability, and ethical considerations.

Chapter 5: Data Analysis and Findings: Empirical findings

This chapter focuses on data analysis, study findings, and their discussion.

Chapter 6: An e-Government model for enhancing E-government in OR Tambo Municipality and beyond

In this chapter, the findings are summarised. A model is created based on the study's conceptual framework, empirical findings, and literature review.

Chapter 7: Conclusion and Recommendations

The research findings from this chapter provide an overall summary of the study. The recommendations stem from the study's findings and aim to help stakeholders, policymakers, and researchers working on solutions to the identified problems.

1.8 Summary of the Chapter

Chapter one of the study established the research basis by presenting the research problem within the framework of the South African National e-Government Strategy and Roadmap (SANESR). The chapter presented the research background, which explained why the SANESR system needed to be created as a solution to public service delivery problems, governance efficiency, and citizen participation issues in South Africa. The research investigated the reasons why local government policies fail to achieve their intended targets. The chapter also presents a clear definition of the problem, demonstrating that the SANESR system fails to deliver its intended results when municipalities use it. The next chapter presents the literature and theoretical framework that guided the study.

Chapter 2

Literature and Theoretical Framework

2.1 Introduction

The previous chapter presented the background, problem statement, research objectives, and study significance. The theoretical framework of Chapter Two of the study establishes an analytical framework which enables researchers to evaluate the SANESR in light of the literature and theoretical frameworks that underpinned the study. The research benefits from structured theories and models that help explain how policy design affects implementation processes, service delivery outcomes, and citizen satisfaction.

The contemporary landscape increasingly recognises the significance of e-government; however, numerous regions still rely on paper-based forms and outdated technologies (Dahiya, 2019). This chapter presents a comprehensive literature review of e-government, delineating its core elements and characteristics. It emphasises the theoretical issues, contextual factors, and frameworks essential for analysing the transformation of e-government. Furthermore, the chapter engages with scholarly and research-based perspectives concerning e-government.

The discussion begins with an exploration of various definitions of e-government, each originating in distinct contexts. It examines the theoretical frameworks that direct the study and evaluates existing literature on e-Government, particularly with respect to its definition, an overview of its fundamental concepts, its categories, and the dynamics of information systems adoption and success within e-government systems. Additionally, the chapter addresses the challenges associated with implementing the SANERS and investigates the functionality of e-government portals.

2.2 The Concept and Overview of e-Government

This section defines e-Government through its historical progression and the required public sector elements which institutions need to establish. The framework establishes e-Government as a strategic governance tool which improves administrative work and provides enhanced public service delivery, better public sector transparency, and improved public institution audience communication.

2.3 The definitions of e-Government

The United Nations defines e-Government as the integration of online government services with electronic information and service exchanges between citizens, businesses, and government branches, aiming to enhance the efficiency of government agencies (UN, 2024). World governments have dedicated their efforts to implementing e-government initiatives to advance e-government development.

The UN also defines e-Government as "the implementation of information and communication technologies, especially the Internet, to deliver public services and provide citizen information and support governance participation" (Charlton et al., 2021). The definition illustrates how e-Government facilitates improved service delivery and enhanced citizen involvement. The World Bank (2004) and the United Nations (2012) established the first definitions, specifying how public organisations should implement ICTs to improve operational performance and service delivery quality.

Governments are implementing online-based information systems to reduce expenses more quickly and conveniently than traditional services (Alkraiiji, 2020; Avianto et al, 2022), which depend on citizens' willingness to capitalise on the provided e-services (Alkraiiji & Ameen, 2022). The implementation of information and communication technologies (ICT) to improve government service delivery, efficiency, and accessibility defines e-Government according to various interpretations (Kadewandana & Kaligis, 2024).

According to Chukwudi et al (2023), e-Government refers to the use of ICTs in public administration to enhance service delivery and information access, as well as to boost citizen participation. The focus of this definition centres on using technology to enhance public administration operations, thereby improving governance. Wright (2004) explains in his book that e-Government combines technology integration with service delivery and citizen information exchange (Zhang et al., 2024). The definition emphasises e-Government's interactive nature by concentrating on information sharing as a core governance function.

Hans and Rutenge (2024) opined that e-Government involves utilising web-based services and technologies to enhance government operations through faster and more cost-effective processes, thereby delivering improved services to citizens. The definition emphasises how the implementation of technology leads to operational improvements.

According to Saidi and Al-Sharhan (2009), e-Government represents a system that tracks the adoption of information technology in government operations through service delivery, administrative efficiency, and citizen interaction (Sheoran, 2022). The definition covers all aspects of e-Government by combining operational management with citizen-focused services.

Fang (2002) proposes that e-Government involves using Internet technology to enhance government operations and service delivery, which enables communication between public institutions and their citizens and business entities. The definition illustrates how e-Government initiatives require collaboration among multiple stakeholders.

Kettl (2002) defines e-Government as a comprehensive term that encompasses all government operations utilising technology for assistance or complete automation. The definition extends its reach to encompass all government operations, rather than focusing solely on service delivery.

The World Bank (2016) defines e-Government as the use of ICT to improve access to government services, benefiting citizens, businesses, and the entire society. The definition emphasises how e-Government creates advantages for society while reaching beyond basic service delivery.

Mutula and Mostert (2010) agree that information technology should be used to boost internal government operational efficiency while simultaneously enhancing service delivery quality and accessibility for all stakeholders, including citizens, businesses, and other government entities. The definitions presented here define e-Government as a digital tool that enables public administration to modernise.

The current conceptual frameworks of e-Government have evolved to include governance systems and participatory approaches beyond their original scope. Van der Waldt (2016), Umbach (2022), and Sithole demonstrate that e-Government requires citizens to participate, while governments need to work together, indicating that e-Government requires more than service delivery because it requires government-stakeholder communication and collaboration. Gil-García (2020) examines web-based systems to understand how they enhance transparency in governance, deliver better results, and enable citizen participation. The definitions of e-Government have progressed from technology-based systems to governance-based systems, which view e-Government as a tool for administrative work, democratic engagement, and public sector accountability.

Previous studies have revealed the failure of e-Government programmes (Adam & Alhassan, 2021; Galushi & Malatji, 2022; Li & Shang, 2023; Fan & Pan, 2023). Studies by Chohan & Hu (2022), Adnan et al. (2022), and Muhammad & Kaya (2023) focus on strengthening digital inclusion through e-Government, Cohesive ICT training programmes to enhance digital competency, e-participation within the Context of E-government Initiatives, and factors affecting citizens' intention to adopt E-government, respectively. It cites that despite widespread adoption of e-government strategies in countries, their actual benefits remain unfulfilled, particularly among resource-deprived communities.

Bawazir (2022) conducted a study on modelling e-Government service usage patterns, surveying 341 Saudi citizens and expatriates. The study employed the Use-Diffusion Theory (UDT) to examine the diffusion of e-Government services in Saudi Arabia and the factors influencing each stage of use. The findings suggested that investments in IT infrastructure are required for digitisation. The study recommends an appropriate user-oriented model, including how and why such services should be used effectively to further their inclusive delivery.

Twizeyimana and Andersson (2019) conducted a study in Rwanda examining public value from e-Government initiatives. Their findings emphasised that e-Government projects have a high failure rate during implementation in developing countries. The recommendation is that further research is needed on high-quality frameworks that can be effectively integrated into existing structures to ensure their effectiveness. The literature revealed a few aspects that are ICT-related, and the authors fail to provide the outlook of e-Government at the local government level and government simultaneously in a single study establishing its efficacy, variables that contribute to the retardation in implementing e-Government, and methods to enhance it in the municipal context. This study aimed to develop a model to address challenges in implementing government policies using empirical findings, contrary to most studies, which are ideological rather than empirically based (Abdelhakim & Idoughi, 2021; Stefanovic *et al.*, 2021; Distel & Lindgren, 2023).

The transition from traditional to e-Government aims to improve the standard quality of service (Jameel et al., 2019). Besides enhancing service standards, e-Government boosts productivity. It helps improve how governments share information, save money, and deliver services more effectively and efficiently, as it also allows citizens to access information more safely and straightforwardly while lowering people's communication expenses with the government (Li & Shang, 2023).

Prior to the advent of electronic government, public services were traditionally provided with little regard for connecting residents, and doorstep services were wholly ignored (United Nations e-government survey, 2018). This initiative is constrained by factors such as a shortage of IT-qualified experts and communities' inability to operate

public e-services platforms efficiently. As a result, e-service centres cannot foster close collaboration among various government departments, corporate organisations, or individuals to achieve the intended outcomes. In a study on e-Government and e-participation in improving E-Service delivery in Bushbuckridge Local Municipality, Terrance (2023) noted that Citizens' faith in government is eroding as the gap widens due to similar predicaments. The study examined the efficacy of e-services and assessed the implications of the SANESR Framework, including its contribution to the OR Tambo Municipality.

Some public institutions have not fully embraced modern communication methods to enhance the level of service they provide and transition all paper-based records to digital records to improve efficiency in municipalities, decrease labour-related costs, and the ability to provide clients with services without requiring them to visit the municipality offices physically or to be reached by telephone (Paul, 2023). Previous studies have revealed the failure of e-Government programmes in both economically developed and developing countries (Adam *et al.*, 2021; Galushi & Malatji, 2022; Li & Shang, 2023; Fan & Pan, 2023). These studies focused on e-Government implementation. Other studies (Chohan & Hu, 2022; Adnan *et al.*, 2022; Muhammad & Kaya, 2023) focused on strengthening digital inclusion through e-Government, Cohesive ICT training programmes to intensify digital competency, e-participation within the Context of E-government Initiatives. The literature review highlighted a notable imbalance: the majority of authors did not address the e-Government perspective at the grassroots level. Furthermore, few studies effectively connected this perspective with established policies, nor did they explore the variables that hinder the implementation of E-government in a municipal context.

Fotiadis and Chatzoglou (2023) suggested that citizens should be able to pay taxes, rates, and other fees online. This helps eliminate lengthy procedures for managing files, provides a proper, rapid, and on-time way to communicate with people about local businesses, and ultimately alleviates the frustration caused by poor service delivery. Therefore, an employee's ability to adapt to providing a particular online service or multiple types of internet-based services may affect citizens' satisfaction (Kassen, 2022).

The SANERS is a comprehensive framework designed to improve public service delivery, transparency, and e-participation. Since its launch, the strategy has made notable progress in addressing access, infrastructure, and digital skills issues. The establishment of Service Centres and the implementation of Batho Pele (People First) principles are among the initiatives aimed at providing easy access to information prior to the advent of the SANESR and e-Government facilities in rural and underserved areas, including information on health, education, and business. Even with these improvements, the framework still struggles to address significant issues in rural digital infrastructure, skills shortages, and persistent systemic inefficiencies, primarily associated with cross-departmental integration (Mosehlana, 2018). Identifying these issues necessitates developing policies that enable large-scale digital literacy interventions, particularly within underdeveloped communities, and providing a resilient ICT infrastructure that supports both urban and rural e-government delivery. The Department of Communications and Digital Technologies strives to improve by advancing universal internet access and overcoming infrastructure barriers.

Van der Waldt (2016) highlights that the vision and strategies for e-governance in South Africa were first laid out in the Information and Communication Technology (ICT) sector, with the goal of establishing public information terminals for Internet and e-mail access by 2025. In addition, the objectives of the SANESR also aim to support the 2030 Sustainable Development Goals (SDGs) and the National Development Plan (NDP), with a particular focus on enhancing governance efficiency and promoting citizen participation (Lyulyov et al., 2024; Molobela, 2025). However, these objectives can be achieved effectively by enhancing ICT skills, providing training, and addressing operational impediments.

Further review of the literature in this study proves lopsidedness in research conducted on e-Government, as the majority of the researchers focused on evaluating e-Government from the lenses of the effectiveness of instruments, portals, and applications used for e-services (Adam, 2020; Chohan & Hu, 2022; Shao *et al.*, 2023). Reissig *et al.* (2022) investigate the use and effectiveness of e-Government technologies and portals. This study examines the effectiveness of e-Government in a municipal setting, with a focus on the SANESR framework, which has not been the

subject of previous or contemporary studies, specifically in the context of the OR Tambo District Municipality of the Eastern Cape.

e-Government has multiple definitions, but its core function is to use technological solutions to improve government operations and citizen services (Fan, 2024). According to the World Bank, e-Government refers to government agencies utilising information technology to establish stronger connections with citizens, businesses, and other government branches (Diakite & Wandaogo, 2024).

e-Government has undergone substantial development over the past several decades, shifting from basic government service digitisation to full digital transformation, enhancing public service delivery, transparency, and citizen involvement. The research examines how e-government definitions have evolved to align with modern technological advancements and governance systems.

The initial definitions of e-Government emphasised how ICTs enhance government service delivery by improving efficiency and accessibility. The United Nations (2006) defines e-Government as the use of the Internet and World Wide Web technology to deliver public information and governmental services to citizens. The initial approach centred on digitalising current services to boost operational efficiency and minimise bureaucratic hurdles. Fang (2001) defined e-Government through ICTS as supporting public services, government administration, and democratic processes.

The early definitions established a fundamental understanding of e-Government as a means to improve government operations and service delivery systems. The development of new technologies and shifting citizen expectations led to more comprehensive definitions of e-Government that incorporated governance principles and mechanisms for citizen participation. The application of e-Government serves to "improve citizens' access to government services and their delivery to business partners and employees" (Ndou, 2004). The expanded perspective identified e-Government as a mechanism for promoting democratic values by improving interactions between governments and their citizens.

Balaji, (2025) highlighted that modern definitions of e-Government now encompass comprehensive digital transformation strategies that aim to generate public value while enhancing governance quality. The United Nations e-Government Survey (2024) presents a Digital Government Model Framework that utilises artificial intelligence and other emerging technologies to accelerate digital transformation for sustainable development (Department of Economic, 2024). This framework shows how e-Government now serves as a transformative force driving public sector innovation and ensuring inclusive, resilient governance practices.

The study of Malodia et al. (2021) analysed the stages in e-Government development. The study highlighted that the initial phase of e-Government development centred on implementing information exchange between government agencies. The second stage established interactive e-government through public visualisation, enabling citizens to access various government services. e-Government evolved into a technology system for non-managerial administrative work, including financial transactions, back-office operations, and clerical checks during this stage. The advancement of technology enabled researchers to study the third stage, which examined technology as both a tool for public administrative reform and a mechanism for service delivery convenience. The fourth and fifth stages of e-Government research focus on technology adoption and citizen perceptions, with a particular emphasis on user adoption and service quality issues (Ilieva et al, 2024).

According to SANESR (2017), e-Government is an innovation that promotes the use of communication technologies, including mobile devices, websites, applications, and other ICT services and platforms, to link citizens and the public sector and facilitate collaborative, efficient governance. This definition highlights the strategic role of eGovernment in fostering collaborative governance practices while enhancing service delivery across multiple sectors.

The Table below summarises some definitions of e-Government from the literature above.

Table 1: Definitions of e-Government

At the end of the discussions

Authors	Definition
United Nations (2012).	e-Government uses ICTs to deliver government services to citizens and businesses effectively and efficiently. It involves the application of ICT in government operations to achieve public ends by digital means.
Kraemer and King, 2008	The use of information technology within government to achieve more efficient operations, better quality of service, and accessible public access to government information and services
Mutula and Mostert, 2010	E-government is the use of ICTs to improve the activities of public sector organisations, including the delivery of services to citizens, businesses, and other arms of government.
Umbach, (2022)	E-government uses information technology to support government operations, engage citizens, and provide government services.
Sithole and Van der Waldt (2016)	E-Government uses digital technologies to deliver services and information to citizens, businesses, and other governmental entities.
World Bank, (2004)	“E-Government is the use of information technologies to support government operations, engage citizens, and provide public services.”
Gil-García, (2020)	E-Government is the use of ICTs, particularly web-based applications, by governments to improve the efficiency, effectiveness, transparency, and participation in public administration.

Source: Authors' Own Compilation

In terms of implementation, the application of information technology to government services through e-Government breaks distance and time barriers, enabling better

service delivery. The transformation occurs in two fundamental ways: enhancing service delivery quality alongside administrative process renewal, cost reduction, and review of the democratic system. E-Government also delivers convenient government services to citizens while achieving operational efficiency and process simplification goals (Nkgapele, 2024).

2.4 Historical Perspectives

The implementation of e-Government began in the late 20th century as governments adopted computer technologies for administrative processes (Yadav & Yadav, 2025). The initial systems automated basic functions, including payroll management, record keeping, and data processing. Mainframe computers and batch processing technologies were the primary components of early systems, which offered limited functionality and restricted access (Khorsand et al., 2023). The development of e-Government became possible through advances in technology, which enabled more intricate system operations. Government departments and agencies gained control over their computing resources through this transition, enabling better data sharing and improved inter-agency collaboration while speeding up processing times. The initial implementation of electronic systems established a solid foundation, laying the groundwork for successful e-government initiatives. Digital platforms and advanced technologies have proven essential in enhancing citizen engagement and optimising administrative processes (Papel et al., 2024). Yadav and Yadav (2025) highlighted that operational efficiency is a significant benefit of early e-Government adoption through automation and system integration, which cuts paperwork and redundant procedures while speeding up services.

Public administration began using information and communication technologies (ICTs) to boost performance through Management Information Systems (MIS) during the 1980s and early 1990s, enabled by New Public Management (NPM) reforms (Nguar, 2022). The Internet began developing in the mid-1990s, enabling governments to establish external communication channels with citizens and businesses through ICTs, laying the foundation for contemporary e-Government (Fang, 2006; Kettl, 2002).

The early 2000s brought e-Government into a new governance framework that combined service delivery efficiency with transparency and accountability, and citizen engagement with intergovernmental coordination (Hegazy, 2026). Official websites, online service portals, and transactional platforms, including e-taxation, e-procurement, and electronic licensing systems, became standard government practices. The United Nations, together with the World Bank, established e-Government as a worldwide development priority through their international organisations, which supported the implementation of digital government to improve governance, social inclusion, and economic growth in developing nations (Ivanova et al, 2022). The development of e-Government over time has led to digital government systems that use smart government approaches to integrate mobile technology, big data analytics, and artificial intelligence to deliver better public services and enhance citizen participation (United Nations, 2014; World Bank, 2016).

Wang et al. (2024) postulate that implementing e-Government leads to cost reductions in manual labour operations and time-efficiency benefits through digital platforms and online portals. The system creates better convenience and easier accessibility while promoting transparency and accountability. Electronic technology integration enables e-Government to make data-driven decisions. Government entities can discover essential insights into citizen needs by processing diverse information sources (Lu & Nguyen, 2016).

e-Government, in its early stages, generates multiple advantages that enhance the efficiency and effectiveness of public service delivery (Samsor, 2021). It also enables citizens to access government information and services from the comfort of their homes, eliminating the need to visit physical government offices (Wang et al., 2024). The system reduces the load on public infrastructure and saves citizens' time (Sikaonga & Tembo, 2020). The system delivers real-time government operational data, improving transparency and accountability measures (Esselimani, Sağsan, & Kıralp, 2021).

The status of citizen applications and requests can be tracked through transparent, open governance systems. Electronic systems enable fast and accurate data

processing, reducing errors and enhancing decision-making capabilities. By conducting more effective citizen needs assessments, governments can deliver superior services to their populations (Hooda et al., 2023). Early adoption drives innovation by enabling the development of new digital services that adapt to changing citizen requirements (Lu & Nguyen, 2016).

Mushtaq et al (2024) opined that the successful operation of e-Government services depends heavily on preventing cybercrimes. The finding shows that user-focused perspectives, such as service adoption and system vulnerabilities, dominate the field, yet internal cybersecurity aspects, including managerial practices and mitigation strategies, receive minimal attention. The restricted availability of data might explain this knowledge deficiency. The research suggests that future studies should adopt an integrated methodology, focusing on managerial-level cybercrime prevention strategies for e-government institutions across both developing and developed nations (Mushtaq et al., 2025).

In South Africa, Molobela (2025) conducted a study on digital governance and public service delivery. This study examines South Africa's efforts to enhance public service delivery and citizen participation through the Internet of Things, social media, artificial intelligence (AI), and machine learning. This study examines the key public administration paradigms of Classical Public Administration and New Public Governance (NPG) to determine how digital tools can facilitate the creation of a more people-centred and participatory form of governance. The study's findings emphasised the need for strategic investment in ICT skills and infrastructure to support the digital transformation of public services and enhance digital governance frameworks in South Africa (Molobela, 2025).

In a divergent study, Sánchez-Torres et al (2017) examine the role of future-oriented technology in e-Government. Focusing on Information and Communication Technologies (ICTs) and enhancing government operations through e-Government initiatives. The findings reveal that strategic vision is a recurring weakness in e-Government initiatives, underscoring the need to apply FTA more widely to advance the development of extended e-Government. Vargas-Murillo et al (2024) emphasised the digital transformation of public services through e-Government, which leads to

improved government efficiency, transparency, and better accessibility of public services. The study highlights the crucial role of e-Government and e-Governance systems in modernising operations through digital technology. The study explained how governments utilise information and communication technologies (ICTs) to enhance the efficiency, transparency, and accessibility of public services.

Balaji (2025) identifies three primary obstacles to e-Government: the digital divide, cybersecurity issues, and the implementation of AI and blockchain technologies in governance systems. The study proposed solutions and identified future directions to deepen understanding of digital governance frameworks in a rapidly evolving technological environment.

2.5 International, Continental, and Local Perspectives

The implementation and evolution of e-Government initiatives vary significantly across different governance contexts, shaped by institutional capacity, policy priorities, and levels of technological development. This section examines e-Government from international, continental, and local perspectives to provide a comparative understanding of how digital governance is conceptualised and operationalised at different levels. The section highlights best practices, common challenges, and contextual realities that influence e-Government adoption and effectiveness, thereby situating the current study within a broader multi-level governance environment.

2.5.1 e-Government International Perspective

The global adoption of e-Government has revolutionised how citizens interact with their governments through digital systems (Balaji, 2025). The systematic research examines international e-government perspectives through case studies from the United Kingdom, the United States, Australia, Ghana, and Nigeria. The review examines existing research about e-Government implementation challenges and

achievements across these countries through a comparative analysis of international perspectives.

Since its inception, the UK has led the development of e-Government solutions to improve public service delivery (Balaji 2025). The UK government achieves its e-Government policy direction through citizen need assessment combined with ICT infrastructure development, according to Dovhan et al. (2022). The development of frameworks that promote accessibility and transparency has increased public involvement, thereby enhancing the effectiveness of government services. Public services in the UK have undergone significant digital transformation, according to multiple research studies, creating an environment that encourages both public citizens and employees to utilise online platforms. The UK government achieved better efficiency through its digital integration strategy while making public services more accessible to citizens, according to Jiang et al. (2021). According to the National Audit Office, Grecu & Dicusar (2021), the digital divide and cybersecurity concerns continue to pose problems despite these advancements.

E-government in the United States has undergone a significant transformation since its inception during the 1990s. Jiang et al. (2021) state that e-Government strategies in the US primarily focus on improving service delivery efficiency and public participation levels. The establishment of USA.gov, alongside other significant programs, demonstrates the government's commitment to delivering various services through easy-to-access online platforms that enable seamless interactions between citizens and multiple levels of government. The United States stands as a pioneer in creating legal structures which help merge e-Government into national development plans, according to Chen and Li (2024). The country's e-Government projects implement user-driven design principles because this approach supports broader goals of improving service delivery and building public trust. Data privacy issues, along with cybersecurity threats, persistently affect the operational success of these programs, according to Muhammad & Hromada (2023).

The Australian e-Government strategy relies on high-quality digital infrastructure to deliver citizen-centric services. Digital solutions integrated into Australian service delivery have led to improved user satisfaction, according to research by Castro &

Lopes (2021). Through its Digital Transformation Agency (DTA) initiative, the organisation leads public-sector innovation efforts to enhance transparency and accountability (Mensah & Mwakapesa, 2023). The Australian e-Government system supports governance models that enable citizens to participate in shaping policies. The implementation of inclusive approaches lays the foundation for citizen ownership of governmental initiatives. The Australian National Audit Office has stated that achieving effective e-Government service accessibility remains challenging for all demographics, especially those in rural communities (Doran et al., 2023).

United Nations member states ranked the United Kingdom first in their E-Government Development Index (EGDI) ratings during 2016 because of its internet technology development, along with expanding citizen access to electronic services (UN E-Government Survey, 2016:82). The United Kingdom held the top position in the E-Participation Index which showed how internet penetration at 94.8% correlated with digital government service utilisation (World Bank, 2021).

The UK Government Transformation Strategy (2016) presents a blueprint to reshape public services through digital excellence and transparency improvements while maximising operational effectiveness between departments. The UK government sets three major priorities: building digital platforms for reuse, developing digital competencies within the civil service, and implementing services through iterative approaches that focus on desired outcomes (UK Government, 2016, p. 6).

In the United Kingdom, Kasabali et al. (2024) conducted a systematic literature review study on digitisation and e-Government. The findings demonstrate an increasing focus on user-centred approaches, which place service quality at the forefront because it affects citizens' personal lives and professional activities. The study highlights how business ethics emerged alongside e-Government portals, utilising multiple service models. Furthermore, e-Government operates as a complex ecosystem that surpasses conventional organisational structures and local governance frameworks.

The Australian Digital Transformation Agency released Vision 2025, establishing the government's plan to achieve complete digital services by 2025 (Meyerhoff, 2023). The strategy establishes three key goals: securing digital identification systems,

providing user-specific integrated services, and delivering digital solutions to non-digital citizens. The roadmap outlines key transformational goals and initiatives for the period from 2018 to 2020 (Digital Transformation Agency, 2018:19).

The UN E-Government Development Index (EGDI) ranked Denmark first globally in 2020 for the second time in a row, while placing it in the "Very High" EGDI category (UN E-Government Survey, 2020:12). The country maintained its first position in e-government but failed to reach the top eight in e-participation, which indicates that digital services do not match the level of online citizen engagement. Denmark serves as a reference point for the European Union and the global community due to its advanced digital government maturity.

Estonia demonstrates outstanding digital governance success, ranking third in the 2020 E-Government Development Index (EGDI), holding a position as a world leader in e-participation, and having high internet usage rates (Hoffmann & Solarte-Vásquez, 2022). The country utilises its digital infrastructure to provide online access to most public services via the X-Road communication protocol, enabling efficient e-voting, e-taxation, and digital identity management (Hoffmann & Solarte-Vásquez, 2022). The Estonian governance model illustrates how digital services must be user-friendly and equipped with robust cybersecurity systems to foster public trust and engagement (Nweke, 2023).

Estonia maintains its digital success but struggles to convert digital citizen involvement into actual civic involvement. The "Estonian paradox" exists because Estonia demonstrates top-notch e-government performance, yet its e-democracy initiatives yield outcomes that do not align with its e-government success (Vooglaid & Randma-Liiv, 2022). The evaluation process for digital services needs to continue because it addresses current problems while ensuring equal public access for every citizen (Vooglaid & Randma-Liiv, 2022).

2.5.2 e-Government Continental Perspective

The implementation of e-Government in Ghana faces substantial barriers because of poor infrastructure and vast socioeconomic inequalities. Grecu and Dicusar (2021) Grecu & Dicusar (2021) demonstrate that economic disparities need resolution to enhance e-Government programs because inadequate ICT infrastructure blocks digital governance implementation. The Ghanaian government is working to enhance public services through its GIFMIS and E-Pharmacy Project initiatives, which aim to improve financial management and healthcare delivery. Digital platform implementation has improved operational efficiency; however, digital literacy issues and the digital divide persist. Muhammad and Hromada (2023) explain that building trust in e-Government systems requires greater citizen engagement and stronger privacy protections. The e-Government sector in Ghana demonstrates promising development potential that requires specialised approaches to address existing connectivity issues.

The e-Government initiatives in Nigeria face multiple obstacles, including political, economic, and infrastructure barriers. Research indicates that digital governance investments have not led to effective e-government implementation due to corruption, inadequate ICT infrastructure, and bureaucratic inefficiencies (Naqvi et al., 2023). The Nigerian government has introduced several digital projects aimed at enhancing the efficiency of public service administration through the Integrated Payroll and Personnel Information System (IPPIS) (Bougherra et al., 2023).

From an African perspective, Mncwango et al. (2024) contest the notion that Africa is merely a bystander in the Fourth Industrial Revolution (4IR) and demonstrate that several African countries have been actively embracing digitalisation to improve government efficiency and service delivery. The study utilises case studies from South Africa, Mauritius, Nigeria, Rwanda, and Tunisia to explore the integration of technology into key government sectors, including home affairs, finance, education, transport, and health, between 2000 and 2022. The results indicate a significant improvement in the quality of service delivery and execution time. The study also demonstrates that Africa is well-positioned for the 4IR and can effectively harness technological advancements

to transform the public sector. Secondary data is employed to evaluate the effects of e-government programs in the chosen countries (Mncwango et al, 2024).

Omweri (2024) reviewed peer-reviewed articles, policy documents, and case studies from Ghana, South Africa, Kenya, and India, revealing significant developments in the adoption of e-Government, particularly in urban areas. However, it highlights that rural areas face challenges due to poor infrastructure, low digital literacy levels, and limited resources. The study suggests addressing the urban-rural digital divide, improving infrastructure, digital literacy, and inclusive design to enhance access to e-government services and increase institutional transparency and accountability.

2.5.3 e-Government Domestic Perspectives

Through e-Government initiatives, the public sector can deliver better services to citizens and increase their participation in governance processes. Since South Africa's democratic transition in 1994, e-government systems have become increasingly important for the government, as they aim to address the nation's socio-political and economic issues through information and communication technology (ICT) (Mofokeng, 2023). This review assesses current research on e-Government in South Africa by examining its implementation aspects, challenges, and positive impacts on public service delivery.

The South African government launched e-government initiatives during the late 1990s through policies that integrated ICT into public administration (Mabinane, 2022). The White Paper on E-Government (2001) established a technological strategy for improving service delivery efficiency. The local government's implementation of these policies remains inconsistent because municipalities vary in their capabilities and follow distinct approaches, as noted by Nel-Sanders and Malomane (2022).

The adoption of e-government in South Africa is facilitated by governance reforms that enhance transparency and accountability. The implementation of e-Government systems in South Africa leads to enhanced administrative efficiency and better service

delivery, according to various research studies (Wang et al., 2023; Galushi & Malatji, 2022). According to multiple authors, successfully implementing these systems requires strong cybersecurity and overcoming fundamental obstacles (Timcke et al., 2023; Dagada, 2024).

Various studies indicate that e-Government in South Africa offers opportunities, but multiple barriers hinder its successful implementation. The evaluation by Nel-Sanders & Malomane (2022) highlighted three primary institutional problems: poor infrastructure, limited digital proficiency, and public institution resistance to transformation. Systemic challenges documented in other research highlight the need for strategic planning alongside organisational acceptance of digital transformation (Galushi & Malatji, 2022; Timcke et al., 2023).

Public acceptance of e-Government services requires assessment to determine their success levels. According to research, public trust in e-government services depends directly on the quality of services provided and on citizen involvement in governance activities (Smith & Marx, 2022). The research by Nkgapele & Mokgolobotho (2024) on local government services demonstrates that user involvement improves service quality while fostering feelings of responsibility and stewardship among service recipients.

Digital illiteracy and the digital divide prevent many citizens from fully participating in e-Government programs. Nkgapele (2024) stresses that effective solutions must be developed to bridge these divides because marginalised communities need digital tools and skills to participate fully. The usability of e-Government platforms must be enhanced because it is a fundamental element for boosting citizen participation (Nkgapele, 2024).

Research data demonstrate that e-government initiatives have led to substantial improvements in service delivery. Mohale (2024) explains that municipalities now deliver faster responses to citizen needs because of process streamlining. Digital service integration is a governance advancement tool because it enables governments to be more responsive, according to studies examining the impact of telecommunications infrastructure on government response (Adams & Paul, 2023).

Adams and Paul's (2023) research indicates that higher e-government maturity is associated with improved service quality and increased resident satisfaction. The analysis demonstrates support for e-Government initiatives, which help improve public governance in line with the Sustainable Development Goals.

Cybersecurity remains a top priority in all e-government discussions in South Africa. The increasing number of digital services poses substantial threats to public trust due to data breaches and cyberattacks (Dagada, 2024). To achieve effective governance frameworks, it is necessary to invest in cybersecurity measures to protect government data and citizens' sensitive information.

In South Africa, many studies focus on existing challenges and future digital opportunities in the next stage of development. Experts agree that advancing digital inclusion, strengthening cybersecurity, and increasing public knowledge about e-Government are fundamental to its success (Nel-Sanders & Malomane, 2022; Shah et al., 2022). Co-designing e-Government services with citizens, businesses, and civil society will be key for creating user-centric systems that meet local needs (Adams & Paul, 2023). Public service delivery effectiveness will improve through continuous investment in digital literacy programs that help bridge the participation gaps and reduce the digital divide.

Maphangwa and Van der Waldt (2023) investigate how South African cities are transitioning to innovative city development through ICT and Fourth Industrial Revolution (4IR) e-readiness models. The research demonstrates that South African cities require immediate investment in human capital and ICT infrastructure to achieve global standards. The study further revealed that cities lack coordination in implementing different models focusing on specific contexts. The study suggests a model that facilitates sustainable digital transformation alongside enhanced service delivery.

In a similar study, Abdurahman and Kabanda (2024) identified the challenges and enablers in designing and implementing accessible e-government services, with a focus on developing countries. It also identifies four current practices that help

enhance accessibility: championing accessibility, adopting omni-network approaches with digital learning, developing in-house guidelines and assistive technologies, and implementing reflective practices. These findings emphasise the importance of inclusive strategies and provide implications for future research on enhancing accessibility in digital public service delivery (Abdurahman & Kabanda, 2024).

Terrance (2023) evaluated South African municipal e-readiness for implementing e-government services, focusing on their capacity to enhance e-participation and deliver digital services. The research employed qualitative methods and secondary data to study four municipalities, developing an e-readiness theory to understand implementation challenges. The research reveals two major obstacles: the lack of ICT professionals and inadequate financial support for infrastructure development. The research indicates that e-government transformation policies often fail to clearly specify the ICT provision framework. The research suggests that better adoption of ICT strategies can boost e-participation and improve municipal service delivery (Terrance, 2023).

The literature review on e-Government in South Africa reveals a complex environment that presents significant opportunities and major challenges. The documented potential for improved service delivery and governance remains valid, despite systemic challenges, such as cybersecurity and public participation, that continue to hinder development. The complete realisation of e-Government's transformative potential in South Africa will require a coordinated effort to overcome these barriers.

2.6 The South African National e-Government Strategy and Roadmap Origin

The National e-Government Strategy and Roadmap is a detailed plan for transforming South African government services into digital-based systems (van der Hoogen et al, 2024). The strategic document presents an explicit e-Government implementation strategy and precise methods to achieve these goals through a planned, sequential set of steps over multiple years. The strategy marks a substantial change in government service delivery, requiring all government spheres to coordinate their

efforts to achieve digital transformation success. The implementation process begins with legislative modifications that establish the essential legal structures for digital governance.

The National e-Government Strategy and Roadmap (2017), under the Electronic Communications and Transactions Act, 2002, of South Africa, serves as the framework for e-government development (Tshuma et al., 2024). The strategy is to provide an electronic public service that enables all citizens to access digital technologies, thereby improving their quality of life. Despite specific accomplishments, progress is hindered by obstacles such as service delivery issues and the digital divide. Limited infrastructure, characterised by uneven digital access and socio-economic disparities, creates barriers to the widespread implementation of plans (Nkgapele, 2024).

While investigating the impact of digital transformation in the public sector, Komna and Mpungose (2024) highlighted that the central e-Government portal developed by the State Information Technology Agency (SITA) offers user-friendly services with multilingual support, serving both informational and transactional purposes, and meeting accessibility needs for people with disabilities. Through feedback channels and social media integration, the strategy promotes citizen engagement, enhancing transparency and responsiveness that support the Batho Pele principle of consultation. The e-participation index showed South Africa achieved a very high ranking during 2020, demonstrating progress in digital governance and citizen inclusion (Coetzer, 2022).

Although South Africa is dedicated to inclusive digital transformation, it trails behind Brazil and Estonia in technological advancement and systemic coordination. The unified and participatory strategy of South Africa faces critical barriers in implementation capacity, resource allocation, and the development of digital literacy, hindering its efforts to enhance its global e-government standing (Coetzer, 2022).

The e-Government framework in South Africa has undergone substantial transformation since 1995, when the government acknowledged the potential of ICT to enhance service delivery (Molobela, 2025). The 2001 release of Electronic

Government: The Digital Future and Minimum Interoperability Standards (MIOS) established a policy milestone for ICT system integration (Chuma, 2025). The Batho Pele Gateway became operational in 2004 as a centralised online portal following the Electronic Communications Transactions Act 2002.

The establishment of the Department of Telecommunications and Postal Services (DTPS) brought a fundamental transformation to the framework in 2014. The National ICT Integrated Policy White Paper received approval in 2016, along with the SANERS, which established digital transformation as the focus through stakeholder collaboration and intergovernmental support (Petzer, 2025).

The framework development demonstrates an increasing awareness of the need for coordinated strategies and for implementing digital policies across the government. A whole-of-government approach necessitated a central structure to develop a national e-Government policy and strategy (Othman et al., 2025). The framework follows an iterative process, allowing it to adapt to technological advancements and citizen needs while maintaining its primary goal of leveraging digital technologies to transform public service delivery.

Objectives of the SANERS include, but are not limited to:

- The National e-Government Strategy and Roadmap seek to improve public service delivery through digital technologies to ensure every South African citizen can access better government services. This is a well-developed plan to improve government functions and service delivery.
- The strategy's mission is "To digitalise government services, to transform South Africa into an inclusive digital society and economy".
- The DTPS headed the development of this strategy with the assistance of extensive situational analysis and public consultation to determine the current challenges and practical implementation concerns. This was to ensure that the barriers to adopting e-Government were well appreciated.

- The major weakness of the strategy is the digital divide that restricts the use of ICT products and services. Historical educational infrastructure inequalities continue to affect ICT provision in schools, underscoring the need for comprehensive infrastructure development.
- Further, the implementation is required at all government levels. The strategy focuses on standardisation and features such as a single look for all government websites and e-government integrated service delivery platforms
- The strategy focuses on changing government-to-citizen solutions, and citizens today expect convenient and instant service experiences when dealing with the government.
- SITA (State Information Technology Agency) is being reorganised into a Digital Transformation Entity to enable the support of the implementation of the strategy
- The implementation period from 2017 to 2022 consists of defined deliverables and targets for each strategy phase. The plan includes both immediate transformative wins and future-oriented transformational projects.

(South African Government, 2017)

2.7 Theoretical Framework

The following section presents the theoretical framework guiding this research and preliminary findings from the literature review. The study employs the LOGFRAME approach, the SERVQUAL model, and the Theory of Change as its underlying framework.

2.7.1 The Logical Framework Approach

The Logical Framework Approach (LOGFRAME) is one of the theoretical frameworks underpinning the study. The framework can serve as a systematic evaluation framework for e-government strategies in this literature review.

The Logical Framework Approach is a project management and evaluation tool that enables systematic project design, implementation, monitoring, and assessment (Uwizeyimana, 2020). The Logical Framework Approach (LFA), also known as LOGFRAME, is a comprehensive framework for planning, implementing, and evaluating development projects. The USAID developed the LOGFRAME as a project management tool in 1969, before it was adopted by international organisations and governments to improve project design and accountability. LOGFRAME presents a matrix structure that organises project elements by defining objectives, inputs, activities, outputs, outcomes, impacts, indicators, verification methods, and assumptions (Wangang, 2024). Project stakeholders benefit from this structured method, which facilitates clear communication and provides a comprehensive monitoring and evaluation framework throughout the project lifecycle. LOGFRAME is a powerful instrument for designing and measuring e-government projects within the digital implementation framework. Through LOGFRAME, governments define precise objectives, identify essential resources, and develop quantifiable success metrics. The logical framework approach enables policymakers to handle resource problems, technology infrastructure, and stakeholder participation issues systematically.

Apleni and Smuts (2020) introduced an e-Government implementation framework for developing countries, emphasising four critical success factors: funding and ICT infrastructure, legal and policy frameworks, and stakeholder involvement. The components of LOGFRAME align with these CSFS, demonstrating how LOGFRAME serves as a framework for organising and evaluating e-Government projects.

Nkgapele and Mokgolobotho, (2024) highlighted that through digital transformation, the South African National e-Government Strategy and Roadmap aim to improve service delivery to citizens. The execution of this strategy remains problematic at the

municipal level because the system faces three key challenges: insufficient resources, digital inequalities, and dissimilar ICT adoption patterns, which hinder the improvement of public service delivery through effective e-Government implementation. Ishengoma, F., & Shao, D. (2025). This approach aims to improve municipal service accessibility by leveraging digital platforms for service delivery. Through the project outputs, e-Government applications become user-friendly, staff receive training, and citizens gain awareness. LOGFRAME is envisioned to enable municipalities to develop e-government initiatives by systematically planning, implementing, and evaluating strategies that align with both national objectives and local requirements.

The OR Tambo District Municipality's rural character and socioeconomic issues make it an important testing ground for evaluating e-government effectiveness through the LOGFRAME framework. The Logical Framework Approach provides an effective system for developing e-government plans, implementing them, and assessing their impact, especially in areas such as the OR Tambo District Municipality, where resources are limited. LOGFRAME establishes a systematic project management and accountability framework by defining project objectives in conjunction with activities and indicators. Implementing the LOGFRAME in line with the South African National e-Government Strategy and Roadmap will enhance the effectiveness of digital initiatives by delivering better services to citizens through greater municipal involvement.

2.7.2 The SERVQUAL Model

The second theory underpinning the study is the Service Quality Model (SERVQUAL). The SERVQUAL model, developed by Parasuraman, Zeithaml, and Berry in 1985, is a well-established framework for evaluating service quality by measuring the gap between customer expectations and actual experience across five dimensions: reliability, assurance, tangibles, empathy, and responsiveness. This model has been applied in various service sectors to evaluate and enhance service delivery.

In e-Government, SERVQUAL has been used to assess the quality of government digital services. Zwane & Debusho (2012) contend that an adapted SERVQUAL instrument incorporating the Batho Pele principles can measure service quality in community e-Government service centres in South Africa. Their study emphasises the need to modify the SERVQUAL model for the e-Government service environment. Mahlangu and Ruhode (2020) point out that SERVQUAL may not fully capture the intricacies of e-Government service delivery, and that a multi-dimensional model that includes other factors relevant to e-services may be necessary.

The OR Tambo District Municipality, characterised by significant challenges, provides a relevant context for applying the SERVQUAL model to assess the quality of e-Government services within local government. In line with the objectives of the South African National e-Government Strategy and Roadmap (SANESR), municipalities are expected to deliver efficient, accessible, and citizen-centred digital services (Molobela, 2025). However, disparities in infrastructure, digital literacy, and institutional capacity often affect service quality, particularly in rural settings. The SERVQUAL model provides a structured framework for evaluating these challenges by examining key dimensions of service quality, thereby enabling a comprehensive assessment of how users experience e-Government services (Parasuraman et al., 1988; Alzahrani et al., 2017).

In this study, the SERVQUAL dimensions are operationalised to assess e-Government service delivery in the OR Tambo District Municipality. Reliability evaluates the consistency and dependability of online services; assurance assesses the competence and trustworthiness of municipal officials; tangibles focus on the quality of ICT infrastructure and digital platforms; empathy examines the extent to which services are user-centred and responsive to citizen needs; and responsiveness measures the timeliness and effectiveness of service delivery. These dimensions are particularly relevant in the municipal context, where challenges such as system inefficiencies, limited technical capacity, and poor coordination can undermine service delivery outcomes. Empirical studies have shown that applying SERVQUAL in e-Government contexts provides valuable insights into service gaps and areas requiring improvement (Mensah & Adams, 2020; Balbin-Romero et al., 2022).

2.7.3 The Theory of Change

A Theory of Change (ToC), as the Third theory underpinning the study, is a strategy for planning, participation, and evaluation that describes long-term goals and works backwards to determine the conditions that need to be in place. It focuses on the links between activities, outputs, outcomes, and impacts, and how and why a particular change is likely to occur in a specific situation. Shoemaker & Reid (2005) highlighted that the ToC is very important for complex e-Government interventions involving many actors and variables. It is a model that describes how an intervention or approach works to reach its goals and create the expected impact. It describes the causal relationships between activities, outputs, outcomes, and impacts over time, as well as the assumptions that must be true for these changes to occur. It gives an overview of how the initiatives are interlinked and prioritising change using a back-to-front mapping approach characteristic of ToC (Zhang & Kaur, 2024).

De Silva et al. (2014). Stated that the Theory of Change (ToC) is a logical and transparent description of the mechanisms that explain how an intervention or programme works in a complex context to achieve outcomes. It represents possible outcomes based on the linkages between inputs, activities, outputs, and outcomes/impacts, and identifies assumptions, risks, and factors affecting outcomes. (Mawela, Twinomurizi & Ochara, 2017; Lnenicka et al., 2024). Moreover, using a Theory of Change enables one to structure challenges related to e-Government implementation and align e-Government implementation with the desired outcomes of service delivery.

The Theory of Change is participatory and context-specific, involving stakeholders such as municipal staff, community members, project team members, and policymakers in identifying needs, constraints, and potential priority areas for digital intervention within the municipality. The ToC was used to design an effective plan that will enable the municipality to deliver on its service delivery goals (Shoemaker & Reid, 2005).

2.8 Categories of e-Government

The categories of e-Government provide a structured framework for understanding how digital technologies facilitate interaction between the government and its key stakeholders. Within the context of the South African National e-Government Strategy and Roadmap (SANEGR), these categories clarify the different forms of electronic engagement that support service delivery, administrative efficiency, and participatory governance. The sections that follow outline the main categories of e-Government, highlighting their distinctive roles and their relevance to public sector transformation.

2.8.1 Government-to-Government e-Government

Government-to-Government (G2G) e-Government refers to digital technology applications that facilitate seamless communication and data sharing among government departments at various administrative levels. G2G stands as one of the essential e-Government foundations, alongside Government-to-Citizen (G2C), Government-to-Business (G2B), and Government-to-Employee (G2E), to improve public administration efficiency, transparency, and responsiveness (Ahmed, 2025). Implementing e-government and digital government policies through G2G requires fundamental elements, including information exchange, information security, citizen engagement, policy-related decision-making, human resources, and inter-agency services (Puentes-Poloché et al., 2023).

The implementation of G2G e-Government systems continues to face ongoing difficulties. The KwaZulu-Natal Department of Transport in South Africa served as the basis for a case study that revealed user adoption as the primary barrier to implementation. User adoption factors stem from user requirements management, business process management, change management, user involvement, organisational culture, and prioritisation (Abdulla & McArthur, 2018). G2G e-Government faces interoperability as its fundamental challenge. System interoperability through information sharing depends on the creation of standardised frameworks and protocols. The European Union's Interoperability Framework and the

United States' Enterprise Architecture initiatives serve as examples of initiatives that promote digital integration across different agencies. G2G implementation success depends on infrastructure development, change management, and political support. The numerous e-Government project failures stem from mismatches between design and reality, driven by insufficient stakeholder participation, capacity, and legal frameworks.

Ahmed (2025) noted that G2G e-Government has substantial potential to improve governance effectiveness. However, its success depends on strategic institutional coordination, a strong ICT infrastructure, aligned policies, and the development of a digital culture in public agencies.

2.8.2 Government to Citizen E-government

G2C e-Government represents the digital communication system between public entities and their citizens, providing better public services, transparent governance, and enhanced civic participation. Various elements, including technological infrastructure, digital literacy, trust in government, and the perceived usefulness of online services, have influenced the adoption of G2C e-government services.

Studies show that user-centred design enhances the usability and accessibility features of e-government platforms (Nkgapele, 2023). The South African e-government services face implementation obstacles due to digital divides, limited ICT skills, and resistance to technological innovation, as noted by Nkgapele (2023). The solution to these obstacles must focus on improving digital literacy and providing access to technology for all population groups.

The government's reputation and the digital divide are examined in relation to their impact on citizen engagement. According to Tran and Nguyen (2024), the usage of e-government and citizen engagement exhibits a mediated relationship through positive government reputation, while the digital divide serves as a moderating factor. Such findings suggest that both enhanced government transparency and reduced digital inequalities are crucial for fostering active participation in digital governance. Service

centres are vital in South Africa, as they connect citizens to digital services and information throughout underserved regions. These centres enhance local digital literacy and e-participation levels, promoting inclusive governance (RSIS International, 2023).

The implementation of e-Government services depends on three main factors: trust and perceived risk, alongside optimism bias. Tran (2023) demonstrates that resolving privacy and security issues will boost citizen interest in online government services.

The successful execution of G2C e-Government services requires solutions to technological challenges and social and institutional barriers. The implementation of e-Government initiatives succeeds when they adopt user-centred design approaches, improve digital literacy, and build government trust, resulting in better public services and higher citizen involvement.

2.8.3 Government to Employee E-government

G2E e-government refers to digital communication between government organisations and their workforce, aiming to enhance administrative performance while optimising workplace processes and employee engagement. G2E initiatives provide electronic payroll systems, online training platforms, benefits management capabilities, and internal communication tools.

Current research indicates that G2E systems are crucial drivers of agile governance. According to Bao et al. (2024), government employees need technological proficiency and group collaboration to deliver agile responses in e-governance. According to the research, five mechanisms that enable agility include technological infrastructure, organisational culture, and employee competencies.

The implementation of G2E e-Government systems faces multiple obstacles during adoption. According to Bhaskar et al. (2021), their systematic literature review demonstrated that G2E services fail to meet their goals because of training deficiencies, resistance to change, and insufficient infrastructure. Their research

introduces a theoretical model that recommends tackling obstacles by boosting worker participation and institutional backing. The achievement of G2E initiatives faces significant obstacles due to institutional and cultural barriers. According to Al-Shihi (2006), adopting G2E e-Government faces essential obstacles, including bureaucratic resistance, insufficient leadership commitment, and policy frameworks. Solving these barriers requires comprehensive strategies, including policy reforms, capacity building, and change management.

Digital literacy, access to technology, and trust in digital systems are essential factors for developing countries. Basamh et al. (2014) explain that Saudi Arabian employees face obstacles to adopting e-Government services due to infrastructure costs, deficiencies in computer skills, and privacy-related concerns. The authors recommend specific training initiatives and infrastructure investments to address these obstacles.

The success of G2E e-Government relies on resolving technological, organisational, and cultural challenges that affect governmental operations and employee satisfaction. Future studies should develop unified frameworks that integrate multiple elements to support the successful deployment of G2E systems.

2.8.4 Government to Businesses e-Government

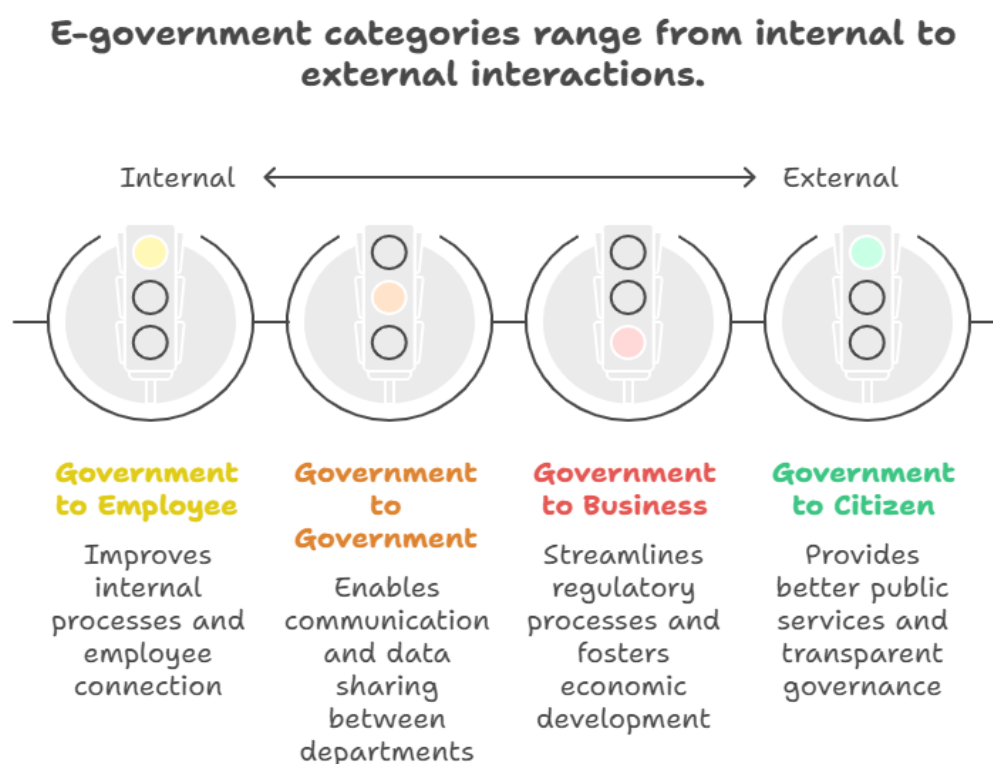
The digital interactions between government entities and the business sector constitute Government-to-Business (G2B) e-Government, which aims to streamline regulatory processes, enhance service delivery, and foster economic development. The G2B initiatives provide businesses with electronic systems for tax filing, business registration, licensing, and procurement.

The implementation of G2B e-Government systems encounters multiple obstacles during adoption. Implementing G2B e-government systems faces technological challenges, interoperability issues, and security and privacy concerns. Research indicates that the adoption of G2B services depends heavily on trust and perceived usefulness (Sambasivan et al, 2010). Transparent processes and reliable e-services create trust, leading businesses to use G2B platforms. G2B e-Government initiatives

achieve their effectiveness through the public value they create in a broader sense. According to Twizeyimana & Andersson (2019), G2B services deliver better public services, administrative efficiency, and social value when properly implemented.

The success of G2B e-Government depends on resolving technological, organisational, and trust-related challenges that affect its implementation. Future research should develop comprehensive frameworks that account for multiple variables to support the successful implementation of G2B systems.

Figure 1: e-Government categories



Source: Author's own Compilation

The figure illustrates four types of e-government interaction, progressing from internal to external connections. The South African National e-Government Strategy and Roadmap (SANESR) utilise these categories to establish a framework for implementing digital transformation between the government and society.

E-Government can be operationalised and implemented through four interactive platforms: Government-to-Employee (G2E), Government-to-Government (G2G), Government-to-Business (G2B), and Government-to-Citizen (G2C) (Ahmed, 2025). While these technologies are important components of the digital revolution within the public sector, their successful implementation can make all the difference between success and failure. Many governments are struggling to create meaningful e-government initiatives due to a lack of capacity (Nkohkwo & Islam, 2013; Kampira, 2025).

From a Government-to-Business (G2B) perspective, Government Information Portals facilitate government interaction with the private sector for business registration, licensing, procurement, and revenue collection, including tax administration. (Panayiotou & Stavrou, 2021). This is the last of a three-part article that focused on the Government-to-Business (G2B) and Government-to-Government (G2G) aspects of e-Government and addresses the most visible component of e-government, namely the Government-to-Citizen (G2C) dimension of service delivery to citizens (Retnowati & Nugraheny, 2021).

However, municipalities, including rural municipalities such as the OR Tambo District Municipality, still face challenges such as the digital divide, inadequate internet access, and digital illiteracy. Addressing these challenges requires an understanding of the local context, which will enable the municipality to achieve the objectives outlined in the South African National e-Government Strategy and Roadmap (SANESR). The operational framework of SANESR includes employee capacity development, system integration, business process simplification, and digital service delivery for citizens.

2.9 eGovernment Implementation Prospects

Sharma & Panigrahi (2015) highlighted that the roadmap tool serves as a planning instrument to facilitate the implementation of interoperability capabilities in e-Government systems, as integrated “one-stop shop” services have become

increasingly essential. The study suggests that the roadmap promotes knowledge exchange and creates a common understanding while effectively delivering interoperable e-government services.

To assess how technologies can enhance public service delivery, Kenosi (2024) emphasises the importance of increasing transparency and citizen engagement. The findings reveal that security and privacy issues, together with the digital divide, persist as significant challenges despite the advantages of these technologies. The study further suggests the need to develop e-Government frameworks that involve all stakeholders through participatory processes. The study further recommends that digital transformation be aligned with democratic values and social equity. Moreover, Marlina et al (2024) suggested four developmental phases and highlighted big data, transparent government data, data security, and smart cities as promising areas for future research to enhance e-Government.

Explore how digital transformation can improve service delivery in South Africa's public sector. Shibambu and Ngoepe (2024) collected data through semi-structured interviews with professionals from national departments and state-owned enterprises using a qualitative case study approach. The findings reveal the absence of harmonised legislation and strategic direction for digital transformation, resulting in inconsistent implementation across public institutions. The study also recommends reforming the existing legislative framework to support digital initiatives, providing practical and social value by serving as a benchmark for enhancing public sector service delivery through effective digital transformation (Shibambu & Ngoepe, 2024).

To determine the e-Government services in Limpopo Province, South Africa. Moloto and Muchie (2023) conducted a study with 823 public servants, senior managers, mayors, and community stakeholders. The study used quantitative methods and a United Nations-developed composite index to determine that public servants perceived a 54.01% demand for e-Government services. The analysis of multiple variables revealed that applications for South African identity documents, social grants, and tax-related services generated a significant demand for e-government services throughout the province (Moloto & Muchie, 2023).

Ayodele et al. (2025) investigate the effectiveness of e-participation initiatives in South African municipalities and the political, social, and technological factors that influence them. Based on a literature review and content analysis, the study reveals significant challenges, including the lack of digital infrastructure and a research gap between urban and rural municipalities. These problems prevent the development of effective ICT strategies for citizen participation. The study suggests the need for urgent awareness campaigns to increase the use of e-participation platforms, better understand citizens' needs, and develop more inclusive policies that enhance local governance (Ayodele et al., 2025).

In addressing how systemic barriers, organisational resistance, and technological constraints affect the digital transformation efforts of the State Information Technology Agency (SITA) in South Africa, Komna and Mpungose (2024) advocate for an extensive framework which enhances SITA's digital strategy through solutions for policy restructuring, capacity development and modern technology adoption, including cloud computing, big data and Internet of Things (IoT). The study reveals that outdated infrastructure and resistance to change are significant obstacles; however, successful security measures and strategic partnerships are crucial to overcoming them. This suggests a comprehensive framework for implementing advanced technologies and developing capabilities to enhance SITA's digital transformation (Komna & Mpungose, 2024).

As a point of departure, the strategy utilises a diverse range of outreach channels to connect with citizens, including government websites, press releases, print media, advertising banners, radio, television broadcasts, and social media platforms. The combination of various communication channels allows broad accessibility for all population segments and geographic regions to use e-Government services.

2.10 Challenges in the Transformation from Traditional to Digital Technology

Public sector digital transformation involves utilising digital technologies to enhance service delivery, improve efficiency, and promote transparency and accountability.

The 4IR enables organisations to integrate artificial intelligence (AI), blockchain, and cloud computing to streamline processes and improve service accessibility (Marwala, 2020; Tangi et al., 2021).

The digital transformation of public sectors across Africa varies widely. Rwanda and Kenya demonstrate notable advancements in digital transformation, but South Africa faces obstacles due to insufficient infrastructure, limited digital expertise, and financial constraints (Mushinzimana et al., 2025). SITA, under the South African State Information Technology Agency, continues to modernise public sector operations, yet faces obstacles from organisational silos, outdated infrastructure, and employee resistance to change (Shivambu, 2024).

Despite facing multiple obstacles in public sector operations, SITA continues its mission to implement AI alongside cloud computing and cybersecurity solutions (Nfuka & Rusu, 2020). Public sector organisations must develop strategies that extend beyond technological integration to successfully manage their digital transformation journey. These strategies should include cultural transformation alongside capacity development and stakeholder engagement. The intricate nature of digital transformation necessitates a customised approach that considers the specific requirements and limitations of public institutions (Odufuwa et al., 2020). Public sector organisations can achieve their strategic targets and enhance citizen service delivery by implementing an integrated approach that combines innovation with improved infrastructure development and enhanced communication (Sanchez & Zuntini, 2021).

From a business perspective, Hakimi et al (2024) investigate the degree of e-government adoption in projects. The finding underscores the need to overcome integration challenges while harnessing the strategic advantages to overcome obstacles and achieve positive outcomes in digital governance, thereby enhancing service quality and citizen satisfaction. Rami et al. (2021) demonstrate that enhanced information and communication technologies (ICTs) have improved the government's communication with the public. Government websites, social media channels, email services, and mobile applications have simplified citizens' access to information about government policies, programs, and services.

A significant problem arises from the digital divide, the disparity between digital technology users and non-users (Atobishi & Mansur, 2025). The existing divide prevents people without digital capabilities from accessing government services and relevant information, as they lack the necessary skills or resources to engage with digital platforms. Riyadh et al. (2018) demonstrate that the connectivity gap remains substantial, particularly among individuals without digital access or education, as well as those with limited digital skills. E-Government systems face substantial challenges from cyberattacks because they handle extensive amounts of sensitive data. Mkhwanazi and Fitcher (2025) highlighted that public trust in government services and national security is at risk from serious cybersecurity threats, including phishing attacks and ransomware.

2.11 Digital Divide

The digital divide in South Africa presents numerous challenges that directly impact the functioning of local governance systems. The digital divide is evident in differences in ICT access between urban and rural districts and across different social classes. The need for South African society to create inclusive digital initiatives emerges as it transitions from its apartheid history to promote equality.

The digital divide refers to the social disparity between individuals who have easy access to digital technology and the internet and those who do not. South African society faces digital divide issues due to economic standing, educational background, geographical location, and inadequate technological infrastructure, according to Frans & Pather (2021). The apartheid system has created lasting social divisions because disadvantaged groups do not receive basic services, including the technological infrastructure needed for proper governance.

Frans & Pather (2021) explain the public access ICT centres created by government agencies to combat digital exclusion. These programs focus on providing access to technology to rural communities and low-income urban neighbourhoods with insufficient technology infrastructure. These programs solve immediate needs but do

not resolve the fundamental problems of digital inequality. Local governments face dual challenges because they often lack the technical expertise and financial resources to establish and sustain these programs. At the same time, existing inequalities worsen according to Hofisi & Chigova (2023).

According to Hofisi and Chigova (2023), local governments face a shortage of technical expertise, which hinders their ability to implement digital transformation. The lack of competent staff to monitor the deployment and maintenance of technological infrastructure leads to frequent failures in digital divide bridging initiatives. This situation leads to a never-ending pattern of social inequality, as rural and urban areas have different access to digital government services.

South African local government service delivery experiences critical effects from the digital divide between citizens. South African municipalities have started digitising their services to enhance operational performance and public involvement. The unequal distribution of these services prevents development from reaching its full potential. Manyazewal et al. (2023) demonstrate that insufficient ICT infrastructure in certain areas hinders the effective implementation of digital health programs, thereby causing unequal access to health services. The inconsistent service delivery pattern demonstrates that local governments must establish digital strategies that promote full utilisation of citizens' resources.

According to Shaxnoza (2024), the digital divide widens due to socio-economic inequalities, preventing people from accessing the internet and ICT resources. Most citizens in rural regions and low-income communities lack the necessary infrastructure and devices, which prevents them from utilising e-Government services effectively. The digital divide yields substantial disparities in public service access, necessitating the coexistence of traditional service delivery systems with modern e-Government initiatives (Shaxnoza, 2024).

The successful deployment of e-Government services depends heavily on how well citizens understand technology. The difficulties of navigating digital platforms among uneducated citizens and elderly adults create additional obstacles that prevent them from participating in government processes, according to Muhammad & Hromada

(2023). Several South African communities struggle with technological literacy due to limited access to modern digital technologies. According to Muhammad & Hromada (2023), digital literacy programs should be established to develop a population capable of effectively using e-Government resources.

The educational sector in South Africa continues to face the effects of the digital divide, as demonstrated by Chomunorwa et al. (2023) during the pandemic period. The digital shift to online learning has exposed profound inequalities in technology and internet access within South African society. Rural students face significant obstacles to accessing educational resources and digital platforms, exacerbating educational inequalities within South African communities. Digital solutions that fail to provide equal access to all students create long-term governance problems, as educated citizens are the foundation of active civic engagement.

According to Shava & Vyas-Doorgapersad (2022), the digital divide establishes an environment that restricts full participation in local government programs to only specific population segments. When internet access varies across population segments, it leads to poor communication between local governments and citizens, which, in turn, reduces public trust and satisfaction with governance processes.

Increasing funding for ICT infrastructure in areas with limited access is a key solution (Visagie & Turok, 2021). Local communities require essential infrastructure development to ensure equitable service delivery and support for digital literacy. Establishing partnerships among local governments, NGOs, and private entities enables communities to access the resources and funding needed to enhance their digital capabilities (Galushi & Malatji, 2022).

Through targeted initiatives that combine infrastructure improvements with digital education and community participation, South Africa can empower its residents while strengthening its municipal governments. Bridging the digital divide presents numerous challenges, but it remains essential for South Africa to establish equity alongside transparency and improve public service delivery throughout the country.

2.12 Overcome Obstacles in Adopting e-Government Services

Ezeji (2024) called for robust cybersecurity measures to address the aforementioned challenges and prevent unauthorised access and potential data breaches. The digital divide remains a significant barrier to early adoption, as it highlights the unequal distribution of access to technology and digital skills among population groups (United Nations, 2023). Most citizens lack the resources and competencies to properly interact with digital government services (Apleni & Smuts, 2020).

Digital inclusion strategies must focus on capacity-building programs and inclusive design principles to bridge the digital divide. The technical challenge of interoperability remains a significant obstacle today. Electronic systems used by different government departments must be compatible for seamless integration and coordinated service delivery through effective communication (Enaifoghe & Ndebele, 2023). e-Government systems require successful solutions to these challenges to achieve their goal of improving public administration and service delivery. Delivering e-government services through online channels offers multiple benefits, enhancing accessibility and operational efficiency.

The frameworks established by regulatory bodies and institutions pose a significant obstacle to e-Government operations. The implementation of strong regulations, combined with effective institutional structures, according to Rusadi and Rahmadany (2023), leads to improved efficiency and effectiveness of e-government services. Local governments often struggle with bureaucratic obstacles alongside outdated policies that restrict their ability to develop innovative solutions for service delivery and citizen engagement. The successful implementation of digital initiatives depends on thorough governance reforms that address technological e-Government aspects and develop better governance practices to build digital-friendly environments (Rusadi & Rahmadany, 2023).

Building better digital infrastructure is crucial to reducing the digital divide. Rural areas require improved telecommunications and internet connectivity, supported by public and private investments, to support e-Government services (Acquah, 2024). The

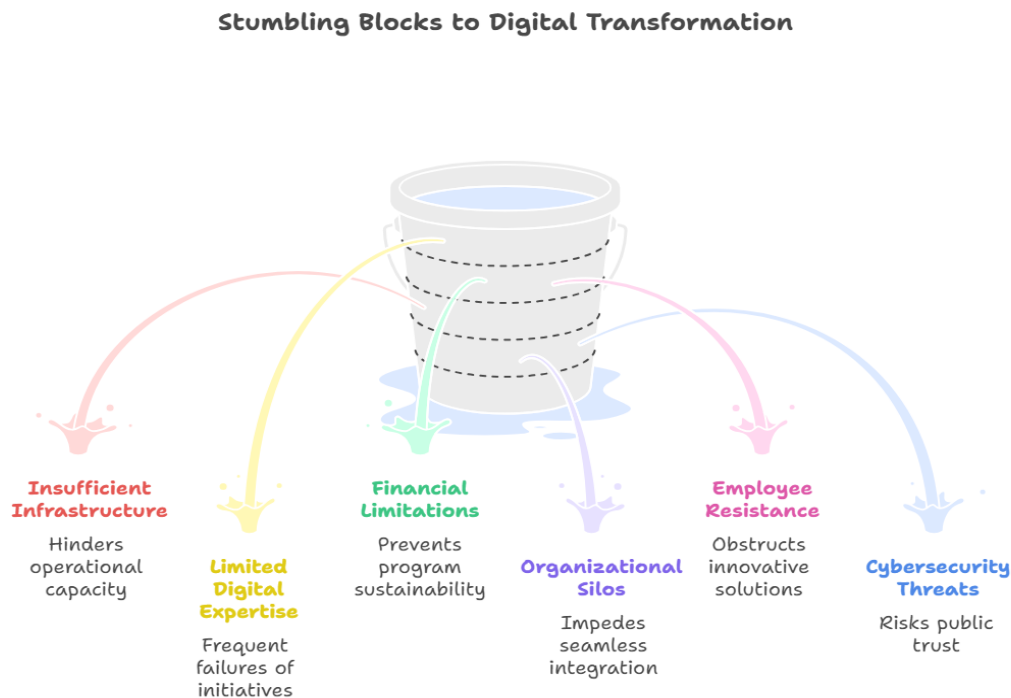
required infrastructural capabilities can be developed through government funding, public-private partnerships, and international aid programs (Acquah, 2024).

Different demographic groups, including youth, adults, and elderly citizens, should receive targeted programs that teach them how to use e-government services efficiently. Public workshops and training sessions should be held regularly to educate citizens about digital platforms, enabling them to access e-Government services with ease (Paul & Enoch, 2022). The public will use e-Government platforms more effectively when simple user interfaces and dedicated customer support services are implemented (Susilowati et al., 2024).

Developing trust in e-Government systems is essential for increasing citizen involvement in public services. People avoid e-government services because they worry about privacy, data security, and the potential for misuse of information. According to Muhammad & Hromada (2023), public trust in e-Government systems depends on the implementation of transparent policies and robust data protection laws to address security concerns. Government initiatives must provide transparent explanations of data protection measures to citizens and demonstrate their commitment to ethical data management standards.

The successful implementation of e-Government requires solutions that address multiple areas, including infrastructure challenges, educational needs, and regulatory weaknesses. The digital divide, insufficient technological education, and weak governance systems create significant obstacles to development in South Africa and other comparable regions.

Figure 2: Stumbling Block for Digital Transformation



Source - Author's own Compilation

The "Stumbling Blocks to Digital Transformation" figure illustrates digital transformation barriers through a bucket with six holes, each representing a major obstacle to successful digital transformation. The six holes in the bucket represent individual barriers that drain the "water", symbolising progress and resources, thus preventing the bucket from reaching its full capacity. The visual representation illustrates how these obstacles hinder organisations from achieving their digital transformation goals.

The six main obstacles to digital transformation include insufficient infrastructure, limited digital expertise, financial limitations, organisational silos, employee resistance, and cybersecurity threats. Each challenge's description explains how it affects the organisation. The operational capacity remains restricted when infrastructure falls short, while digital initiatives fail due to a lack of digital expertise. The financial constraints of transformation programs create sustainability issues, while departmental silos hinder organisations from implementing a unified digital strategy.

Adopting employee resistance prevents organisations from implementing new solutions because staff members fear change and lack comprehension of its value. The last stumbling block is cybersecurity threats that compromise public trust, which is essential to the success of digital platforms and services (Schneider, 2025). The various obstacles demonstrate how digital transformation requires organisations to handle technical and human-related challenges through a unified strategy. The bucket illustrates that addressing all holes remains essential because any remaining gaps will continue to hinder progress.

2.13 The Scope of SANESR in Enhancing Digitisation

The SANESR establishes a comprehensive plan to accelerate government service digitalisation, enabling public institutions to use technology to improve operational performance and service delivery, and to enhance public access and clarity. SANESR establishes strategic objectives, implementation plans, and governance systems to achieve its goal of uniting digital platforms across all government levels, enabling interoperability and improved service delivery for citizens. The initiative requires more than technological adoption; it also requires developing public-sector institutional capabilities, enhancing cybersecurity systems, and promoting innovative practices throughout the organisation. The SANESR implemented measures help South Africa create a digital government system which provides responsive services through accountable and inclusive practices.

2.13.1 E-Democracy

In a democratic system, political power is vested in the citizens. E-democracy means the employment of Information and Communication Technologies (ICTs) to enhance decision-making processes. It involves all stakeholders, civil society, public administrators, politicians, and economic actors, and signifies a shift from traditional to electronic governance (Lindner & Aichholzer, 2019). In essence, e-democracy

enhances political participation through platforms that facilitate the dissemination of information and civic engagement.

E-democracy, also known as digital democracy, involves utilising digital technologies to enhance democratic processes by increasing citizen participation, promoting transparent governance, and improving management (Ali, 2023). The concept of e-democracy encompasses various practices, including online voting, public consultations, digital deliberation, and participatory policymaking. Research studies currently focus on the diverse aspects of e-democracy. The systematic review by Malik & Noman (2024) demonstrates that e-democracy serves two purposes: spreading information while creating interactive government-citizen relationships, strengthening democratic institutions.

The deployment of e-democracy systems presents multiple obstacles during their execution. The successful implementation of e-democracy depends heavily on two main factors, according to Khalid & Yang (2023): technological accessibility and digital literacy. Social media has introduced new complications through misinformation and echo chambers, posing a threat to the integrity of deliberative democratic processes.

The African region faces specific barriers when implementing digital democracy. Despite implementation hurdles, E-democracy can improve civic involvement and government transparency. Through digital tools, governments can build participatory platforms to revitalise democratic practices throughout the digital era. According to the 2020 UN E-Government Survey, e-participation refers to the engagement of citizens in policy formulation, service delivery, and governance through the use of ICTs, aiming to enhance governance inclusiveness, participation, and deliberation (United Nations, 2020). It has intrinsic value, which promotes civic inclusion, and extrinsic value, which enhances accountability and responsiveness. E-participation is crucial in developing digital governance and fosters stronger relationships between governments and citizens (Benlahcene, 2024).

2.13.2 E-Information

E-information refers to the use of digital platforms, including websites, forums, emails, and mobile applications, to disseminate public information. This includes updates on transportation schedules, available e-services, policies, and public initiatives (Dzemydienė et al., 2024). E-information enables citizens to monitor the transparency of activities and requires public officials to account for their actions, thereby emphasising citizens' position in governance (Lai & Beh, 2025).

E-information, a fundamental component of e-government, involves digitalising government information for citizens, businesses, and other stakeholders. It is the foundation for transparency, accountability, and informed citizen participation in governance processes. In South Africa, the National e-Government Strategy and Roadmap emphasise the importance of leveraging digital technologies to transform public service delivery and promote inclusive access to information. The strategy outlines a program of action to improve the electronic government landscape, ensuring that all citizens can benefit from the opportunities offered by digital technologies to enhance their quality of life.

Effective information management is critical for the success of e-Government initiatives. Erhueh et al (2024) underline that the degree to which information and knowledge are captured and utilised to support good governance depends on a robust information management infrastructure. The study emphasises the importance of a carefully considered plan and strategy for developing information management infrastructure, including the creation of a shared vision, decisive action, and broad awareness and support from key stakeholders.

Moreover, the implementation of e-Government systems in South Africa has faced challenges related to the design and implementation of information technology controls. Singh and Travica (2018) note that most departments and public entities have experienced difficulties in ensuring the confidentiality, integrity, and availability of financial information, which are essential for effective information management in e-Government systems.

2.13.3 E-Service Landscape

The South African government has implemented e-service delivery within its e-government adoption framework to address multiple public administration issues and improve governance.

E-services are delivered through ICTs and are used in both the public and private sectors. In e-government, e-services encompass applications such as online tax payments, driver's license renewals, and business permit requests. These services enhance efficiency, accessibility, and responsiveness in public administration, thereby supporting e-Governance and e-democracy. E-government utilises ICTs to enhance government functionality, increase citizen participation, and improve service delivery. According to the World Bank (2005), the interaction between public and civil entities is redefined by increasing information sharing, accountability, and resource management. UNESCO also notes that e-governance is the utilisation of ICTs to enhance citizen participation in decision-making, thereby strengthening accountability, trust, and democratic governance (Leila & Abdelhak, 2022).

The South African government has implemented e-Service integration throughout public administration because it recognises that technology improves interactions between government and citizens. Nkgapele (2024) emphasises the need to implement e-Government initiatives to enhance public service delivery in South Africa. During the COVID-19 pandemic, several municipalities implemented digital platforms to substitute for their limited physical interaction capacity (Swartz et al., 2021). E-Services serve as essential tools for sustaining service delivery operations while preserving citizen involvement.

The adoption and effective delivery of e-Services in South Africa face multiple obstacles. The digital divide is a significant obstacle because it substantially influences internet and ICT access between urban and rural regions (Frans & Pather, 2021). According to Shibambu (2024), technological infrastructure constraints prevent certain regions from accessing fundamental government services equally. The existing socio-economic inequalities persist, and digital solutions fail to achieve transformative governance in this context.

Low digital literacy rates among the population create additional obstacles to the adoption of e-services. Citizens of both older age groups and lower-income brackets typically lack the digital competence needed to use digital platforms effectively (Nkgapele, 2024). Healthcare services that have adopted significant e-Service integration face utilisation challenges because patients demonstrate low awareness and limited understanding of telehealth services, according to Bhamjee et al. (2022). The population needs extensive educational initiatives and outreach programs to utilise the benefits of e-Services, given literacy barriers.

E-service implementation faces significant hurdles due to concerns about data security and privacy protection. According to Hofisi & Chigova (2023), citizens refrain from using e-Government platforms because they worry about protecting their data. Weak cybersecurity systems lead to public distrust of digital services, which in turn reduces adoption rates. Strong cybersecurity frameworks must be strengthened to create an environment that supports e-service engagement.

Multiple strategies exist to enhance the effectiveness of local government e-service delivery by addressing current challenges. Developing a strong digital infrastructure represents the first essential step. Local governments should allocate telecommunications and internet connectivity funding to unserved rural areas to ensure fair access to digital government services, according to Tiika et al. (2024). Local governments can enhance their reach and capabilities in limited-resource areas through partnerships with private entities and NGOs.

The successful implementation of e-Services in public administration creates substantial governance effects for South Africa. An optimal e-Service framework exists to strengthen citizen involvement, promote governmental transparency, and maintain accountability (Nnenna et al., 2024). According to Mohale (2024), the e-service movement supports the objective of the Fourth Industrial Revolution to drive digital transformation in governance and public service delivery. By adopting electronic systems, local governments can achieve operational excellence while providing effortless public service access.

2.13.4 Municipal e-Platforms

Municipal governance operations have undergone substantial changes through the implementation of electronic platforms, improving efficiency, transparency, and accountability in local government services. This review examines five essential e-platforms: Electronic Document and Records System (EDRS, Electronic Document Management System EDMS, South African Local Authorities Revenue System SOLAR, Promun (Professional Municipal System), and Employee Self-Service ESS. The systems operate independently to support various municipal functions, ensuring regulatory compliance and delivering improved services to the public (Chiwawa & Uwizeyimana, 2025). The review discovers multiple e-platforms municipalities use to demonstrate their digital transformation efforts.

2.13.5 Municipal Standard Chart of Accounts (mSCOA)

The Municipal Standard Chart of Accounts (mSCOA) is a fundamental tool enabling South African municipalities to maintain uniform financial reporting practices. The development of mSCOA emerged as a solution to enhance financial management and accountability in local governance through its standardised system for recording and reporting financial transactions (Nomzaza, 2025). The standardised financial reporting system through mSCOA enables municipalities to present financial statements that are both transparent and comparable, which strengthens public confidence in their local government operations.

Municipalities that adopt mSCOA achieve better compliance with financial regulations through standardised reporting, enabling them to present their financial data in line with national standards. The system enables the collection of dependable financial information, which supports better decision-making and resource distribution (Patergiannaki & Pollalis, 2022). The standardised framework of mSCOA enables effective financial monitoring of municipalities by revealing financial patterns and performance data that inform strategic planning activities. The standardised reporting system enables stakeholders to evaluate financial performance and operational

efficiency across municipalities, thereby improving public sector performance monitoring.

2.13.6 Electronic Document and Records System (EDRS)

The Electronic Document and Records System (EDRS) functions for municipal record creation, storage, retrieval, and management. The system plays a vital role in improving operational efficiency and ensuring compliance with archival regulations. Municipalities achieve greater operational efficiency through digital record management, which enables quick access to essential documents for informed governance decisions (Nomzaza, 2025; Patergiannaki & Pollalis, 2022). Through EDRS, citizens can access municipal records, thereby increasing public trust in local government operations (Giulio & Vecchi, 2021).

The system helps preserve accurate historical records, which are essential for informed public administration decision-making and strategic planning. The system enables efficient record management, which reduces staff administrative work while maintaining service delivery that meets community requirements (Talukder et al., 2024). Municipalities implementing EDRS systems fulfil their legal requirements while building better governance systems through enhanced citizen-government interaction (Nkgapele & Mokgolobotho, 2024).

2.13.7 Electronic Document Management System (EDMS)

EDMS is built on capabilities that expand its functionality, including document and workflow management. This system enables municipalities to convert paper documents into digital files, facilitating document sharing and approval tracking across different departments for improved inter-entity collaboration. The cloud-based EDMS solutions of today provide instant document access, boosting departmental communication and accelerating organisational decision-making (Wahi, 2023).

Implementing an EDMS leads to faster service delivery by eliminating traditional paperwork delays, thereby improving operational performance for municipal governments. The streamlined workflow management of municipalities enables better resource allocation, resulting in enhanced public service delivery and satisfied citizens (Hajj et al., 2023; Al-Kaabi, 2024). Research shows that municipalities using EDMS achieve lower operational expenses and better employee performance, which demonstrates its vital role in contemporary governance (Güler & Büyüközkan, 2023).

2.13.8 The Service-Oriented Local Authority Resource Management Solution (SOLAR)

The Service-Oriented Local Authority Resource Management Solution (SOLAR) operates as a South African financial management system (FMS) that has served municipalities exclusively since its establishment in 1987. SOLAR has proven itself through extensive testing and verification as a reliable system which helps municipalities meet their required reforms and transaction standards.

The SOLAR ERP system enhances its functionality through additional modules, making it more than just a basic financial management system. The system functions as a leading Enterprise Resource Planning solution for municipal organisations, which enables them to follow their mSCOA implementation plan.

The SOLAR system provides South African municipalities with a specialised platform to improve their financial management and revenue collection operations. The platform handles billing operations, including rates, taxes, and service charges, to provide comprehensive financial management solutions for local authorities (Tsatsani et al., 2024). SOLAR enables municipalities to achieve better financial stability through its efficient revenue collection system, which also supports statutory financial reporting compliance (Tsonkov, 2023).

SOLAR enables municipalities to achieve financial sustainability through enhanced fund management. The system enables municipalities to improve cash flow and

prevent service interruptions due to budget constraints through its efficient billing and payment systems (Ujjan et al., 2022). Transparent revenue management fosters public confidence in municipal governance, as citizens can monitor how their local tax and rate payments are spent (Păunescu & D'Ascenzo, 2021).

2.13.9 Promun (Professional Municipal System)

Promun functions as a vital financial management system for South African municipalities because it was designed to fulfil the requirements of local government bodies (Vincent & Stephen, 2015). The development of Promun followed South African regulatory needs because it implemented the Municipal Standard Chart of Accounts (mSCOA) and the Municipal Finance Management Act (MFMA). The financial management standards of the Municipal Standard Chart of Accounts (mSCOA) and the Municipal Finance Management Act (MFMA) require municipalities to follow strict rules which improve transparency and accountability and boost service delivery performance. Promun unifies various municipal operations, including payroll, human resource management, and procurement, into a single platform to reduce bureaucratic inefficiencies, which research on South African local governance has identified as major issues (Vincent & Stephen, 2015). The system integration enables municipalities to fulfil their regulatory requirements while enabling them to use data for better resource management and allocation (Manuel & Erasmus, 2024).

According to academic research, South African municipalities use Promun to solve service delivery problems, which remain a significant concern in local governance (Ngumbela, 2022; Mabunda et al., 2023). The system enables municipality managers to handle operational complexities stemming from political instability and financial mismanagement through accurate data analysis and real-time capabilities (Takalani & Lavhelani, 2024; Sitishe et al., 2023). Promun's enable local governments to build public trust, given South Africa's historical governance problems (Bless, 2023). Implementing this ERP system enables municipalities to utilise contemporary technology while navigating social and political changes and population shifts, thereby

delivering services that align with community requirements for participatory governance, as explored in relevant research (Mazenda et al., 2021). Promun serves as a strategic tool for achieving operational excellence, supporting the delivery of sustainable and equitable services across South Africa's municipalities.

2.13.10 Employee Self-Service (ESS)

Through Employee Self-Service (ESS), municipal staff members can manage their personal details, request leave time, and view their pay statements and performance records online. The distribution of HR tasks through ESS systems reduces the HR department's workload while increasing employee involvement (Shi et al., 2024). The system provides complete visibility into HR operations, which allows staff members to handle their personal data and work-related requests independently (ENCIU & Ursu, 2023).

Implementing ESS systems increases employee satisfaction by giving staff better access to information, enabling HR departments to focus on strategic work rather than administrative tasks. Implementing ESS systems enhances workplace relationships among municipal staff members, thereby improving service delivery performance (Marler & Dulebohn, 2005). Research indicates that municipalities utilising ESS systems achieve better HR policy compliance and faster processing of employee requests (Pinilla et al., 2021).

Municipalities utilise multiple e-platforms beyond the Systems Mentioned Earlier. Municipalities implement multiple e-platforms which support their governance operations and service delivery functions. Municipalities use the following e-platforms:

BAS is a financial reporting system that helps municipalities comply with accounting standards (Fargette et al., 2024).

Municipalities utilise GIS systems to manage spatial planning and land use, as well as to create service delivery maps that support infrastructure development (Alshammari et al., 2025).

The **CRM** system enables municipalities to document and monitor citizen complaints about service delivery, thereby improving service responsiveness (Bernika et al., 2023).

The e-Permit/e-Licensing system streamlines the process of obtaining building permits and business licenses, thereby driving economic growth (Amicarelli et al., 2021).

The SCM e-Procurement Portal enables organisations to manage their supply chain operations and tenders for transparent procurement activities (Pang et al., 2023).

EDRS, EDMS, SOLAR, Promun, and ESS, as well as PAYDAY, represent a significant advancement in digital governance practices in the OR Tambo District Municipality. These systems enable municipalities to achieve improved operational performance and regulatory compliance, while also making their operations more transparent and accountable. Research on e-platform effectiveness will remain essential for municipalities as they develop governance systems that meet community requirements while implementing new digital solutions (Katzef et al, 2025).

Municipalities have adopted multiple electronic systems to improve financial management, service delivery, and operational efficiency, thereby enhancing governance. The modernisation of municipal operations and improved citizen service delivery depends on the essential role of Municipal Standard Chart of Accounts (mSCOA) and Munsoft and CaseWare and PAYDAY and SAP and Basic Accounting System (BAS) and GRAP Compliance Tools and Geographic Information Systems (GIS) and Customer Relationship Management (CRM) portals and e-Permit/e-Licensing systems and SCM e-Procurement portals and Water and Electricity Metering Systems.

2.13.11 Munsoft

Munsoft operates as an integrated municipal financial management system which helps municipalities optimise their financial operations through streamlined financial processes (Giulio & Vecchi, 2021). Munsoft's financial consolidation capabilities improve operational efficiency for budgeting, accounting, and reporting functions in municipalities. The system's comprehensive features enable municipalities to manage their finances effectively while fulfilling all required legal requirements.

Munsoft's importance lies in its integration, which enables different municipal departments to work together effectively in financial management. The system enables data sharing across different functionalities, maintaining current, accessible financial information (Talukder et al., 2024). Real-time financial data accessibility enables organisations to make informed decisions based on current financial conditions. Implementing Munsoft improves operational performance and service delivery by optimising the use of municipal resources.

2.13.12 CaseWare

CaseWare serves as a powerful tool for compiling and auditing municipal financial statements, thereby enhancing the reliability and trustworthiness of these reports (Nkgapele & Mokgolobotho, 2024). The tool has gained widespread acceptance. The system enables municipalities to meet multiple accounting standards while generating comprehensive, accurate financial statements that serve as the foundation for sound governance practices.

Municipalities that use CaseWare for their auditing needs can achieve faster, more efficient financial audit operations, minimising the work required for these processes. The system enables auditors and financial officers to analyse data, helping them

detect irregularities and confirm that financial records accurately reflect municipal financial health (Wahi, 2023). CaseWare's operational efficiency benefits auditors and stakeholders by providing transparent financial information and strengthening public trust in municipal governance.

2.13.13 PAYDAY

The electronic payroll system PAYDAY exists to fulfil the specific requirements of municipal organisations. The system facilitates easier management of employee compensation for organisations while ensuring compliance with all applicable labour regulations (Hajj et al., 2023). The automated payroll functions of PAYDAY reduce the HR department's workload, allowing them to focus on strategic human resources activities while delivering prompt, accurate payments to municipal staff.

The implementation of PAYDAY minimises typical payroll calculation mistakes, resulting in satisfied employees who receive their salaries correctly. The system provides transparent compensation details to employees, which builds trust between staff members and the municipal organisation (Al-Kaabi, 2024). Combining transparent operations with efficient processes creates an essential environment for productive work and helps municipalities fulfil their payroll management obligations.

2.13.14 SAP (Systems Applications and Products)

SAP ERP provides comprehensive functionality for human resources management, financial operations, and procurement. The implementation of SAP by municipalities enables financial system integration, leading to enhanced efficiency in public administration and improved system coherence (Güler & Büyüközkan, 2023). The diverse capabilities of SAP enable municipalities to manage complex operations through a single, unified system, thereby enhancing departmental coordination.

Implementing SAP technology enables municipalities to optimise their procurement operations through effective expense tracking and supplier performance monitoring.

Through SAP's data analysis features, municipalities can utilise information to optimise their purchasing activities, resulting in financial savings and improved resource utilisation (Tsatsani et al., 2024). The ERP structure of SAP enables standardised data management and process control, which supports municipal financial accountability and operational compliance.

2.1.15 Siyakhokha

Siyakhokha operates as an internet-based municipal customer portal that enables residents to make simple payments for their rates and services online. The portal serves two essential purposes: making financial operations more accessible to citizens and municipalities (Tsonkov, 2023). Siyakhokha's online payment system streamlines administrative work by eliminating the need for manual billing and collection procedures.

The implementation of Siyakhokha aligns with the increasing municipal demand for digital service delivery systems in contemporary governance practices. The ability to handle municipal payments online makes citizens more satisfied with their local government services, as it offers convenience and accessibility. Payment data obtained through this portal enables municipalities to understand payment patterns and optimise their service delivery systems, thereby improving financial stability (Ujjan et al., 2022).

2.13.16 Basic Accounting System (BAS)

Municipalities utilise the Basic Accounting System (BAS) to produce financial reports and ensure compliance with regulations. The system is crucial for maintaining accurate financial records and complying with all relevant laws and regulations. BAS provides an easy way to document transactions, helping municipalities manage their financial resources efficiently (Păunescu & D'Ascenzo, 2021).

The principal value of BAS lies in its ability to create a solid framework for financial reporting, which enables stakeholders to view transparent processes. Municipalities

can present their financial situation clearly to citizens and regulatory organisations through dependable financial reports. Implementing BAS to improve financial integrity increases public confidence in local governments and fosters better governance practices (Cohen et al., 2021).

2.13.17 GRAP Compliance Tools

The Generally Recognised Accounting Practice (GRAP) Compliance Tools assist municipalities in complying with existing accounting standards. These tools enable municipalities to create precise financial reports by providing essential frameworks and guidelines for their development (Balasubramanian et al., 2023). Implementing GRAP standards enables municipalities to preserve their financial reporting credibility and transparency.

Municipalities that implement GRAP compliance tools reduce their risk of producing incorrect financial statements and failing to meet regulatory standards. Implementing GRAP compliance standards enables municipalities to meet their legal requirements and fosters stakeholder trust in their financial management practices (Ko et al., 2023). These tools are essential for supporting proper financial oversight in municipal organisations.

2.13.18 Geographic Information Systems (GIS)

Municipalities utilise Geographic Information Systems (GIS) to manage their spatial planning needs, including land use, and to create service delivery maps. The spatial data visualisation capabilities of GIS help municipalities create better resource allocation plans and infrastructure development strategies (Vorobets, 2024). The system enables municipalities to plan urban areas more effectively, which results in fair service distribution throughout communities.

The combination of GIS technology helps municipalities identify service deficiencies and create plans for upcoming projects, resulting in higher community involvement

and improved service quality. The strategic decision-making process for municipal service delivery becomes more effective through GIS, which provides data on population distribution and geographical patterns (Shi et al., 2024).

2.13.19 Customer Relationship Management (CRM)

CRM portals are to help municipalities handle citizen inquiries and service delivery complaints more efficiently. Municipalities achieve better service delivery through systematic complaint-tracking systems, which help them solve problems more efficiently (ENCIU & Ursu, 2023). Implementing CRM systems improves governance by enabling citizens to receive prompt responses from their government.

A CRM portal system enables municipalities to track service delivery performance and pinpoint areas for improvement. The feedback mechanism fosters an environment in which public officials remain accountable to citizens while working to improve their services, thereby sustaining trust in local government (Li et al., 2022). CRM portals will become essential for municipalities to achieve customer-focused governance, as they help establish effective governance practices.

2.13.20 e-Permit/e-Licensing Systems

Municipalities utilise e-Permit and e-Licensing systems to streamline business and building plan application and approval processes. The platforms facilitate fast approval processes through online submission and tracking capabilities, thereby enhancing municipal service efficiency (Pinilla et al., 2021). Reducing bureaucratic obstacles through e-Permitting systems leads to economic development and satisfied communities.

These systems demonstrate municipal dedication to modernising service delivery. Municipalities that utilise technology can provide rapid business solutions, fostering conditions that promote economic expansion (Fargette et al., 2024). Combining

efficient, transparent e-Permitting systems enables municipalities to actively participate in their regulatory activities.

2.13.21 SCM e-Procurement Portals

The Supply Chain Management (SCM) e-Procurement portals serve to ensure compliance with municipal tendering and supply chain management protocols. The platforms optimise procurement operations, which leads to transparent public spending processes and fair market competition (Alshammari et al., 2025). Implementing e-Procurement solutions helps organisations prevent procurement-related corruption and inefficiencies while promoting ethical governance practices.

An SCM e-procurement portal provides enhanced visibility and accountability during vendor selection and contract oversight processes. Municipalities that implement digital procurement systems achieve operational excellence and obtain superior value from their procurement activities (Bernika et al., 2023). The systems help municipalities distribute their resources efficiently and responsibly.

2.13.22 Water and Electricity Metering Systems

Water and Electricity Metering Systems are essential tools for usage tracking and municipal service billing operations. Innovative metering technologies enable precise billing, reducing disputes between municipalities and their residents over payment amounts (Amicarelli et al., 2021). Implementing efficient metering systems enables municipalities to track consumption data, helping them optimise resource management and provide sustainable services.

These systems deliver precise billing while providing municipalities with essential data on consumption patterns, which helps them plan more effective infrastructure development. Municipalities can use community consumption data to optimise

resource distribution while responding promptly to service requirements (Pang et al., 2023).

In sum, the Electronic Document and Records System (EDRS), Electronic Document Management System (EDMS), SOLAR, Promun and Employee Self-Service (ESS) demonstrate how electronic platforms transform municipal governance operations. The systems work independently to boost operational performance, financial control, transparency, and public participation. Municipalities must perform ongoing assessments and system adaptations to maintain alignment between their technological implementations, new public administration and community requirements. Research on the effectiveness of these systems will inform the development of future municipal governance systems and service delivery methods.

Moreover, the combination of electronic systems, including mSCOA, Munsoft, CaseWare, PAYDAY, SAP, Siyakhokha, BAS, GRAP Compliance Tools, GIS, CRM portals, e-Permit/e-Permit/e-Licensing systems, SCM e-Procurement portals, Water and Electricity Metering Systems, revolutionises municipal governance operations. These platforms enable municipalities to achieve better financial control, service quality, and transparency, which are essential for successful local governance. The digital transformation of municipalities depends on continuous evaluation and system adaptation to achieve sustainable governance that fulfils community requirements.

2.14 Strategies for Resolving eGovernment Challenges

E-government initiatives drive digital transformation to deliver better services, greater transparency, and greater citizen participation. Security threats and privacy breaches make it challenging to successfully implement and sustain these systems. Multiple strategic interventions, including authentication, data encryption, system assessments, user education, and compliance with global best practices, are necessary to resolve these issues.

Authentication is the primary protection against unauthorised access to e-government systems. Modern cyberattacks have made password systems inadequate for protecting systems. Strong authentication systems, including two-factor authentication and biometric identification, should be treated as essential. The implementation of biometrics serves dual purposes: it verifies user identity while simultaneously reducing the likelihood of identity theft incidents and system breaches, according to Grassi (2020). Cloudian (2023) advocates multi-factor authentication as an effective method for protecting government data from unauthorised access. Strong authentication enables verified users to access essential e-Government functions, ensuring secure interactions between citizens and government entities. E-Government security requires the vital protection of sensitive information as it moves from one point to another and is stored. Pureti (2023) highlighted that data encryption is a fundamental protection mechanism for maintaining the integrity and confidentiality of information. Sensitive data requires encryption algorithms to convert it into an unreadable format, making it useless for unauthorised users.

Encryption must be supported by the Secure Sockets Layer (SSL) and Transport Layer Security (TLS) protocols to protect data during transmission (Wakoli, 2024). Data encryption tools protect information from unauthorised access by encrypting it from end to end. Modern data protection strategies, combined with strong encryption techniques, enhance system resilience during both the data-at-rest and data-in-motion phases (Oladoyinbo, 2024). E-government infrastructure requires continuous assessment to identify security weaknesses before hackers can exploit them maliciously. Finworks (2023) argues that ongoing system vulnerability analysis, penetration testing, and code inspection reveal critical weaknesses that require swift fixes. The assessment processes help security teams discover threats early to take suitable countermeasures. Assiri (2022) suggests conducting regular security audits to verify adherence to established security standards and regulations. Audits confirm the effectiveness of existing security protocols while also exposing potential attack vectors that criminals could exploit. Regular assessments protect the system's security posture and create user confidence regarding e-government services.

The weakest link in cybersecurity remains human behaviour, despite the importance of technical security measures. According to Assiri (2022), protecting e-government

platforms requires educating users about the basics of data protection and demonstrating how to identify phishing scams and maintain safe online conduct. Through awareness programs and frequent training sessions, users can identify suspicious behaviour and quickly notify authorities.

The e-Government strategies establish a comprehensive risk assessment framework that requires identifying both external and internal threats (Figueroa, 2025). Governments can establish protection systems against system breaches by identifying vulnerabilities in advance, before threats occur. To protect against external attacks, governments should establish intrusion detection systems, access controls, and cybersecurity protocols. Legal and ethical frameworks that address issues with handling citizen data will help preserve trust levels between citizens and governments over time. The process of implementing e-Government faces various extensive hurdles. The obstacles to e-Government implementation include technological constraints, funding constraints, complex legal issues, and political opposition. All effective solutions need to be strategic and holistic. e-Government represents a comprehensive transformation of governmental operations and stakeholder interactions, extending beyond maintaining an online presence (Grassi, 2020).

Moreover, implementing all e-Government applications, including e-business, e-management, and e-democracy, requires secure system integration. e-Government implementations that are effectively carried out lead to transparent operations, enhanced accessibility, and streamlined processes. e-Government delivers superior service quality to three main stakeholder groups: citizens, businesses, and intergovernmental departments.

2.15 The Nature and Scope of Adopting e-Government Strategies

The implementation of local government e-government substantially changes public service design, delivery methods, and assessment procedures. Local municipalities throughout the OR Tambo District must follow the South African National e-Government Strategy and Roadmap Framework (2017) as part of their national digital

transformation requirements. Assessing local service delivery improvements depends on understanding the full scope and nature of e-government in local government.

e-Government functions as a governance transformation tool beyond administrative digitisation, creating greater transparency, citizen engagement, and faster responsiveness (Balaji, 2025). Implementing e-Government at local governments requires multiple factors to interact, including institutional capabilities, technological systems, policy requirements, and citizen demand. Local government e-government adoption encompasses digital initiatives that combine e-service portals with electronic records management, digital communication platforms, and integrated service delivery systems. The implemented interventions enhance service accessibility, boost administrative productivity, and strengthen accountability systems.

The extent of e-Government adoption in local governments throughout South Africa depends on factors such as financial limitations, differences in ICT infrastructure, workforce capabilities, and the digital divide between cities and rural areas. e-Government operationalisation depends heavily on local governance structures, political will, and community readiness because national frameworks provide only general strategic direction. This section provides an in-depth analysis of the legislative framework, as well as the institutional and technological elements that determine the scope and nature of e-Government adoption in South African municipalities, with a special emphasis on the OR Tambo Municipality.

2.16 Legislative Frameworks Supporting e-Government

The digital transformation of public service delivery relies on local e-Government policies and mandates, which serve as essential regulatory instruments. South Africa and various other countries established national and local guidelines to direct e-government development, but these guidelines face different implementation challenges depending on the specific context.

In South Africa, the Department of Telecommunications and Postal Services has initiated this project to transform public services into an inclusive digital society by 2030, in support of the National Development Plan (NDP). The strategy identifies key legislative mandates, including the Electronic Communications and Transactions (ECT) Act of 2002, regulating digital transactions and e-government services. It empowers the Minister of Telecommunications and Postal Services to develop the national e-strategy. The Public Service Act, together with Public Service Regulations, grant the Minister of Public Service and Administration authority to create standards for information management and e-government implementation throughout all government departments, with a focus on IT management effectiveness, information security, and interoperability (SANERS & Dept. of Telecommunications and Postal Services, 2017).

e-Government mandates for local governments aim to improve digital service channels that deliver continuous, accessible services to community members. The digital transformation of South African municipalities faces significant obstacles due to inadequate ICT infrastructure and constrained budgets. At the same time, their rural citizens exhibit low levels of digital literacy. Municipal e-government progress remains limited by structural and socioeconomic barriers preventing widespread digital access and community involvement (Mawela et al., 2017). Research indicates that local e-government transformation requires digital literacy programs, robust digital infrastructure, public-private partnerships, and ongoing citizen engagement to align services with user needs (Balaji, 2025).

South Africa's e-Government transformation largely depends on local government to fulfil its role in accordance with broader governance obligations. The local government's developmental mandate is the core requirement that demands digital initiatives to support the enhancement of public service delivery and citizen empowerment objectives. Research experts have developed e-Governance models for local authorities, demonstrating that service delivery improvements require stakeholder involvement, ICT capabilities, and effective governance practices (Ncamphalala, 2019).

The South African situation reveals the main obstacles, which include inconsistent internet connectivity and data security risks. The successful implementation of digital identity verification systems, online portals, and mobile applications proves that e-government can boost transparency, citizen participation, and accountability in public services (Matlala, 2025). The established policy frameworks prioritise digital inclusion by enabling all citizens to access digital economy opportunities through targeted inclusion programs.

Multiple national strategies across countries implement interoperability standards, cybersecurity protocols, and multi-level governance coordination, mirroring South Africa's strategic framework. The varying levels of financial and technical support between countries result in different implementation success rates, particularly for local government initiatives. Matlala (2025) noted that the South African public sector is adopting Virtual Evaluation (VE) as part of its digital transformation strategy to enhance monitoring and evaluation (M&E) processes through improved efficiency and accessibility.

The legal and strategic framework in South Africa enables comprehensive local e-Government transformation to deliver efficient, inclusive, and accountable digital public services. Local governments face ongoing challenges due to limited resources, poor digital literacy, and inadequate infrastructure. Solving these challenges requires coordinated national and local strategies, multi-sector partnerships, and continuous community engagement. The lessons learned from South Africa regarding local e-government development under unequal access conditions and changing digital governance expectations have implications for other nations.

2.17 Implementation Structures and Institutional Roles

Local government e-government success depends on clear definitions of institutional structures and roles for effective implementation. These organisational frameworks establish connections between national government guidance and municipal delivery services, as well as official roles for CIOs and executive officials, and informal roles

for community leaders and civil society representatives. This assessment draws on South African studies and international examples to illustrate how various organisational frameworks influence digital municipal governance.

Mawela et al. (2017) evaluated municipal workshop data and interview responses to find that some municipalities did not establish ICT units or appoint Chief Information Officers (CIOs), thereby impairing their ability to lead strategic e-Government adoption. The review found that governance and leadership deficits posed greater barriers to adoption than technical limitations. ICT planning should include all ICT committee members, according to (Hilkemeijer, 2021; Molobela, 2023)

The SALGA-hosted Local Government ICT Network serves as the national professional community for municipal ICT practitioners, encompassing all 278 municipalities in South Africa. The peer learning and document sharing capabilities of the organisation remain limited because its membership operates voluntarily

Wikipedia

Implementing digital engagement channels through MobiSAM is carried out as separate pilot projects, despite institutional requirements for participatory governance through IDP forums and ward committees. The research by Khene et al. (2021) demonstrated how MobiSAM's collaborative system, which links researchers with civil society groups and municipalities, exposed power imbalances, requiring municipal authorities to formally accept these intermediaries for long-term adoption. Gudepu and Gellago (2019) highlighted that Big Data units are being created. However, the lack of integrated data governance systems limits continuity in strategic decision-making and institutional embedding.

A divergent study reports disconnects between Policy and Institutionalisation. According to Mayedwa (2023), South Africa implements policy tools, including the National e-Government Strategy (2017) and the GWEA framework. However, most municipalities lack specific frameworks or governance models that effectively translate strategy into institutional practice. Due to these conditions, implementing e-service portals and digital systems exhibits variable quality and scope. Institutional clarity

regarding governance, ICT responsibility, resource allocation, and stakeholder engagement remains weak in local governments (Mawela et al., 2017).

Molobela (2023) explains that limitations in ICT infrastructure, insufficient digital competencies, financial constraints, and procedural complexities prevent municipalities from institutionalising e-government functionalities (Nalubega & Uwizeyimana, 2019; Nxumalo, 2019). The Information Kerala Mission (IKM) is an independent state-local government agency that delivers IT support while building capacity and redesigning processes for all 1,223 local self-governments in Kerala, India. The IKM demonstrates an institutional structure that ensures uniform implementation, interoperability, and permanent training opportunities, which differs from South Africa's dispersed organisational system.

2.18 Local Government Readiness and Capacity

Research on South African local government readiness for e-government implementation reveals multiple technological, sociopolitical, and economic factors that determine the ability to deliver electronic services effectively at the municipal level. The primary purpose of e-government implementation is to deliver better services to citizens, improve their involvement in governance, and enhance transparency in public administration. Multiple studies indicate that South African local governments face significant challenges in delivering electronic services effectively, despite adhering to best practices that vary across different implementation contexts.

Nel-Sanders & Malomane (2022) identify essential elements for e-municipalities, including the need for local governments to provide useful citizen information to enhance welfare outcomes. The authors demonstrate that e-municipalities improve service delivery; however, their successful implementation depends on having sufficient ICT infrastructure and proper local governance systems. According to Mohale (2024), ICT infrastructure is the fundamental support system for municipal service delivery in the South African public sector. Many citizens cannot access e-government services without these essential foundations.

The study by Nkgapele & Mokgolobotho (2024) examines citizens' opinions on electronic services and finds that social inequalities, technological barriers, and trust issues limit access to these services. The authors present transformational methods to address these obstacles, emphasising that local governments must foster trust through active citizen participation to achieve success in digital governance.

Mukonavanhu (2024) supports this perspective by demonstrating how South African local governments face obstacles in adopting e-services due to insufficient e-government legal frameworks. The absence of legal guidelines creates operational barriers which prevent municipalities from creating structured plans for e-governance adoption. The research by Shava & Vyas-Doorgapersad (2022) demonstrates that leadership and innovative municipal cultures significantly influence the effectiveness of local governments in executing digital strategies that engage all citizens. The authors demonstrate that local governments often lack effective leadership, which hinders their ability to implement vital digital solutions that enhance service delivery.

The qualitative research conducted by Nkgapele (2024) reveals that e-government initiatives face ongoing challenges due to insufficient ICT expertise, inadequate funding, and insufficient infrastructure, ultimately diminishing their effectiveness in public service delivery. The research conducted by Mohale (2024) supports this finding by demonstrating that outdated administrative systems hinder service delivery, underscoring the need for comprehensive capacity development programs for local governments.

The study by Galushi & Malatji (2022) demonstrates, through digital readiness research, that the COVID-19 pandemic accelerated the digital transformation of South African public administration. The research indicates that the pandemic forced local governments to adopt digital transformation, but successful implementation depends on resolving technological and infrastructure problems, which multiple studies have identified. Ngumbela (2023) demonstrates through his work that political fragmentation and bureaucratic resistance to change negatively impact local government performance due to governance-level misalignment, thereby disrupting service

delivery. Structural problems in local governments hinder their effective use of e-government tools, exacerbating service delivery challenges.

The research by Engelbrecht et al. (2022) demonstrates that public trust is the primary determinant of e-government service adoption and use in participatory governance systems. The research indicates that government trust directly affects community involvement, underscoring the importance of transparency and accountability for local authorities. The research conducted by Moloto & Muchie (2023) demonstrates that poor technological implementation of e-government services creates significant problems in social grant distribution and infrastructure management systems. The current challenges underscore the need for local governments to allocate funds for human resource development and technological infrastructure to enhance service delivery. Kweyama et al. (2023) demonstrate that technical problems and weak legal systems prevent successful technology adoption in organisations. The research demonstrates that technical readiness requires well-designed training programs and effective resource allocation to achieve the successful integration of digital solutions with existing systems.

The successful implementation of e-government in South African local governments requires a comprehensive solution to handle their complex readiness and capacity issues.

2.19 Infrastructure, Digital Inclusion, and ICT Penetration

Shava & Vyas-Doorgapersad (2021), in their examination of Smart City initiatives, note that although metropolitan municipalities have invested in fibre-optic networks and enterprise ICT systems, significant infrastructure deficits persist in low-income and peri-urban areas. They further argue that the advent of the Fourth Industrial Revolution (4IR) requires government departments in South Africa to be adequately prepared to adopt ICTs and related digital technologies in order to realise smart governance objectives. Nel-Sanders & Malomane (2022) conducted a comparative review of e-municipality implementation challenges. They reported that many municipalities still

lack basic broadband connectivity, hardware, and the necessary maintenance capacity to sustain e-service platforms. Netshirando et al. (2024) conducted a survey of citizens across multiple municipalities. They found that facilitating conditions (e.g., access, affordability), perceived risk, and trust significantly impact the willingness to adopt e-services, emphasising how inclusion is not just about infrastructure but also about how citizens experience access.

The broader digital exclusion challenge is echoed by the Springer article "Bridging the digital divide..." (2025), which shows that rural areas remain underserved due to poor connectivity, high data costs, and low digital literacy, even amid SA Connects' ambitions. Mawela, Ochara, & Twinomurinzi (2017) argue in the South African Computer Journal that municipalities' ability to deploy ICT infrastructure is hampered by governance constraints, such as weak leadership, limited funding, and the absence of formal ICT units, which limit penetration beyond pilot projects. Zindi and Majam (2024) further emphasise that municipal leadership often lacks strategic vision or understanding of technology adoption dynamics, resulting in underinvestment in infrastructure and missed digital transformation opportunities.

2.20 Human Capital and Skills Gap

E-government system management and adoption face substantial challenges due to human capital deficiencies that local municipalities often experience. The national-level shortage of qualified candidates with digital skills, as noted by Samsor (2021), impedes service delivery and undermines institutional continuity. Shava and Muringa (2024) highlighted that municipal IT staff require up-to-date technological training to utilise continuous learning platforms effectively. However, they face limited access to updated materials and scarce opportunities for leadership development.

Rural councils face additional pressure because they struggle to retain or recruit qualified staff and lack the specialists needed to manage data-intensive systems, such as AI and advanced analytics. The implementation of e-government systems faces significant barriers because of financial constraints. According to the Development

Bank of South Africa (2023), most local governments struggle to obtain enough funding for ICT infrastructure, platforms, and training. They must depend on consultants to address their expertise shortages.

Innovative service delivery projects in rural municipalities face continuous underfunding of internet connectivity, sustainable power systems, and digital hardware, according to Mashau & Kroeze (2023). The integration of institutional ICT depends on reliable broadband connectivity and maintenance capabilities, which many municipalities lack, as Nel-Sanders & Malomane (2022) noted.

The digital transformation of South African local governments encounters essential obstacles, which Hofisi and Chigova (2023) analyse in their research. According to their research, digital service delivery remains ineffective due to insufficient technical knowledge, security concerns, resource constraints, and unequal access to digital services. Adoption of technology for governance improvement and citizen participation remains out of reach for municipalities due to existing obstacles. The necessity for local governments to address these issues is further underscored by Galushi & Malatji, (2022), who examine the implications of inadequate digital public administration during crises such as the COVID-19 pandemic. The authors assert that digital public administration transformation demands solutions to existing technological gaps to halt the growth of service access inequality.

Examining local government data management regulations forms the foundation for this research. According to Nkgapele and Mokgolobotho (2024), the establishment of comprehensive legal and regulatory frameworks supports the development of e-governance and protects data privacy. Current governance systems require analysis to develop strict data privacy laws which follow the constitutional principles established after the 1994 democratic change. Local leaders require appropriate knowledge and tools to implement governance frameworks (Muringa & Shava, 2024). A forward-thinking governance method requires municipal leaders to obtain data protection capabilities to support the development of responsible transformation projects.

2.21 Cybersecurity, Data Privacy, and Legal Issues

South Africa's local governance evolution parallels the demands of digital transformation, which require robust cybersecurity practices, strong data protection regulations, and effective legal frameworks. The rapid implementation of digital technology by local governments has exposed significant gaps in service delivery, created data security risks, and necessitated new legal approaches to address these challenges. The review of academic research focuses on South African local governments to analyse these matters.

The government must establish a comprehensive legal framework and develop a robust technological infrastructure to effectively address cybersecurity issues. Shava & Vyas-Doorgapersad (2022) demonstrate that digital innovations, such as cloud computing and big data analytics, are essential tools for enhancing service delivery, thereby improving local government resilience. Municipalities can protect their critical infrastructure while defending citizen data privacy by implementing innovative cybersecurity measures.

The relationship between technological development and capacity constraints poses a major challenge. According to Ngumbela (2022), local governments encounter two major obstacles when implementing new technologies: they must handle numerous expectations, lack sufficient resources, and face institutional resistance. The author establishes a multi-level analytical framework which demonstrates the requirement for individual municipality strategies that adapt to each location's unique circumstances.

The success of these mechanisms depends heavily on their effectiveness and credibility when addressing grievances about data that citizens report to authorities. The involvement of more community members fosters better transparency, as citizens can effectively monitor local governments while safeguarding their data privacy. Nkgapele (2024) finds that better usability of e-governance platforms creates positive citizen experiences and promotes wider community engagement. This creates a continuous process that enables local governments to understand community needs and establish governance practices that include cybersecurity protection.

South African local governments are undergoing digital transformation, but they face complex issues, including cybersecurity, data privacy, and challenges with the legal framework, according to the literature. The path to advancement requires unified initiatives to build strong legal systems together with improved technological networks and increased community involvement. The successful achievement of contemporary service delivery needs and citizens' fundamental rights, including data privacy protection, depends on holistic solutions to these interconnected challenges.

2.22 Research Gap

The difference between policy formulation and policy implementation. The problem of misalignment between local government practices and national e-Government directives is highlighted. There is a need for empirical research to bridge the gap between policy and practice, particularly in the interpretation and implementation of e-government strategies (Kromidh & Cordoba-Pachon, 2014).

The COVID-19 pandemic period has emphasised the need for a strategic digital transformation (Gangneux & Joss, 2022). The e-Government initiatives put in place during the crisis are a good way to gauge the effectiveness of the national strategy. Research on the impact of such initiatives on public service delivery and citizen satisfaction is very rare. Gangneux & Joss (2022) note that understanding the short-term responses and long-term implications of digital transformation during crises can provide valuable insights into the effectiveness of national e-government strategies.

The participation and involvement of citizens in e-Government is another area of concern that has been studied by Nkgapele & Mokgolobotho (2024). The authors emphasise the importance of making e-governmental services accessible to all citizens, particularly in countries with high levels of socio-economic inequality. However, there is a need for more studies to be carried out on how citizens access and utilise these services, as well as interact with them. The current literature does not

adequately consider the user experience of e-government services, which is crucial for assessing their effectiveness and usability (Bhamjee et al., 2022).

The role of digital literacy and infrastructure in the effective implementation of the national e-Government strategy is an important yet underexplored topic in the existing literature. Many initiatives may fail due to low digital literacy levels in the population, as the use of online platforms depends on users' technological competence (Nkgapele, 2024). Bhamjee et al. (2022) also point out that while the COVID-19 pandemic accelerated the adoption of telehealth, the integration of telehealth into routine healthcare was contingent on the availability of technology and people's ability to utilise digital systems. While considerable effort is being invested in setting up e-Government systems, the long-term viability of these services requires further exploration. Many studies, such as those by Sibuyi et al. (2022), focus solely on the short-term effects of e-Government initiatives without examining their long-term outcomes. It is also important to understand how e-Government services can evolve, adapt, and remain relevant in a changing socio-political environment in order to develop effective governance systems.

Furthermore, the need for an assessment framework for adaptability is also evident. Studies like those by Nnenna et al. (2024) on digital governance in East Africa are informative; however, similar comprehensive frameworks are not well-developed in the South African context. It is essential to determine the necessary structures to ensure the long-term sustainability of e-Government initiatives, enabling the evaluation of the national e-Government strategy's effectiveness (Nnenna et al., 2024; Jejenywa et al., 2024).

The South African National e-Government Strategy and Roadmap (SANESR), which the government aims to modernise public service delivery, faces a primary research deficiency about its effectiveness in rural local government settings, especially the OR Tambo District Municipality. The current body of literature primarily consists of national or urban-specific evaluations of e-Government strategies, with insufficient attention to rural implementation and user experience (Maluleka et al., 2023; Galushi & Malatji, 2022). Research limitations due to urban bias hinder a thorough exploration of how

rural municipalities, including those in the Eastern Cape, address E-government platforms while facing structural and digital access challenges.

The SANESR framework offers an extensive strategy for the digital transformation of government services; however, its implementation within rural municipalities has not been sufficiently studied. The SANESR framework aims for the full digital inclusion of citizens, yet rural areas host a large number of South African residents who cannot effectively access e-services due to inadequate infrastructure and digital competence (Lnenicka et al., 2024). The digital divide persists in the OR Tambo District due to poverty, weak ICT infrastructure, and a shortage of skilled personnel (Maremi et al., 2022). The specific barriers to SANESR's effectiveness receive insufficient attention when researchers evaluate the framework's total performance.

The UN E-Government Index improvement of South Africa from 65th place in 2022 to 40th place in 2024 (Lnenicka et al., 2024) does not explain the specific elements driving or obstructing municipal performance growth. National-level evaluations often overlook the roles of stakeholder partnerships, institutional preparedness, and citizen feedback systems in determining local success or failure. The current literature fails to thoroughly analyse how these components affect the sustainability and adaptability of e-Government solutions within rural municipalities, such as OR Tambo.

The fragmented nature of implementation stems from inadequate interdepartmental coordination and oversight, thereby preventing the e-government strategy from achieving sustainable transformation in public service delivery (Muhammad & Kaya, 2023). The absence of participatory mechanisms leads to poor accountability and fragmented service delivery, as identified by Maremi et al. (2022).

This study addresses a gap by assessing the implementation of SANESR in the OR Tambo District Municipality through a combined assessment approach using the LOGFRAME, SERVQUAL, and Theory of Change frameworks. This study evaluates SANESR while developing a model to enhance its effectiveness for municipalities by examining implementation barriers, stakeholder understanding, system durability, and the delivery of enduring value.

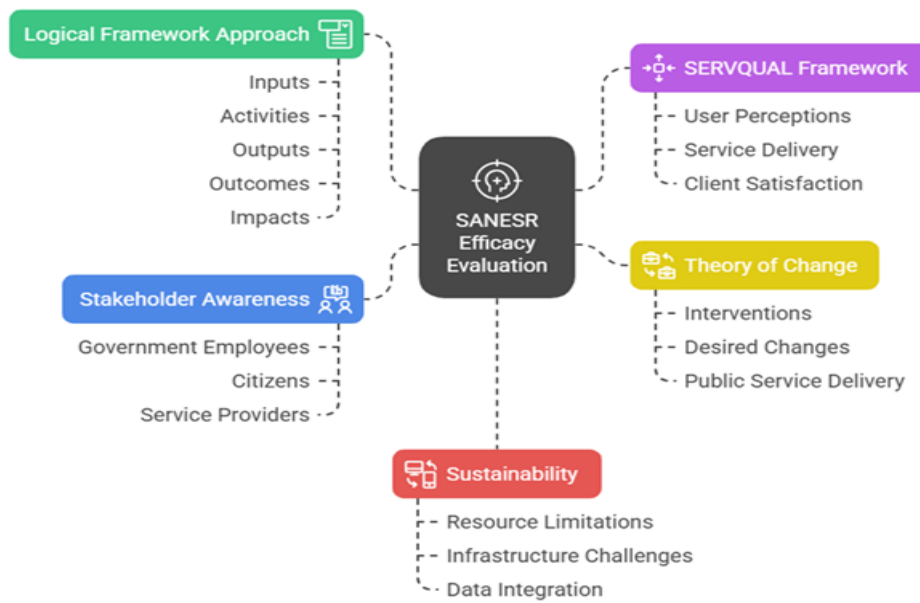
2.23 Aligning the Conceptual Framework and Theories with the Aim of the Research

The research study requires a conceptual framework and theoretical constructs that align with its objectives, as this alignment provides a solid theoretical foundation that guides both research methods and data analysis. According to Van der Waladt (2020), a conceptual framework is a structured network that connects essential variables that explain the studied situation (David, 2023). The research topic draws on this approach, which provides a foundational framework by unifying all study components through educational research analysis methods. According to Fernandez et al. (2025), the research process requires an organised description, as it enables the intentional application of research methods. The study's boundaries become clearly defined through this organisational structure. A study becomes more credible when researchers implement a comprehensive conceptual framework, as all elements align with the main research objectives (Tark et al., 2022).

The systematic literature review by Pitelis et al. (2023) demonstrates how integrative frameworks can connect theoretical concepts to create practical applications for empirical research. The theoretical models developed by Chaudhry and Noreen (2023) combine multiple existing themes into a unified framework that serves particular research needs. The operationalisation of theoretical constructs through frameworks, as per Gunawan et al. (2022), demonstrates how nursing theory is applied in healthcare settings and highlights its value in addressing specific research questions. The complete alignment of the conceptual framework with the research objectives creates both methodological excellence and a deep understanding of the phenomenon under study, enabling better decision-making and stronger data interpretation.

Figure 3: Conceptual Nexus of Theoretical Frameworks in SANESR Evaluation

Conceptual and Theoretical Frameworks Nexus with SANESR Efficacy



Source- Author's own Conceptualisation

This study establishes a conceptual framework for assessing the effectiveness of SANESR, integrating theoretical models with practical elements to evaluate its achievement of target goals. The framework unites five main components: the Logical Framework Approach (LFA), the SERVQUAL Framework, the Theory of Change (ToC), Stakeholder Awareness, and Sustainability Considerations. These dimensions work together to create a comprehensive framework that analyses inputs and processes, outcomes, and the long-term effects of e-government programs within municipalities.

The Logical Framework Approach is a systematic framework that helps users create plans, execute them, and assess their results for SANESR initiatives (Roduner et al, 2008). The system consists of five variables, which include Inputs that represent funding, human capital and technology required for digital project execution activities that describe project tasks and processes for objective achievement, outputs that represent delivered products and services and Outcomes that show the effects of outputs on service delivery and Impacts that describe the lasting benefits of successful e-Government implementation.

The SERVQUAL Framework is used to evaluate service quality delivery in SANESR in this study. In keeping with Xia et al (2025), the model contains three variables: User Perceptions, which show how government staff, public users, and service delivery personnel judge digital service quality; Service Delivery, which assesses platform performance through efficiency, reliability, and responsiveness; and Client Satisfaction, which evaluates service quality to determine user satisfaction with digital governance.

The Theory of Change framework in this study shows how SANESR interventions produce their intended results. Arnold and Wise (2026) highlighted that the model contains three variables: Interventions, which represent strategic projects for service improvement; Desired Changes, which describe service delivery and institutional efficiency targets; and Public Service Delivery, which measures intervention outcomes in government service delivery for citizens and stakeholders.

The primary goal of stakeholder awareness requires organisations to identify and maintain active relationships with all vital stakeholders who need to support the deployment of the SANESR system. Its variables include government employees, responsible for implementing digital services; citizens, the end users of e-Government platforms; and Service Providers, including internal departments and external technology vendors that support service delivery. Digital service awareness enables users to participate in their systems and successfully adopt and operate these services. The framework contains three variables: Resource Limitations, which represent financial constraints and human resource shortages; technological barriers; and infrastructure challenges, which describe physical and technical obstacles to service maintenance; and data integration, which focuses on uniting departmental information systems to deliver continuous digital services.

2.23 Summary of the Chapter

Chapter Two of the study evaluated e-government research from worldwide and South African perspectives on ICT applications for public service transformation. The chapter

established the theoretical framework by utilising the Logical Framework Approach (LOGFRAME), SERVQUAL, and the Theory of Change to evaluate the effectiveness of the National e-Government Strategy and Roadmap. The study developed a conceptual framework that united its research objectives with these theories to create an organised framework for understanding and resolving the research problem. The framework established essential variables and concepts, along with their relationships, for e-Government operations at the OR Tambo District Municipality, linking the study goals to relevant literature. The chapter establishes the necessary groundwork for Chapter Three, which focuses on the research methodology, including design selection and sampling methods, as well as data collection and analysis techniques, to fulfil the research objectives. The previous chapter introduced research results that provided the theoretical basis for this study, evaluating e-Government deployment by assessing how legislative backing enables the development of operational systems from theoretical concepts. This chapter focuses on the literature and theoretical frameworks that supported the study. The next chapter examines how official policy documents and legislative frameworks support the South African National e-Government Strategy and Roadmap.

CHAPTER 3

Legislative Frameworks and Policy Documents Supporting the Implementation of the South African National e-Government Strategy and Roadmap

3.1 Introduction

While the previous chapter addressed the theoretical basis for this study, this chapter examines how official policy documents and legislative frameworks support the South African National e-Government Strategy and Roadmap. The chapter examines South African national laws that control e-Government programs through their regulatory framework to establish the institutional environment that affects SANESR performance.

This chapter analyses the legislative frameworks and policy documents that can support the implementation of the South African National e-Government Strategy and Roadmap (SANESR) in the OR Tambo District Municipality. The focus is the legal documents which support SANESR implementation through the National Integrated ICT Policy White Paper (2016), White Paper on Science Technology and Innovation (2019), Electronic Communications and Transactions Act (2002), National Cybersecurity Policy Framework (2012), Cybercrimes Act (2020), National Policy on Data and Cloud (2024), Draft Digital Government Policy Framework (2024) and National e-Government Strategy and Roadmap (2017). This section of the study is significant as it lays the groundwork for legislation, helping contextualise the study's results within the national and institutional policy framework. Its purpose is to support empirical research that investigates how stakeholders and respondents in the OR Tambo District Municipality put these frameworks into practice. The study enhances its validity through a two-part structure that links theoretical objectives to actual implementation outcomes.

The Policies and Legislative Frameworks that supports the implementation of SANESR are, but not limited to, the following:

- National Integrated ICT Policy White Paper (2016)
- White Paper on Science, Technology, and Innovation (2019)

- Electronic Communications and Transactions Act (2002)
- National Cybersecurity Policy Framework (2012)
- Cybercrimes Act (2020)
- National Policy on Data and Cloud (2024)
- Draft Digital Government Policy Framework (2024)
- National e-Government Strategy and Roadmap (2017)

The success of e-Government initiatives in South Africa depends on a well-structured policy framework and legislative structure that supports digital transformation, protects citizen rights, and delivers efficient public services. Over the last two decades, South Africa has developed multiple acts, policies, and white papers to establish a strategic direction, governance, and regulatory oversight for ICT and digital government. The analysis in this chapter evaluates these frameworks in relation to the National e-Government Strategy and Roadmap (2017) and current research on e-Government effectiveness in the OR Tambo District Municipality. The focused legislative framework

3.1.1 National Integrated ICT Policy White Paper (2016)

The White Paper (2016) established a fundamental policy framework to unite South African ICT policies for inclusive digital transformation (Mfuphi, 2020). The document establishes five core principles: universal access to technology, open access to infrastructure, citizen empowerment, innovation, and digital inclusion for all.

The two frameworks share the common goal of achieving universal digital service access while promoting transparency through modernised ICT infrastructure. The White Paper establishes the digital environment, whereas the e-Government Strategy focuses on implementing ICT systems for government service delivery.

3.1.2 White Paper on Science, Technology, and Innovation (2019)

The STI White Paper emphasises the use of scientific research and innovative approaches to drive national economic development. The policy supports

digital innovation through research partnerships and the advancement of emerging technologies, including artificial intelligence and big data systems (Department of Science and Technology, 2019). The e-Government Strategy relies on technological advancements to achieve its goal of transforming public services. The STI White Paper supports e-Government by fostering innovation hubs, developing digital competencies, and conducting research that strengthens the knowledge base for e-Government initiatives.

3.1.3 Electronic Communications and Transactions Act (ECTA) 25 of 2002

The Electronic Communications and Transactions Act (ECTA) 25 of 2002 is the legal basis for digital transactions, electronic signatures, data messages, and online business operations in South Africa. The Act confirms the validity of digital communication, enabling government departments to conduct electronic interactions with citizens (Netshakhuma, 2022).

ECTA enables the e-Government Strategy to achieve secure online services by validating electronic records and digital authentication systems.

3.1.4 National Cybersecurity Policy Framework (2012)

The NCPF establishes a national defence system against cyber threats through awareness programs, coordination, and security measures. The framework requires protection for government ICT systems, critical information infrastructure, and citizen data.

The strategy depends on citizen trust for digital platforms, which the NCPF supports through its efforts to create a secure cyber environment.

3.1.5 Cybercrimes Act 19 of 2020

The Act makes hacking, cyber fraud, identity theft, and data interception without authorisation punishable offences. The Act establishes procedures for investigating and prosecuting cybercrime cases (Mabeka & Cassim, 2023).

The Act enhances the credibility of digital government services by protecting citizens and institutions from cybercrime, thereby fostering trust in online platforms.

3.1.6 National Policy on Data and Cloud (2024)

The policy framework sets guidelines for data ownership and management, data sovereignty protection, interoperability standards, and ethical use practices. The policy establishes the government as a data controller and a user while encouraging public-private partnerships to advance cloud computing adoption (Celiktas et al, 2025).

The policy supports the e-Government Strategy by focusing on data integration and public service delivery efficiency and innovation through its data management framework.

3.1.7 Draft Digital Government Policy Framework (2024)

The Draft Framework aims to unify digital governance operations throughout the public service sector. The framework adopts a digital-first approach through six core elements: citizen-focused services, operational efficiency, security, transparency, innovation, and accountability. The framework addresses three major system issues: disconnected ICT systems, inadequate leadership, and insufficient employee competencies.

3.2 Analysis of the National Integrated ICT Policy White Paper (2016) and its Analogy with the SANESR (2017)

The SANESR (2017) objectives for determining their applicability to the OR Tambo District Municipality. The framework illustrates how national policy goals are transformed into strategic targets, which are then implemented at the local level. The first step involves connecting the principles outlined in the National Integrated ICT Policy White Paper (2016) to the National e-Government. The table below presents

key principles of the framework, with a focus on transparency, open access, digital literacy, and innovation. How well OR Tambo implements or should implement these goals in practice. The evaluation framework enables researchers to systematically assess policy implementation against practice, revealing both successful elements and areas for improvement in digital transformation at the municipal level.

The National Integrated ICT Policy White Paper of 2016 serves as the fundamental regulatory framework guiding South Africa toward digital transformation (Mosehlana, 2018). The policy framework supports inclusive development through affordable services that deliver citizen-focused solutions, while maintaining transparency and open access, and promoting digital literacy and sustainable governance. The principles serve as foundational elements to build a digital society, enabling ICT to drive economic growth, promote better governance, and enhance citizen participation (Mfuphi, 2020). The National e-Government Strategy and Roadmap Framework convert policy principles into functional operational targets. The e-Government Strategy aims to eliminate digital inequality by providing government services to all citizens (SANESR, 217), in line with the White Paper's focus on universal access and inclusivity. The Strategy implements the White Paper's affordability and equity principles by enhancing government service delivery efficiency and reducing costs, thereby benefiting disadvantaged communities through digital governance.

The National Integrated ICT Policy White Paper (2016) serves as a comprehensive framework to advance South Africa's digital landscape by addressing significant barriers to access and fostering an inclusive ecosystem. The policy emphasises the imperative of digital empowerment, particularly among marginalised groups, which resonates with findings that highlight the underrepresentation of women and other vulnerable populations in digital skills development initiatives (Shava & Muringa, 2025). This document delineates strategies to bridge the digital divide by enhancing access to technology and improving digital literacy across diverse socio-economic strata. However, implementing such policies is not without challenges; for instance, previous studies have highlighted systemic issues in infrastructure and governance that could impede effective ICT adoption in educational settings (Aboderin, 2025; Sasere & Makhasane, 2023). Therefore, aligning the aspirations of the National Integrated ICT Policy with robust infrastructural development and consistent

monitoring mechanisms is vital for achieving its objectives and ensuring that the digital transformation in South Africa is both equitable and sustainable.

The White Paper's service delivery approach for citizens aligns with the Strategy's mission to enhance access to services and increase citizen involvement in governance activities. Mwapwele (2018) argues that the documents share a common perspective that digital transformation in government requires service design grounded in citizen needs to strengthen connections between the state and society. The White Paper demands transparency and accountability in government operations, aligning with the Strategy's goal of creating open government systems that utilise technology to enhance accountability.

The White Paper emphasises innovation, coordination, and sustainability, which aligns with the Strategy's mission to implement new technologies and establish enduring digital governance structures. The White Paper establishes fundamental principles that the e-Government Strategy implements through its operational framework.

Table 2: White Paper Principle (2016) and SANESR 2017

	SANESR Objective (2017)	Relevance to this Study (OR Tambo District Municipality)
Inclusivity & Universal Access	Digital inclusion & access to services	Examines whether OR Tambo residents can access e-services despite the rural and infrastructural challenges they face.
Affordability & Equity	Efficiency & reduced cost of service delivery	Evaluates whether e-Government reduces service costs and barriers for disadvantaged communities.
Citizen-Centric Service Delivery	Enhancing access & citizen participation	Assesses how OR Tambo integrates citizen needs into its digital platforms.
Transparency & Accountability	Open government & trust	Analyses if ICT fosters transparency in OR Tambo's municipal governance.

Open Access & Fair Competition	Interoperability & integration	Evaluates whether systems in OR Tambo are interoperable or siloed.
Digital Literacy & Capacity	Capacity development of citizens & officials	Investigate whether OR Tambo provides training to ensure the effective adoption of e-services.
Innovation & Transformation	Adoption of emerging technologies	Considers whether OR Tambo applies ICT innovation beyond basic digitalisation.
Coordination & Sustainability	Long-term integration & governance reform	It examines whether OR Tambo has the institutional capacity to sustainably adopt ICT.

Source: Author's Own Compilation

The analogy becomes essential for the OR Tambo District Municipality at this point. The research on e-government implementation in this setting needs to determine how the White Paper's principles of inclusivity and transparency, efficiency, and citizen empowerment translate into the Strategy's operational targets. The Strategy's effectiveness at the municipal level depends on its ability to implement White Paper principles despite facing barriers such as insufficient infrastructure, digital skills shortages, and funding limitations. The research used this relationship to analyse the achievements and weaknesses of e-government operations in the OR Tambo District Municipality.

3.2 The White Paper on Science, Technology, and Innovation (2019) and the SANESR (2017)

This section analyses how the White Paper on Science, Technology, and Innovation (2019) supports the goals of the National e-Government Strategy and Roadmap (2017). The White Paper identifies research and innovation, and new technology adoption, as essential national development drivers, yet SANESR uses these priorities to develop specific plans for digital governance improvement. The section demonstrates how these policy instruments work together to build institutional

capacity, deliver better services, and promote inclusive socio-economic development in the OR Tambo District Municipality.

The White Paper on Science, Technology, and Innovation (2019) outlines a future-oriented strategy that positions South African development through knowledge economy principles and Fourth Industrial Revolution (4IR) frameworks (Jegade, & Ncube, 2021). The National e-Government Strategy and Roadmap (2017) share common goals with the STI White Paper, utilising ICT to enhance governance and service delivery while promoting inclusivity, innovation, and sustainability. The two frameworks place equal importance on ensuring that all groups receive equal treatment. The STI White Paper advocates for science, technology, and innovation to combat social inequality, while the e-Government Strategy aims to provide digital access to all citizens for public services. The state demonstrates its commitment to digital transformation by ensuring that all communities, including those in rural areas of the OR Tambo District Municipality, receive equal benefits.

The White Paper on Science, Technology, and Innovation (2019), developed by South Africa's Department of Science and Innovation, aims to position the country as a leader in scientific and technological advancements, promoting economic growth and societal well-being. The document emphasises the integration of artificial intelligence (AI) across sectors as a fundamental driver of enhanced government efficiency and transformed service delivery, aligning with global trends in which AI has reshaped governance and public management practices (Motadi, 2024). It also advocates establishing innovation ecosystems that facilitate collaboration among government, academia, and industry, which are crucial for fostering research and development (R&D) to address local challenges and advance sustainable development goals. While specific examples of such innovations were not identified, the connection between the White Paper and the broader conceptual framework of developing supportive ecosystems for science and technology is well-documented in the literature (Parker-Allie et al., 2023). Furthermore, the White Paper emphasises inclusivity in its approach, particularly in addressing gender imbalances within the National System of Innovation (NSI), and proposes specific measures to empower and represent women in scientific fields (Prozesky et al., 2021). This multifaceted strategy aims not only to

boost technological innovation but also to ensure equitable participation in the benefits derived from scientific advancements, which is essential for long-term societal transformation (Motadi, 2024; Prozesky et al., 2021).

Jegede and Ncube, (2021) highlighted that the STI White Paper promotes innovation for economic development and market competitiveness, which matches the e-Government Strategy's goal to enhance governance efficiency through ICT implementation. The two frameworks treat technological advancement as essential for businesses to remain competitive, modernise, and achieve international market leadership. Municipalities that want to implement an e-Government strategy must move beyond process digitisation by creating new service delivery approaches.

The two frameworks share common ground through their focus on digital transformation and readiness for the Fourth Industrial Revolution. The two frameworks recognise that new technologies, including artificial intelligence, cloud computing, and big data, are creating disruptive changes in the market. The e-government sector can use new technologies to create innovative public services, but STI needs these technologies to drive economic and social development. Municipalities must fulfil two essential duties: preparing their service delivery systems for digital transformation while teaching their communities about digital literacy.

Table 3: STI White Paper (2019) and Principle and SANESR 2025

STI White Paper (2019). Principle	e-Government Strategy (2017) Objective	Analytical Linkage
Inclusive development	Digital inclusion and access to services	Both frameworks stress reducing inequalities by ensuring digital platforms are accessible to all citizens.
Digital transformation & 4IR readiness	Adoption of emerging technologies	Both advocate preparing for disruptive technologies (AI, big data, IoT) to enhance governance and service delivery.
Knowledge production & evidence-based policy	Transparency & accountability in governance	Evidence-driven policy in STI supports data-based, transparent governance within e-government frameworks.

Ethical & sustainable innovation	Sustainability and citizen trust	Responsible innovation in STI aligns with ethical, accountable, and sustainable adoption of e-government systems.

Source: Authors' Own Compilation

The table above illustrates that the STI White Paper expands the discussion by situating e-Government within the national innovation system and in line with the requirements of the 4th Industrial Revolution (4IR). The evaluation of e-government adoption in the municipality should examine both the achievement of Strategy objectives and their alignment with national goals to build an inclusive knowledge-based society as defined in the STI White Paper.

3.3 Comparative alignment of the Electronic Communications and Transactions Act (ECTA) 25 of 2002 and the SANESR (2017)

The Electronic Communications and Transactions Act (ECTA) 25 of 2002 is a significant legislative framework in South Africa that facilitates electronic communication and transactions while fostering confidence and security in e-commerce. Its inception established a legal foundation for recognising electronic signatures, contracts, and related matters, which are essential to the growth of digital commerce and align with global standards (Eck & Agbeko, 2023).

Although the ECTA fundamentally supports the framework for digital transactions, its limitations arise in areas such as the exclusion of certain contracts, notably those involving immovable property, from its scope due to traditional legislative frameworks, such as the Alienation of Land Act (Reddy, 2023). This gap highlights an essential dialogue within legal circles regarding adapting the ECTA to keep pace with technological advancements, including discussions about extending legal recognition to electronic signatures in a broader context (Mabeka, 2021). Furthermore, the growing complexity of digital transactions presents challenges that necessitate ongoing revisions and amendments to the Act, ensuring that it comprehensively addresses the realities of modern electronic interactions (Eck & Agbeko, 2023). As

technology continues to evolve, including developments in artificial intelligence, the ECTA's relevance and applicability will require a critical reassessment to maintain legal integrity and public trust in digital ecosystems (Marule, 2022).

The Electronic Communications and Transactions Act (ECTA) No. 25 of 2002 serves as the legal basis for South Africa's digital transformation, authorising electronic transactions and communications (Snail, 2007). The legal validation established by ECTA enables the National e-Government Strategy and Roadmap (2017) to digitalise government services. The enforceability of electronic documents, signatures, and communications depends on ECTA provisions because these elements form the essential foundation of e-government initiatives. The ECTA enables e-commerce and governance operations that support the strategy's mission to enhance operational efficiency while decreasing service delivery expenses. The legal framework established by ECTA enables electronic transactions, which support the operation of e-government systems that perform online transactions. The legal framework established by ECTA supports the Strategy's operational framework, which focuses on deploying these services across all government departments.

The initiative to achieve universal access and digital inclusion finds common ground between ECTA and the e-Government Strategy. The e-Government Strategy and ECTA aim to ensure digital transformation benefits all citizens through equal access to ICT services. Government and service providers' efforts to reduce the digital divide under ECTA receive operational support from ECTA through its consumer protection and cybersecurity measures. People will avoid using digital government through its citizen access and digital literacy programs. The strategy focuses on transparency and citizen trust services to address concerns about being victims of fraud, identity theft, or data exploitation. The Strategy achieves its goal of developing trustworthy digital platforms through ECTA's security protocols, authentication systems, and certification authority frameworks (Netshakhuma, 2022).

The law grants public bodies the power to deliver electronic services with explicit authorisation under ECTA. The e-Government Strategy relies on the ECTA legislative framework to develop a plan for service integration, long-term maintenance, and

service development. The South African digital governance agenda receives its legal foundation and strategic direction by combining ECTA and the strategy.

Table 4: ECTA (2002) Principle and SANESR (2017)

ECTA (2002) Principle	e-Government Strategy (2017) Objective	Analytical Linkage
Legal recognition of electronic transactions	Access to online services & efficiency	ECTA provides the legal validity that allows e-Government services to be delivered electronically with enforceable legitimacy.
Facilitation of e-commerce & governance	Efficiency, cost reduction, and digital service delivery	ECTA lays the foundation for the government to transact electronically, while the Strategy operationalises it in service delivery.
Universal access & digital inclusion	Bridging the digital divide & citizen access	Both emphasise inclusivity by ensuring that electronic services reach disadvantaged communities.
Consumer protection & cyber security	Transparency, accountability, and citizen trust	ECTA ensures security and privacy, while the Strategy promotes trust in online government platforms.
Authentication & security standards	Interoperability, efficiency, and secure systems	ECTA's certification and authentication rules underpin the secure

		functioning of integrated government systems.
e-Government enablement	Online access to government services	ECTA provides the legal mandate, while the Strategy provides the roadmap for implementation.
Bridging the digital divide	Capacity development and digital inclusion	Both emphasise the importance of infrastructure and skills in ensuring equitable access.

Source: Author's Own Compilation

Table 4 above establishes the link between the ECTA (2002) Principle and SANESR (2017) The Strategy defines service digitisation methods, but ECTA ensures these services remain legitimate while maintaining security standards and legal enforceability. The research should determine if OR Tambo's e-government implementation meets the Strategy's targets and ECTA's requirements for legal compliance, security standards, and inclusive practices. The Strategy requires ECTA as its legal foundation to function effectively, making the Act essential to the conceptual framework.

3.4 Alignment of the National Cybersecurity Policy Framework (NCPF) Government Gazette No. 39475 of 4 December 2015 with the SANERS (2017)

The National Cybersecurity Policy Framework (NCPF), enacted by the South African government in 2012, provides a strategic foundation for addressing the increasing threats posed by cybercrime and ensuring national security in cyberspace. This framework aims to create a cohesive strategy that promotes awareness, resilience, and trust in the use of digital technologies, which is essential as cyber threats continue

to evolve and become more sophisticated (Kondlo et al., 2022). Key objectives of the NCPF include enhancing collaboration among stakeholders, including government entities, the private sector, and civil society, thereby establishing a comprehensive cybersecurity approach that integrates risk management and incident response mechanisms (Kondlo et al., 2022).

Despite the intentions outlined in the NCPF, implementation has faced challenges, as some critical components remain underdeveloped. For instance, a notable gap exists in the effective implementation of cybersecurity measures, leaving vulnerabilities that can result in significant economic losses from cyberattacks (Mkhwanazi & Fletcher, 2024). Furthermore, the framework's alignment with international standards and best practices serves as a crucial guideline for addressing emerging cyber threats, as evidenced by ongoing legislative efforts, such as the incorporation of the Cybercrimes Act, to further reinforce the legal and institutional framework around cybersecurity (Kondlo et al., 2022; Nyambuya & Gopal, 2025). Consequently, the NCPF represents not only a commitment to protecting national digital interests but also underscores the need for ongoing evaluation and adaptation to maintain its relevance in a dynamic cyber landscape.

The National Cybersecurity Policy Framework (NCPF) serves as a fundamental foundation for achieving the goals outlined in the National e-Government Strategy and Roadmap (Kondlo et al., 2022). The Strategy depends on the NCPF to create secure, trustworthy environments for the implementation of digital services. Digital platforms lack adequate protection against attacks, which can erode citizen trust and hinder e-government adoption because of insufficient cybersecurity measures.

The NCPF establishes national security and resilience as core priorities, which align with the e-Government Strategy's requirement for dependable and enduring ICT systems. The operation of e-government services relies on robust cybersecurity measures to safeguard essential services, including payment systems, healthcare services, and identity management systems, against cyber threats.

The table below presents the analytical linkage between the National Cybersecurity Policy Framework (NCPF) and the SANERS (2017)

Table 5: NCPF Principle and e-Government Strategy Objective

NCPF Principle	e-Government Strategy Objective	Analytical Linkage
National security & resilience	Sustainability and reliability of e-government systems	E-government services require robust cybersecurity to remain sustainable and resilient to attacks.
Coordination & collaboration	Interoperability & integration of government platforms	Both stress the need for cross-government and multi-stakeholder collaboration for effective implementation.
Protection of citizens & data	Citizen trust, transparency, and accountability	Cybersecurity safeguards privacy, enabling trust in online services and accountability in governance.
Cybercrime prevention	Secure access to online services	E-government relies on preventing fraud, hacking, and misuse of digital platforms.
Capacity building & awareness	Digital literacy & capacity development	Both frameworks call for training public servants and educating citizens on safe digital practices.
Trust and confidence in ICT	Citizen adoption of digital platforms	Citizens will only embrace e-government if they trust its security — NCPF underpins this trust.

Source: Author's Own Compilation

Table 5 of the study illustrates the relation between the NCPF Principles and the e-Government Strategy Objective. The research about the effectiveness of the e-Government Strategy in the OR Tambo District Municipality needs the NCPF because it establishes the security foundation for digital governance. The Strategy outlines

service delivery through online channels, but the NCPF determines how secure these services remain against cyber threats. The research should analyse the successful implementation of e-government systems and their compliance with cybersecurity standards that protect data, maintain system resilience, and support public trust. Rural municipalities, such as OR Tambo, require robust cybersecurity measures to establish trust with citizens who lack digital skills and have limited access to resources for adopting e-government services.

3.5 Analytical Linkage of the Cybercrimes Act No. 19 of 2020 with the SANESR

The Cybercrimes Act No. 19 of 2020 is a crucial legislative framework in South Africa that addresses the changing landscape of cybercrime. This Act consolidates various offences previously scattered across different legal instruments and introduces specific provisions that criminalise key activities, such as unlawful access to information systems, data interception, and the distribution of harmful content (Van Der Linde, 2024). Notably, it establishes offences related to harmful, malicious communications, including the unlawful disclosure of intimate images and threats of violence, reflecting an important response to societal demands for improved digital safety (Mtuze & Musoni, 2023). Additionally, the Act facilitates the retention and examination of digital evidence, recognising the challenges law enforcement faces in effectively prosecuting cybercrime, which often involves sophisticated techniques and rapid technological developments (Nortje & Myburgh, 2023).

Despite its comprehensive scope, the Act's implementation has faced challenges, particularly in training law enforcement personnel and ensuring compliance with legal standards for evidence collection (Nortje & Myburgh, 2023). Furthermore, the legislation interacts with existing civil frameworks, implying that breaches of the Cybercrimes Act may also result in civil liabilities for wronged parties, thereby intertwining criminal and civil legal processes in addressing cyber offences (Mtuze & Musoni, 2023; Mabeka & Cassim, 2023). This evolving legal landscape aims not only to bolster cybersecurity but also underscores the importance of collaboration among

various sectors, including government, private entities, and civil society, to effectively combat cybercrime in South Africa (Van Der Linde, 2024).

The criminalisation of cyber7 through its legal framework enables a protected digital environment. The Cybercrimes Act protects digital offences, enabling the Strategy to achieve its sustainability and trust goals for e-government services (Republic of South Africa, 2020; Department of Public Service and Administration, 2017). People and businesses will avoid using online government services because they worry about hacking, data manipulation, and fraud. The Act establishes legal protection for e-government systems by prohibiting unauthorised access, cyber fraud, identity theft, and interference with data.

The Act's data protection and privacy regulations support the Strategy's mission to build transparency and trust between citizens and government (Mabeka & Cassim, 2023). The e-government platforms handle multiple types of sensitive personal information, which includes identity documents, financial data, and health records. The Act protects public trust in e-services by establishing laws that prevent data breaches and promote secure data handling practices.

Protecting critical information infrastructure is fundamental to aligning the two initiatives. The e-Government Strategy relies on departmental systems that must function as integrated and interoperable networks. The Act protects essential systems from destructive attacks and unauthorised use, which maintains their operational stability and reliability. The Act's reporting requirements support accountability, a fundamental principle of the Strategy. The Act requires all institutions, including government bodies, to report cyber incidents, thereby enhancing transparency and enabling better risk management practices (Pemmasani, 2023).

The Act provides law enforcement capabilities which enable the Strategy to achieve its operational goals. The existence of secure e-government depends on having the ability to conduct investigations and prosecute cybercriminals. The Cybercrimes Act enables authorities to take swift action against digital threats which harm public service operations (Republic of South Africa, Cybercrimes Act 19 of 2020).

The Act supports capacity development and international cooperation, aligning with the Strategy's focus on digital literacy and global coordination. The borderless nature of cyber threats requires South Africa to join international cybersecurity initiatives which protect e-government systems from global threats while maintaining national compliance.

Table 6: Cybercrimes Act 19 (2020), Principles and SANESR (2017)

Cybercrimes Act (2020) Principle	e-Government Strategy (2017) Objective	Analytical Linkage
Criminalisation of cyber offences	Sustainability & trust in e-Government services	Criminalising cybercrimes protects digital platforms and helps build citizen confidence in online services.
Data protection & privacy	Transparency & accountability; citizen trust	Both safeguard personal data, promoting trust and encouraging the adoption of e-Government.
Protection of critical infrastructure	Efficiency, integration, and resilience of systems	Secure ICT infrastructure is crucial for delivering reliable e-government services.
Reporting obligations	Efficiency & accountability in governance	Mandatory incident reporting increases accountability and strengthens risk management in e-Government.
Law enforcement powers	Secure and sustainable access to online services	Vigorous enforcement ensures that e-Government systems are protected from cyber threats and abuse.
International cooperation	Innovation & alignment with global standards	e-Government must function within global ICT and security norms; cross-border cooperation helps combat global cyber threats.
Capacity building & awareness	Digital literacy & capacity development	Both frameworks emphasise skills and awareness to sustain secure e-government practices.

Source: Author's Own Compilation

The table above presents the relationship between the Cybercrimes Act (2020), Principles, and SANESR (2017). The Act provides legal protection for the services outlined in the Strategy by defending them against cyber threats, fraud, and abuse. The evaluation of e-government effectiveness in OR Tambo requires researchers to examine both the delivery of services and the protection of citizens' digital rights under national cybercrime laws. The evaluation of e-Government success in OR Tambo requires assessing both service delivery performance and digital rights protection in the electronic environment.

3.6 Alignment of the National Policy on Data and Cloud (2024) with the SANESR (2017)

The National Policy on Data and Cloud, which was introduced in 2024, is a strategic initiative by the South African government aimed at streamlining and enhancing the effective management, security, and governance of data in cloud computing environments. This policy framework aims to establish a standardised approach that aligns with existing legislation, particularly the Protection of Personal Information Act (PoPIA), ensuring strong data privacy and security measures across all sectors (Raaff et al., 2022). The rapidly evolving nature of cloud computing technology requires a comprehensive and adaptable policy that addresses governance and compliance challenges while integrating advanced technologies such as artificial intelligence (AI) (Babalola et al., 2024).

One of the core tenets of this policy is its alignment with local and international best practices that aim to strengthen the country's resilience against macroeconomic threats and improve the efficiency of data management in critical sectors (Raaff et al., 2022). Furthermore, challenges such as skill shortages and technological disparities must also be addressed, as these can hinder optimal implementation and utilisation of cloud services (Mkhatshwa & Mawela, 2023).

The National Data and Cloud Policy functions as a modern policy framework that supports the 2017 e-Government Strategy and Roadmap. The Data and Cloud Policy provides comprehensive guidelines for data and cloud governance, infrastructure deployment, security, and reliability management, supporting the objectives of the e-Government Strategy, including digital service delivery, interoperability, inclusion, innovation, and trust.

The Data and Cloud Policy enable interoperability through its open data framework and standardised systems, as well as its cloud-first architecture, which facilitates communication among systems, reduces duplication, and enhances information sharing. The Policy supports the e-Government Strategy's goal of serving all citizens by building broadband networks and creating dependable data centres with strong operational stability (Department of Communications and Digital Technologies, 2024). Raaff et al (2022) highlighted that the Data and Cloud Policy define precise rules for data protection, security, and data ownership, helping build trust in the use of e-Government services. Service adoption rates decrease when citizens refuse to use e-Government services because they lack confidence in data protection and service security measures. The Policy implements legal and regulatory frameworks that serve as the foundation for achieving the Strategy's objectives.

The new policy mandates that government departments acquire infrastructure while developing personnel to run and enhance cloud and data systems. The Data and Cloud Policy provide detailed guidelines for cloud and data competencies, aligning with the capacity-building priority (Raaff et al, 2022). The Policy advances the Strategy's innovation and socio-economic development targets by establishing clear regulations, fostering private cloud competition, and supporting small and medium enterprises (SMMEs). The state's e-government service delivery model enables the development of the digital economy and promotes private sector growth, generating new employment opportunities.

The policy assigns new responsibilities to organisations, requiring them to ensure dependable broadband networks and stable data centre operations (DCDT, 2024). The operational success of OR Tambo depends on the condition of its broadband infrastructure, as well as the dependability and accessibility of cloud and data services.

The policy promotes local data-cloud services through private sector development, yet creates obstacles for local businesses, community organisations, and service providers.

Table 7: Data & Cloud Policy (2024) Principle and Objective SANERS (2017) Strategy Objective

Data & Cloud Policy (2024) Principle / Objective	SANERS (2017) Strategy Objective	Analytical Linkage
Cloud-first approach; government migration to cloud services	Innovation & ICT adoption; efficiency; integration	The policy's cloud-first approach supports the strategy's goal of making government systems more agile, efficient, and interoperable.
Data privacy and security; data sovereignty	Citizen trust; transparency; sustainability	Secure data handling builds trust; local hosting or stringent controls support integrity and accountability.
Open data & interoperability	Interoperability across departments; transparency and accountability	Open data and standards enable systems to share information, promote transparency, and prevent silos.
Capacity building & skills development	Digital literacy and the capacity of citizens and public servants	Both need human capital to make e-Government work.

Source Authors' Own Compilation

The table above presents the analytical linkages between the national Policy on Data and Cloud (2024) and the SANESR (2017)

The policy establishes data protection and security standards, as well as data ownership rules, which serve as evaluation metrics to measure citizen trust in e-government services. The residents of this area feel assured about protecting their personal information. All local systems comply with POPIA requirements. Municipal institutions require systems to monitor data protection responsibilities.

3.7 Digital Government Policy Framework (DGPF) (2024) nexus with the SANERS (2017)

Baloyi et al (2025) highlighted that the National Policy on Data and Cloud, scheduled for formalisation in 2024, is a vital regulatory framework in South Africa that establishes clear guidelines for data management and cloud computing, thereby improving data governance and security. The policy demonstrates a commitment to data sovereignty while ensuring compliance with established legal frameworks, such as the PoPIA Act, as noted by Folorunso et al. (2024), thereby protecting citizens' rights in digital environments. As cloud technologies expand, it becomes essential to develop infrastructure that enables interoperability among government and private-sector entities, promoting collaboration in tackling emerging cybersecurity threats.

Furthermore, the policy aims to address existing skills gaps in cloud computing by encouraging educational initiatives that target both the private and public sectors to enhance digital literacy and data management expertise, which are increasingly vital in the modern economy (Khan & Ahmed, 2024). The National Policy on Data and Cloud aims to position South Africa as a competitive contributor to the global digital economy, while safeguarding citizens' data rights and fostering a secure technological environment.

The Draft Digital Government Policy Framework (2024) updates the 2017 e-Government Strategy by introducing new leadership, governance, and initiatives to integrate modern technology. The Draft Digital Government Policy Framework incorporates new elements of implementation, leadership, governance, and the

adoption of modern technology, supporting access, efficiency, transparency, capacity, and trust.

The Draft Digital Government Policy Framework is based on a new approach that emphasises institutional leadership and governance systems (Baloyi et al, 2025). The 2017 Strategy set performance targets; however, the Draft addresses previous implementation challenges by implementing structural governance, which defines specific roles and responsibilities, as well as monitoring systems. The government has recognised implementation problems and created plans to improve accountability and coordination mechanisms.

The Draft framework is based on data security and privacy protection systems to safeguard citizen information (Gwaka, 2025). The 2024 framework devotes more attention to data management and emerging technology guidelines than the 2017 Strategy, which concentrated on trust and system security. People in the OR Tambo District Municipality will only trust e-Government services when they experience concrete security measures, which makes the implementation of data protection essential. The Draft framework provides superior capabilities for skill development and innovation compared to its previous versions. The Draft surpasses the 2017 Strategy through its formal guidelines for new technologies and its development of partnerships among government entities, academic institutions, and private-sector organisations. The Draft maintains its service delivery focus from the Strategy but adds new initiatives to improve service reach through digital platforms and connectivity solutions (Department of Public Service and Administration, 2024).

The Draft contains beneficial elements but presents potential barriers that could affect its execution. Implementing modern ICT systems and digital platforms presents challenges because rural districts often face limited resources, including insufficient budget allocations, unskilled personnel, and inadequate hardware and infrastructure capabilities (Mwansa et al, 2025). Implementing robust security and privacy measures requires strong regulatory frameworks, effective enforcement systems, and robust oversight bodies, as data breaches can erode public trust in government institutions. Three fundamental elements determine the success of leadership structures: organisational capacity, political commitment, and accountability systems.

The table below relates to the Draft Digital Government Policy Framework (2024), Pillar and the Principles of the SANESR (2017)

Table 8: Draft Digital Government Policy Framework (2024), Pillar and Principle SANESR (2017) Objective

Draft Digital Government Policy Framework (2024) Pillar / Principle	SANESR (2017) Objective	Analytical Linkage
Enhancing citizen access to digital services	Enhance access to government services.	Direct alignment: Both prioritise citizen access to services. The Draft reinforces this.
Improving efficiency & effectiveness of operations	Efficiency, integration, interoperability	The Draft's focus on modernising business processes and systems aligns well with the Strategy's aim to reduce duplication and streamline government operations.
Security & privacy of citizen data	Trust, accountability, and sustainability	The Draft explicitly addresses data security/privacy, which underpins citizen trust – a key element in the Strategy for uptake of e-services.
Fostering innovation & digital skills	Innovation; capacity building & skills	The overlap is substantial: both recognise that technology alone is insufficient without skilled people and an innovative culture.
Modernising access to services & improving connectivity	Bridging the digital divide: access; inclusion.	Citizen access remains unequal without good connectivity and modern systems; the Draft seeks to tackle those infrastructural and access barriers.

Source: Authors' Own Compilation

Table 8 above presents the Draft Digital Government Policy Framework (2024), Pillar, and its relationship with the Principle SANESR (2017) Objective.

The OR Tambo District Municipality public servants require training programs to build their digital competencies. The district should establish partnerships among public institutions, academic institutions, and private sector companies to enhance capacity through targeted development programs. Digital service delivery requires more than basic digitalisation to create innovative solutions.

3.8 Combined analogy of legislative frameworks and the SANASR

The South African e-Government framework comprises multiple frameworks that establish a comprehensive set of laws and policies for digital government operations. The ICT White Paper (2016) and STI White Paper (2019) establish the framework for digital innovation and the operational environment. The ECTA (2002) confirms the legality of digital transactions, while the NCPF (2012) and Cybercrimes Act (2020) protect government platforms from security threats and ensure their trustworthiness. The Data and Cloud Policy (202 Policy Framework (2024) unify digital governance through modernisation while establishing a contemporary direction for digital governance. It establishes proper data management systems that support integrated e-Government service delivery, such as the Draft Digital Government Administration.

Table 9: Policy Legislation Core Focus and their Contribution to SANESR (2017)

Policy/Legislation	Core Focus	Contribution to e-Government Strategy (2017)	Relevance to Current Study
ICT White Paper (2016).	Universal access, open ICT ecosystem	Provides enabling digital infrastructure	Sets the foundation for service access in the OR Tambo District

STI White Paper (2019).	Innovation, research, and emerging technologies	Supports technological innovation in government	Encourages adoption of new solutions
ECTA (2002)	Legality of e-transactions	Legal recognition of digital platforms	Provides regulatory assurance for digital services
NCPF (2012)	Cybersecurity governance	Secures ICT systems and data	Ensures trusted municipal e-services
Cybercrimes Act (2020)	Criminalises cyber offences	Protects digital platforms from misuse	Safeguards citizens in online engagements
Data & Cloud Policy (2024)	Data sovereignty, interoperability	Enables integrated government data systems	Critical for the municipality's data governance
Draft Digital Gov. Framework (2024)	Digital-first, citizen-centric service delivery	Updates and strengthens e-Gov strategy	Provides a modern framework for digital transformation

Source: Authors' Own Compilation

The table above presents the policy/legislation, core focus, contribution to the SANESR (2017), and their relevance to the current study. The above framework supports the National e-Government Strategy and Roadmap (2017) by creating a secure, citizen-focused, innovative, and sustainable operational e-Government framework. The framework provides legal support and strategic guidance for assessing the OR Tambo District Municipality's progress in digital transformation in this study on e-Government effectiveness.

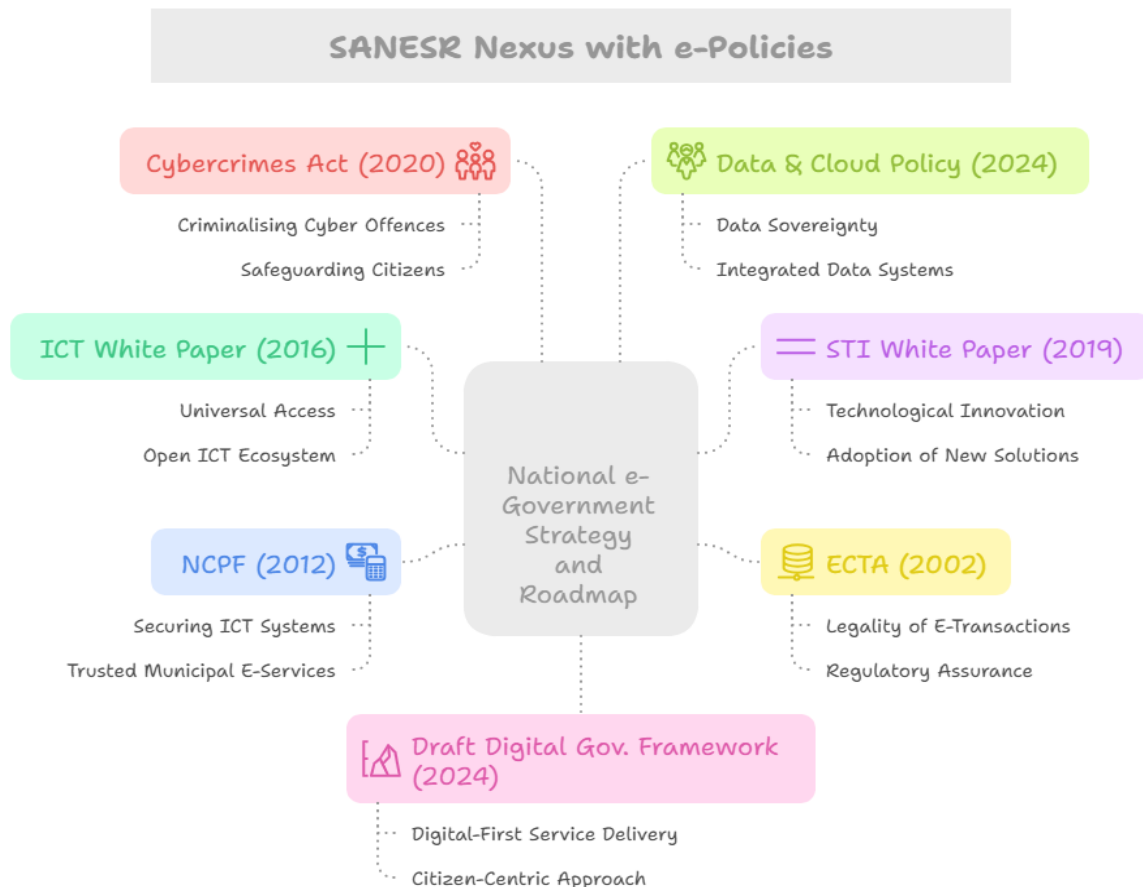
3.9.1 Policy and Legislative Frameworks Nexus with SANESR

The framework below illustrates the relationship between the SANESR and other legislative frameworks that support its objective.

The South African National e-Government Strategy and Roadmap (SANESR) achieve its goals through a comprehensive set of policies and legal frameworks that establish a unified e-Government system. The 2016 ICT White Paper establishes a solid technological foundation for the innovative development of information and communication technology systems, and the 2019 STI White Paper leverages science, technology, and innovation to drive economic growth and enhance public service delivery (Cele et al., 2024).

The Electronic Communications and Transactions Act (ECTA, 2002) provide legal support for digital transactions through essential rules that protect both the security and legality of online operations. The National Cybersecurity Policy Framework (NCPF, 2012) and Cybercrimes Act (2020) work together to improve digital system security through threat management and citizen data protection (Olofinbiyi, 2022).

Figure 4: SANESR and Its Linkages with Key ICT and Digital Governance Policies



Source: Author's Own Compilation

The Data and Cloud Policy of 2024 establish national data control as its primary objective while developing unified data management systems for all government departments (Malahleha & Ajam, 2024). The policy establishes data management practices that protect citizen privacy while maintaining proper data control.

The Draft Digital Government Policy Framework (2024) presents a digital-first service delivery model that represents a transformative approach to public service delivery. The digital-first approach prioritises citizens by making their needs and preferences the central focus of e-Government development (Medaglia et al, 2024). The various instruments within SANESR collaborate to establish a secure e-Government system

that provides innovative services to all South African citizens. The primary objective is to enable people through digital services that offer easy access, reliable performance, and trustworthy interactions with government institutions.

3.9.2 Policy and Legislative Frameworks nexus with SANESR

Cloud Network Diagram – SANESR and Supporting Policy & Legislative Frameworks

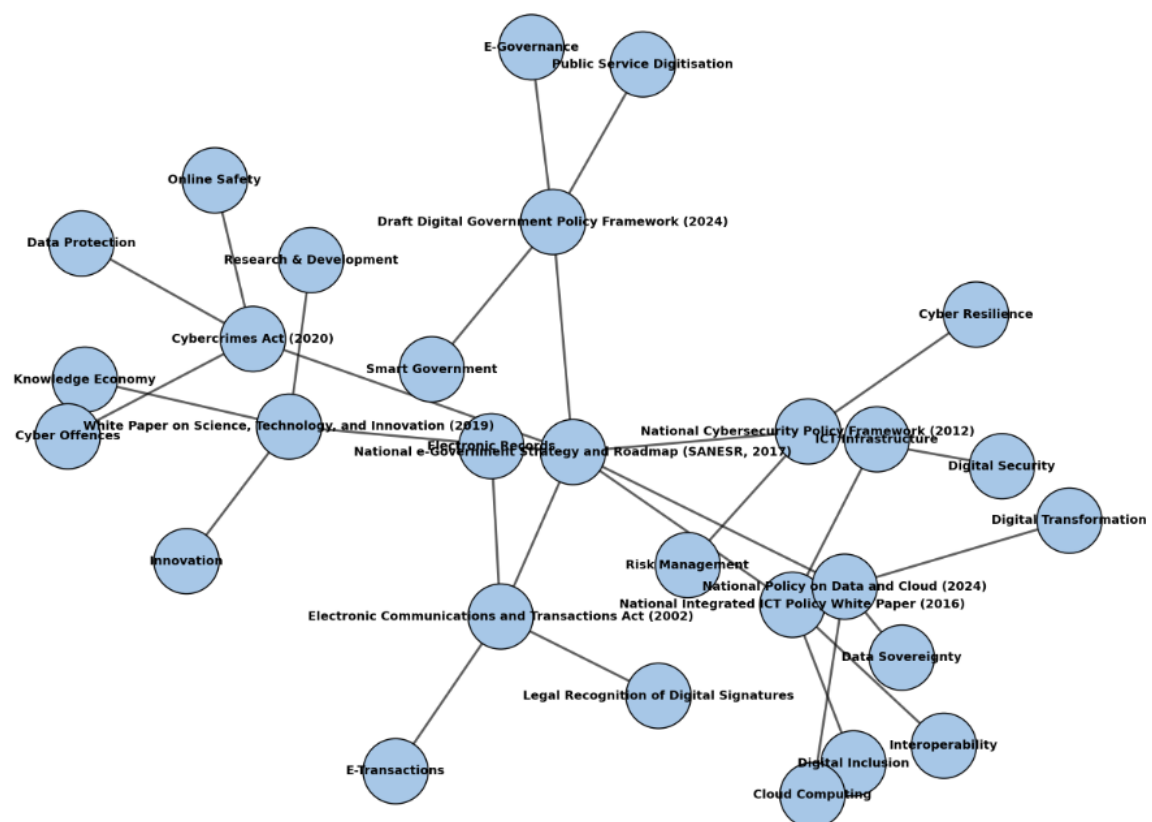


Figure 5: Policy and Legislative Frameworks nexus with SANESR

Source: Authors' Own

The Cloud Network Diagram – SANESR and Supporting Policy & Legislative Frameworks visually maps the interconnections between the National e-Government Strategy and Roadmap (SANESR, 2017) and other key South African digital governance policies. The SANESR system functions as the main connection point between major frameworks including the Electronic Communications and Transactions Act (2002) and National Cybersecurity Policy Framework (2012) and ICT White Paper (2016) and Cybercrimes Act (2020) and White Paper on Science,

Technology and Innovation (2019) and National Policy on Data and Cloud (2024) and Draft Digital Government Policy Framework (2024). The implementation of e-Government depends on the combination of these frameworks, which provide distinct policy directions for cybersecurity, innovation, digital inclusion, and the legal recognition of electronic transactions. The diagram thus depicts how SANESR integrates legal, technological, and institutional enablers to promote a coherent digital transformation agenda across public service domains.

In relation to the e-Government study, the diagram illustrates the multi-layered ecosystem necessary for successful digital governance within municipalities, such as the OR Tambo District. The Cybercrimes Act (2020) and National Cybersecurity Policy Framework (2012) protect digital service delivery through security and trust measures, while the ICT White Paper (2016) and Data and Cloud Policy (2024) focus on digital inclusion, data sovereignty, and infrastructure development. The operationalisation of SANESR requires synchronised policies that support innovation, risk management, and capacity building, in line with the interconnected nodes of E-Governance and Public Service Digitisation, Smart Government, Interoperability, and Digital Transformation. The network illustrates how various policy instruments converge to form an e-Government system in South Africa, delivering transparent and secure services to citizens effectively.

3.10 The implementation of SNESR through e-portals and evidence at the OR Tambo District Municipality

The current e-portals in the OR Tambo District Municipality and evidence of implementation are the focus of this section. The implementation of EasyPay in municipalities represents a significant advancement in enhancing e-Government services, facilitating efficient payment processes for municipal transactions, such as utility bills. This electronic payment platform enhances accessibility for residents, enabling them to complete transactions from their mobile devices or online, thereby eliminating the need to visit municipal offices in person. Similar digital payment systems, successfully implemented in countries such as Estonia and South Korea, have improved public service accessibility and increased citizen engagement by enhancing the use of digital platforms (Nkgapele & Mokgolobotho, 2024). Additionally,

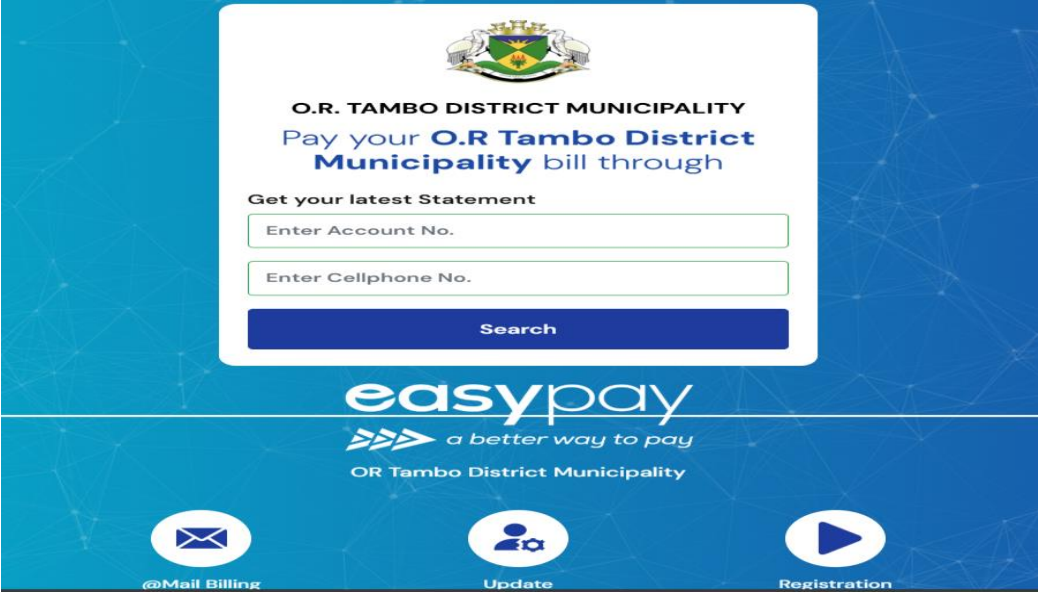
the usage of EasyPay can foster transparency in local government operations, as electronic transactions provide traceable records, reducing opportunities for corruption and enhancing accountability (Dovhan et al., 2022). Nonetheless, as municipalities adopt this technology, it is crucial to address challenges related to digital literacy and cybersecurity to ensure that all residents can effectively utilise these platforms and feel secure in their transactions (Nel-Sanders & Malomane, 2022). Overcoming these challenges while embracing digital payment solutions, such as EasyPay, can significantly enhance the overall quality and effectiveness of public service delivery, aligning with global trends in e-governance.

3.10.1 Online Billing

The municipal billing portal adheres to all essential requirements of the National e-Government Strategy and Roadmap (2017). Nciweni (2023) highlighted that the OR Tambo District Municipality's online bill payment interface serves as a practical example of the South African National e-Government Strategy and Roadmap (SANESR). The municipality allows residents to access their bills and make payments through EasyPay using their account details and cell phone numbers. The system design follows SANESR principles by providing accessible services that benefit all users.

The system design follows SANESR, which supports accessibility and inclusivity through its user interface, providing easy navigation and requiring minimal user input. The system includes features for "@Mail Billing", "Update", and "Registration", which demonstrate a municipal initiative to digitise services that enable users to manage their billing preferences and update their personal details. This initiative supports this goal by promoting the adoption of technology to improve service delivery and drive digital transformation in public administration (Nciweni, 2023). The figure below supports evidence of implementation.

Figure 6: Online payment



O.R. TAMBO DISTRICT MUNICIPALITY
Pay your **O.R Tambo District Municipality** bill through

Get your latest Statement

Enter Account No.

Enter Cellphone No.

Search

easypay
a better way to pay
OR Tambo District Municipality

Mail Billing Update Registration

Source: OR Tambo Municipality, 2025

The initiative receives backing from two national frameworks, including the Promotion of Access to Information Act (PAIA), through the platform. The Municipal Systems Act (2000), Public Service Regulations (2001), and SA Connect Broadband Policy promote accessible and connected government services. The digital billing and payment services of OR Tambo District Municipality enhance operational efficiency while building trust and accountability between the municipality and its citizens (Nciweni & Abrahams, 2023). The digital transformation initiatives support the National Development Plan (NDP) 2030 vision for a state that uses digital innovation to become capable and citizen-oriented.

3.10.2 Online Applications for Municipal Jobs

The introduction of online applications for municipal job vacancies marks a significant shift in how local governments engage with citizens and manage employment services. E-Government initiatives have gained momentum, allowing municipalities to

streamline their recruitment processes and improve transparency, efficiency, and accessibility.

The development of online job portals and employment service systems, such as "BogorKerja" in Bogor City, exemplifies this trend. This system provides job seekers with access to local vacancies and connects them with national platforms, such as the Ministry of Manpower's KarirHub, centralising employment resources. This integration helps municipalities enhance their job services by utilising technologies that enable the online issuance of job seeker cards and digital administrative procedures. Such advancements are vital for reducing unemployment while expanding employment opportunities in the region (Khan & Sartika, 2025; Khan, 2025).

Moreover, the application of information and communication technology (ICT) in local governance has led to the development of citizen-centric platforms that improve engagement in municipal processes. These initiatives empower job seekers and encourage participatory governance. Local governments leverage these digital systems to enhance collaboration with citizens, address local labour market needs, and ensure public sector services are responsive to community demands. For instance, online systems can be designed to prioritise ease of access and user-friendliness, which are essential for effective citizen engagement and service delivery (Sharma, 2025; Wahi, 2023).

Beyond simple job applications, the conceptual framework for innovative governance emphasises a broader trend in which municipalities adopt integrated systems that leverage technology to improve public service delivery. These systems are increasingly seen as tools to make local administrations more responsive and efficient. They incorporate diverse data sources, enabling local governments to make decisions better aligned with their communities' needs and preferences (Alsaad et al., 2024; Muñoz et al., 2025). By using thoughtfully designed e-government platforms, municipalities can boost civic engagement, giving citizens more opportunities to interact with local services and participate in decision-making.

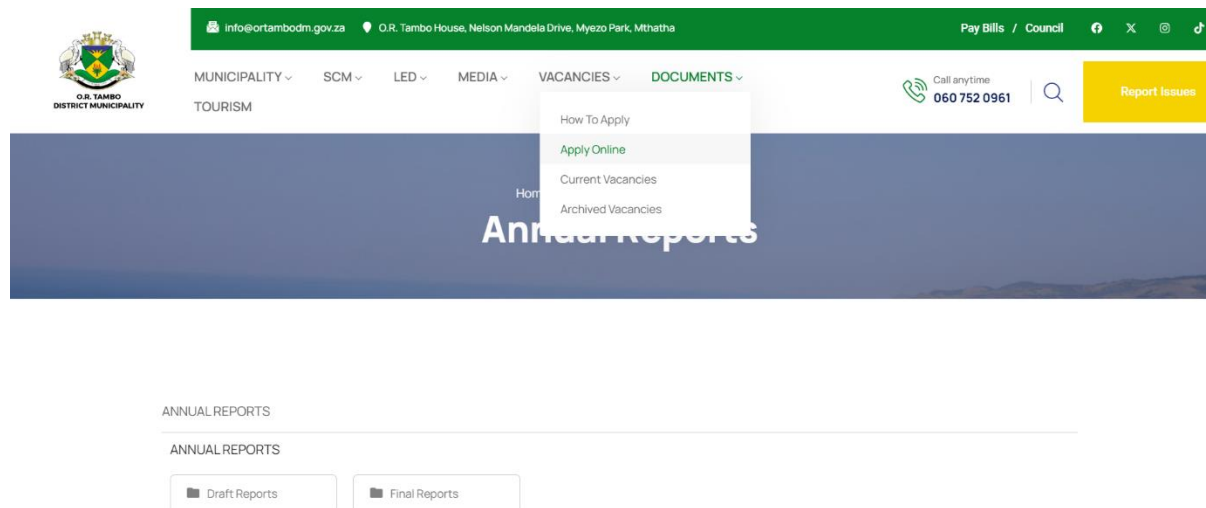
The OR Tambo District Municipality demonstrates its commitment through its digital service delivery (Nciweni & Abrahams, 2023). The website offers two primary digital

services: users can apply for vacancies and make bill payments online. The website features these elements that support SANESR's mission to utilise technology to improve government operations through enhanced accessibility, efficiency, and responsiveness. The municipality provides citizens with remote access to municipal services, streamlining their interactions with the government while reducing administrative burdens.

The municipality demonstrates transparency and accountability through its digital operations and current practices (Aseza, 2023). The municipality demonstrates open governance principles by making draft and final annual reports available online, enabling citizens to track municipal performance and financial management. The Promotion of Access to Information Act (PAIA) requires public institutions to provide the public with easy access to information. The website's structured navigation system and clear contact information demonstrate a user-friendly design that aligns with SANESR's mission for digital platforms that serve all users.

The local implementation of SANESR is supported by multiple national laws and policies that establish its framework. The Municipal Systems Act (2000) supports municipalities in using ICTs for improved service delivery, and the National Development Plan (NDP) 2030 envisions a digital transformation of the developmental state into a capable state. The Public Service Regulations (2001) and SA Connect Broadband Policy establish essential support for infrastructure development and digital governance systems. The combination of these frameworks establishes a supportive environment that enables OR Tambo and other municipalities to execute e-government strategies both efficiently and sustainably.

Figure 7: Online applications



Source: KSDLM 2025

In conclusion, the transition to online applications for municipal vacancies reflects a broader trend toward digital governance, in which technology catalyzes improved public engagement. This not only reshapes employment services but also fosters a participatory governance environment that aligns with modern expectations of transparency and accessibility. These advances are crucial for enhancing the operational efficiency of local governments and promoting employment opportunities within communities (Esposito et al., 2023).

3.10.3 Transparency and Accountability

The OR Tambo District Municipality utilises its Audit Committee webpage to support the South African National e-Government Strategy and Roadmap (SANESR) goals by focusing on transparency and accountability. The municipality demonstrates its commitment to good governance by making Audit Committee information readily available online, thereby promoting transparency in oversight. The digital platform

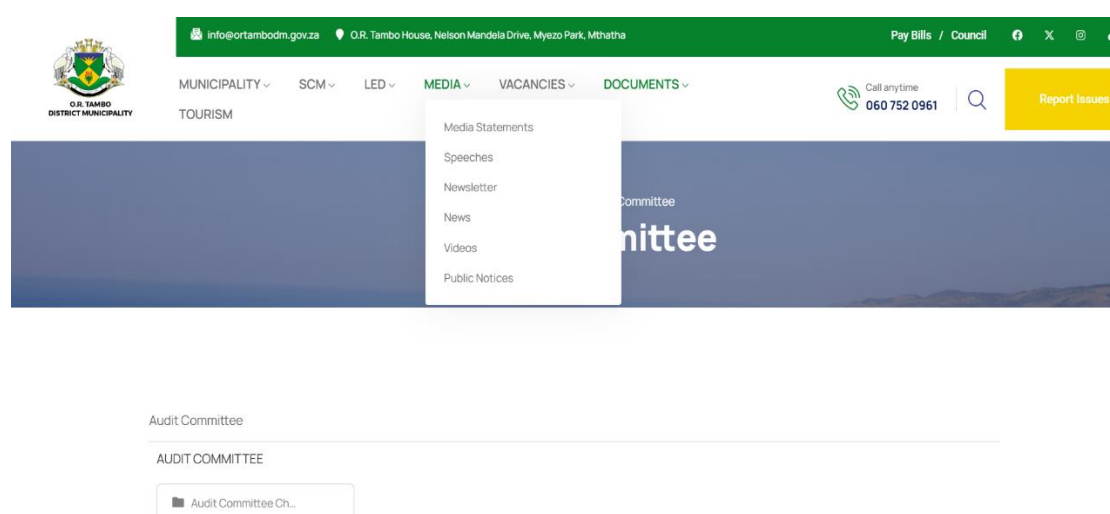
supports SANESR's mission to leverage ICT systems to build institutional integrity and public confidence in government operations.

The municipality has enhanced its communication efforts with citizens by developing a comprehensive media section that is well-structured and easily accessible. This section encompasses a variety of communication tools, including official statements and speeches delivered by municipal leaders, informative newsletters that provide updates on community events and initiatives, timely news articles that keep residents informed about local issues, engaging videos that visualise key topics, and important public notices that ensure citizens are aware of relevant information (Khumalo, 2022). The Promotion of Access to Information Act (PAIA) requires public institutions to provide citizens with accessible information promptly. The platform's easy-to-use design and well-organised content structure align with SANESR's mission to create digital platforms that enable citizens to participate in local governance actively.

The table below provides evidence of transparency and accountability regarding vacancies in the municipality.

3.10.4 Municipal Vacancies

Figure 8: Vacancies



Source: KSDL M 2025

The Municipal Systems Act of 2000 supports this initiative by promoting the use of ICTs to improve service delivery and governance among municipalities. The Public Service Regulations (2001) and the National Development Plan (NDP) 2030 support digital transformation efforts and initiatives aimed at institutional accountability. The OR Tambo District Municipality advances its mission for an open and efficient local government system through its efforts to digitise the Audit Committee and increase media transparency.

3.10.5 Applications for Tenders

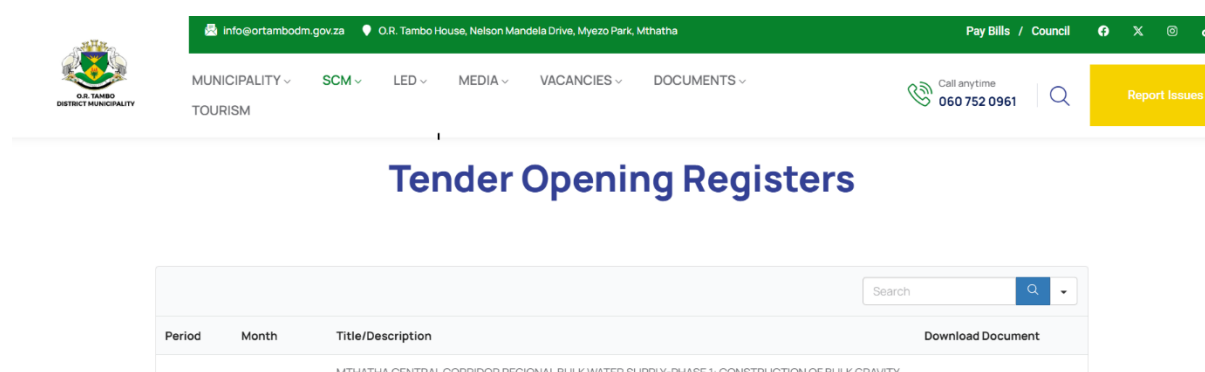
The adoption of online applications for tender openings and registrations in municipal governance is transforming the landscape of public procurement and administrative processes. Electronic governance (e-Governance) enhances transparency and streamlines procedures, thereby improving public trust and the efficiency of service delivery (Sharmin et al, 2025). For instance, e-governance tools such as electronic registers and mobile applications facilitate access to information on municipal tenders, enabling interested parties to register and participate without being constrained by geographic barriers or bureaucratic delays.

In Ukraine, initiatives to integrate electronic services have enabled citizens to complete administrative procedures, such as business registration and document processing, with greater convenience and reliability (Pyrozhkova et al., 2025). Similarly, Mongolia's experience highlights the potential of e-governance to improve the accessibility and efficiency of public services, including tender applications, despite challenges posed by its legal frameworks and the digital divide (Dagva-Ochir & Dashdavaa, 2023).

As these initiatives evolve, continuous efforts to enhance technological infrastructure and citizen engagement will be crucial to the successful implementation of e-governance across municipalities, ensuring transparent and cost-effective public procurement (Khan & Sartika, 2025).

The OR Tambo District Municipality maintains an online Tender Opening Register webpage, demonstrating its commitment to digital governance and transparency in accordance with the South African National e-Government Strategy and Roadmap (SANESR). The municipality ensures open access to procurement processes by publishing tender information online, including project titles, periods, and downloadable documents. The digital system helps build public trust and accountability, which SANESR identifies as essential for creating a transparent and responsive government.

Figure 9: Tender Opening Register



Source: KSDML Municipality 2025

The webpage adheres to established user-centred design principles through its well-structured organisation and straightforward navigation system. It allows stakeholders to monitor municipal projects effectively by categorising tenders by month and time period, and by providing downloadable resources. The Promotion of Access to Information Act (PAIA) requires government entities to provide public access to information through timely, accessible channels (De Waal, 2022). The webpage includes contact information and service links for bill payments and issue reporting, supporting SANESR's goal of digital public administration that delivers services to citizens.

3.10.6 Community Engagement with the Municipality

The Municipal Systems Act 32 of 2000 supports this initiative by encouraging municipalities to use ICT to improve governance and service delivery. The Public Service Regulations (2001) and the National Development Plan (NDP) 2030 promote digital transformation for public institutions. The OR Tambo District Municipality advances national e-Government objectives by implementing its digital tender process and publicly disclosing procurement information, resulting in an efficient, transparent, and inclusive local government system.

Public notices play a crucial role in ensuring transparency and fostering community engagement within municipalities. The methods employed to communicate these notices include media announcements, online platforms, and traditional methods such as public meetings and notices in communal spaces. Municipalities have a constitutional mandate to provide adequate feedback regarding their activities and decisions, enabling citizens to remain informed and actively participate in local governance. This is particularly relevant as communities seek to hold their local governments accountable for actions related to public services and resource management (Mamokhere & Meyer, 2022). Furthermore, the shift towards digital platforms for disseminating public notices offers opportunities for broader access and engagement, especially for marginalised groups that may face barriers to traditional communication methods (Nkgapele, 2024).

The OR Tambo District Municipality utilises its “Public Notices” webpage to demonstrate its commitment to digital communication and civic engagement, in line with the South African National e-Government Strategy and Roadmap (SANESR). The municipality utilises its online platform to promptly disseminate important announcements regarding infrastructure issues, service disruptions, and community responsibilities. The digital information system helps SANESR achieve its objective of utilising ICT to enhance public involvement, awareness, and governance responsiveness.

The page design features organised, dated notices with strong messaging that create a user-centred interface, delivering essential information in an easy-to-understand format. The municipality uses the vandalism warning to educate residents about their responsibilities while demonstrating its commitment to fostering community involvement. The Promotion of Access to Information Act (PAIA) requires public institutions to provide accessible information that is meaningful to their citizens. The service links on the website, including bill payment options and issue reporting functions, help achieve SANESR's goal of creating a digital government that delivers services to citizens.

Integrating sustainability criteria into public notices related to municipal procurement processes demonstrates a commitment to broader socio-economic objectives. For instance, municipalities can enhance their bidding notices to include sustainability goals, thus guiding suppliers toward achieving sustainable practices in their service delivery (Almeida et al., 2024). Additionally, the advent of information and communication technologies (ICT) has enabled the creation of automated, efficient systems for airing public notices, such as e-government web portals that support real-time updates and increased outreach to the community (Nkgapele, 2024). As municipalities increasingly recognise the significance of utilising innovative communication strategies, they are likely to improve not only civic engagement but also the overall effectiveness of their governance frameworks, paving the way for more comprehensive public participation in local decision-making processes (Nkgapele & Mokgolobotho, 2024).

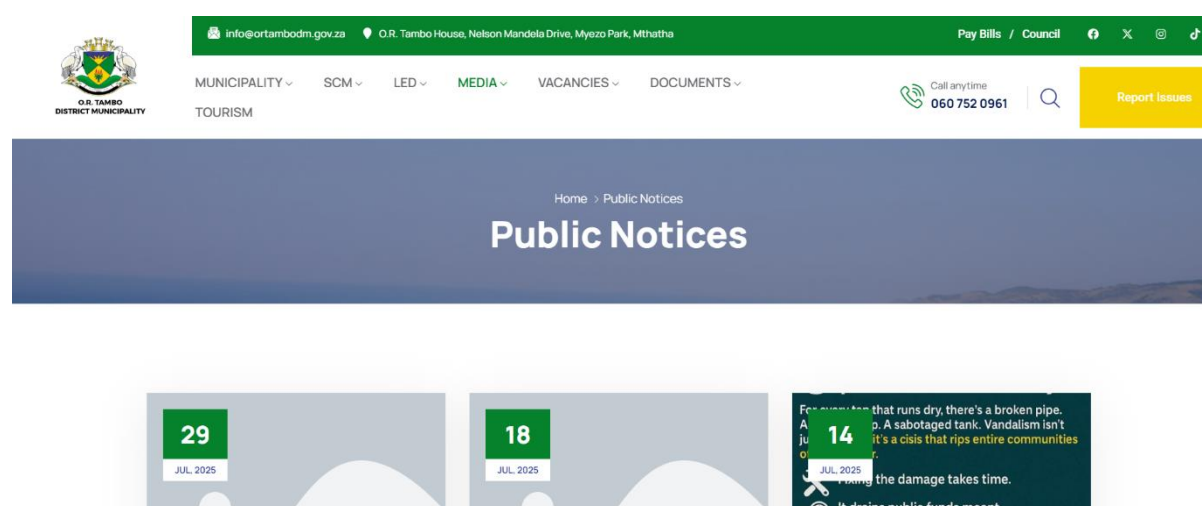
3.10.7 Online Engagement with the Public

The initiative operates within the framework of the Municipal Systems Act of 2000, a comprehensive piece of legislation that promotes innovative approaches to public service delivery through the use of information and communication technologies (ICTs). This Act encourages public institutions to leverage ICTs to enhance governance and to provide more efficient services to citizens. Complementing this legislative framework, the Public Service Regulations of 2001 and the National

Development Plan (NDP) 2030 emphasise the importance of embracing digital transformation and fostering citizen empowerment (Montesh, 2014).

As part of these efforts, the OR Tambo District Municipality has established a robust website-based platform for distributing public notices and engaging with residents (OR Tambo District Municipality. (2025). This platform aims to promote transparency and participation in local government processes, ensuring that community members are informed and actively involved in decision-making. The municipality strives to create a more inclusive and responsive local governance system, ultimately enhancing the quality of life for its residents.

Figure 10: Public Notices



Source: KSD Municipality 2025

The official OR Tambo District Municipality website, particularly the Public Notices section shown above, serves as clear evidence of the practical implementation of e-government initiatives within the municipality. The platform shows how the municipality uses digital tools to share real-time updates and official announcements, enabling citizens to participate from home rather than visiting municipal buildings. The system includes online public notices and service reporting functions, as well as accessible municipal information, demonstrating how ICTs enhance transparency, service accessibility, and administrative efficiency. The online presence shows that the municipality has advanced from adopting a digital governance policy, as it now provides digital services that boost service delivery and strengthen citizen-government interactions.

3.10.8 Online Account

Online account management systems in municipal services have become increasingly vital for facilitating public access to information and services. These systems allow users to register, log in, and manage their accounts efficiently, providing a secure platform for viewing and interacting with municipal resources. For instance, systems such as the Electricity Bill Management System demonstrate how user registration and login functionalities meet citizens' needs by enabling them to access their electricity bill data, track consumption patterns, and conveniently manage payments. Implementing features such as bill generation enhances user engagement and enables essential administrative tasks to be performed online (Hassan et al, 2024).

Moreover, robust user management systems integrate security measures such as multi-factor authentication and one-time password (OTP) functionalities to safeguard sensitive user data from unauthorised access. These security enhancements are critical, particularly in an era of prevalent cyber threats and paramount data privacy concerns. Research indicates that a secure online environment, characterised by features such as an OTP mechanism and user-controlled security controls, can significantly mitigate the risks of phishing and unauthorised account access (Nugraha et al., 2021). By employing diverse authentication protocols and techniques, municipalities can create streamlined, secure online experiences for users while maintaining transparency and accessibility in their service delivery (Sahrin et al., 2024).

The form structure follows a user-friendly design, with clear identification labels for essential details, including the account number, contact information, and residential address. The form includes checkboxes for SMS and email notification, demonstrating the municipality's commitment to improving communication with residents. The Promotion of Access to Information Act (PAIA) supports this approach to direct and prompt communication from public institutions through this digital interface. The digital interface supports the Municipal Systems Act (2000) by enabling municipalities to utilise technology to enhance their governance capabilities and improve service delivery performance.

The initiative receives backing from two national frameworks: the Public Service Regulations (2001) and the National Development Plan (NDP) 2030, which promote a public sector that is both digitally empowered and capable. The OR Tambo District Municipality's online account management system enables residents to manage their account information, thereby improving local government service delivery and transparency. The initiative supports SANESR's goals by implementing digital tools in municipal operations.

The figure below illustrates Online Account usage in the municipality.

Figure 11: Online Account Details

Source: OR Tambo District Municipality 2025

The municipality is committed to delivering digital services by implementing online bill payment systems and issuing reporting tools. The OR Tambo District Municipality utilises its “Update Account Details” webpage to implement digital transformation in accordance with the South African National e-Government Strategy and Roadmap (SANESR, 2017). The municipality offers improved service through its online system, enabling residents to update their personal details and account information. Mollah (2025) highlighted that the digital form enables contactless operations while

maintaining precise data entry. This supports SANESR's mission to implement ICT solutions to improve government service delivery.

3.10.11 Utilisation of TikTok Account

The use of TikTok accounts by municipalities is an innovative approach to enhancing civic engagement and public communication. As TikTok continues to rise in popularity, especially among younger demographics, municipalities have begun to recognise its potential as a dynamic platform for disseminating important information. By leveraging TikTok's unique short, engaging video format, local governments can share essential updates, promote community events, and foster a sense of local identity among citizens (Cervi, 2023). This platform enables municipalities to reach a broader audience, particularly the youth, who are significant consumers of social media content. Many young users turn to TikTok not just for entertainment but also for news and civic issues, enabling municipalities to engage with this demographic in a more relatable way (Tang et al., 2022).

Moreover, TikTok's interactive features, such as comments and duets, provide municipalities with opportunities to establish a two-way communication channel with residents. This interaction can cultivate trust and enhance transparency as communities engage with their local governments on pressing social issues (Yang et al., 2023). Municipalities using TikTok to communicate about safety campaigns, public health initiatives, or community programs may find that this approach increases the visibility of their messages and encourages participatory dialogue (Shaba et al., 2024). In this way, TikTok serves as a medium for information dissemination and as a platform that encourages community feedback and fosters collaboration between local authorities and their constituents (Cervi, 2023). Overall, municipalities that strategically harness TikTok's appeal can enhance outreach efforts, promote civic engagement, and create a more informed and connected community.

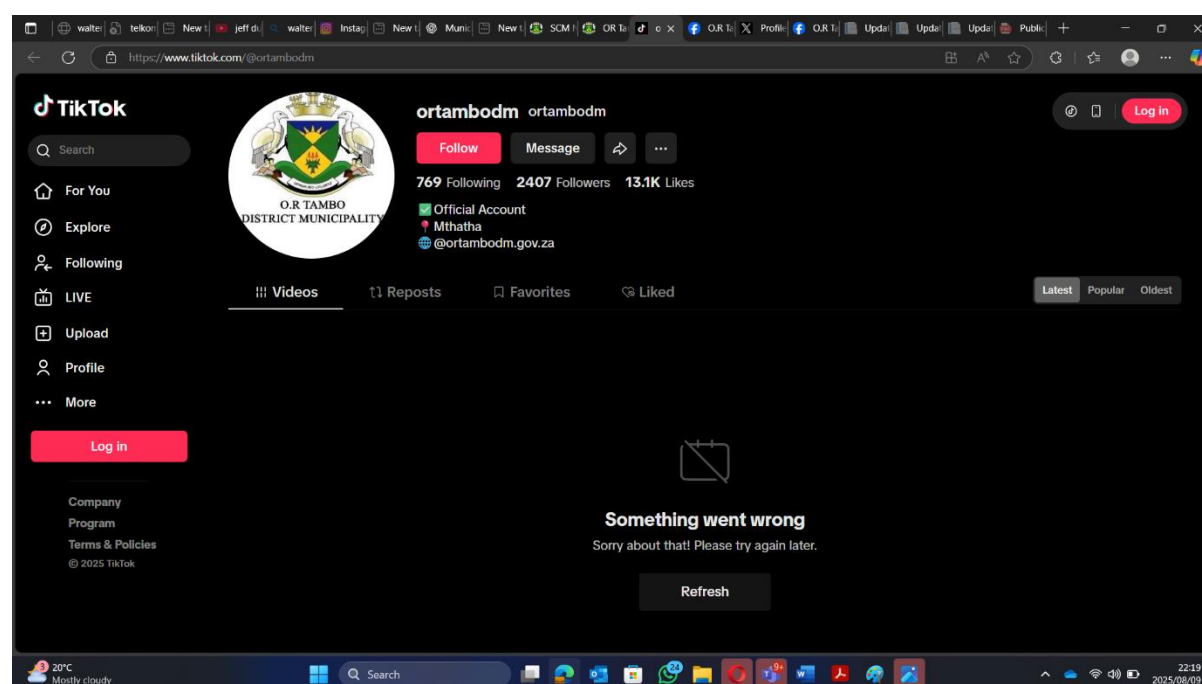
The official TikTok account of the OR Tambo District Municipality showcases a progressive approach to implementing the South African National e-Government Strategy and Roadmap (SANESR) in the image. Through TikTok, the municipality

reaches its citizens and develops a digital presence, utilising the platform to adopt modern communication methods. The municipality implements SANESR through digital platforms that target young people and digital natives to fulfil public participation and accessibility requirements.

The account is verified, as evidenced by its verification status, the display of location details (Mthatha), and an official email address. The municipality continuously engages with its audience, boasting 2,400 followers and 13,100 likes on the platform. Public institutions can distribute information through accessible formats under the Promotion of Access to Information Act (PAIA). Municipalities can utilise TikTok to share updates and educational content, as well as run interactive campaigns.

The figure below shows TikTok usage by the municipality.

Figure 12: OR Tambo District Municipality TikTok Account



Source: OR Tambo District Municipality 2025

The platform remains operational despite displaying a technical issue that shows the error message “Something went wrong.” The digital environment faces recurring technical issues, but SANESR enables organisations to maintain continuous communication through digital resilience capabilities. The municipality utilises TikTok

as a communication platform to complement its traditional methods, creating a multi-channel system that enhances the effectiveness of service delivery. The Municipal Systems Act (2000) enables municipalities to use modern technologies to deliver better services.

The Public Service Regulations (2001) and the National Development Plan (NDP) 2030 endorse municipal communication strategies that integrate social media to create a digitally empowered public sector. The frameworks enable transparent operations, citizen engagement, and efficient information exchange, which TikTok and comparable platforms make possible. Through digital tools, the OR Tambo District Municipality is building an inclusive governance system that promotes public engagement while transforming its communication practices.

The OR Tambo District Municipality achieves effective SANESR implementation through its TikTok platform. Through this initiative, the organisation proves its commitment to digital transformation, public engagement, and transparency. The municipality demonstrates its capacity to meet evolving constituent needs through its well-designed social media strategy, which continues to operate despite technical issues. The initiative establishes a digital local government system that meets national e-Government targets by promoting digital inclusion.

3.10.12 Supply Chain Management

The integration of online supply chain management (SCM) systems and budget management in municipalities represents a critical area of focus for enhancing operational efficiency and transparency. Online SCM systems enable municipalities to manage their procurement, inventory, and distribution processes effectively. The real-time data exchange capabilities enabled by the Internet of Things (IoT) and blockchain technologies can broaden supply chain visibility and enhance its resilience by offering transparency and promoting the efficient allocation of resources (Nazir & Fan, 2024). Furthermore, the use of big data analytics in SCM optimises operations through predictive analytics, facilitating improved decision-making in areas such as budget

allocation and resource management (Zeng & Jing, 2023). As municipalities adopt these digital technologies, they can swiftly adapt to changing circumstances, thereby improving the quality of services delivered to citizens while managing public funds effectively.

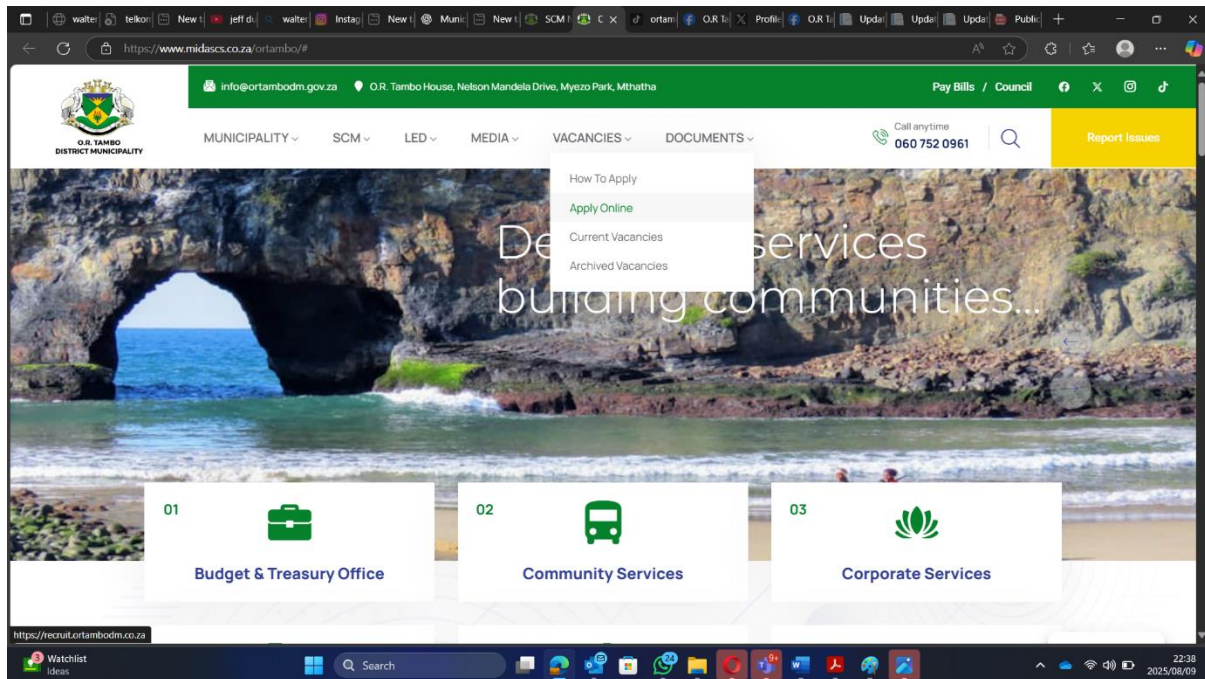
In addition to technological advancements, online budget management tools empower municipalities to maintain fiscal responsibility and accountability. These tools enhance budget tracking, allowing local governments to analyse expenditures against budgetary allocations in real time. This financial oversight is crucial to ensuring that resources are allocated and spent effectively. The convergence of online SCM and budget management through digital platforms supports municipalities in minimising wasteful expenditures and optimising service delivery. Digital transformation of supply chain processes increases responsiveness and agility in government operations, promoting the sustainable use of public resources (Tavana et al., 2022). By implementing such integrated systems, municipalities can create informed budgeting practices that align with the overarching goals of fiscal sustainability and improved public service quality (Kamalov et al., 2023).

The OR Tambo District Municipality's website homepage serves as an electronic entry point, showcasing the municipality's commitment to service delivery and community engagement. The municipality showcases its developmental mission through its slogan, "Delivering services building communities..." while utilising a coastal view to foster a sense of community pride. The website aligns with the South African National e-Government Strategy and Roadmap (SANESR), utilising digital platforms to promote transparency and accessible, citizen-focused governance.

The website header features organised contact details and a comprehensive navigation system, allowing users to access various services easily. It offers extensive online services organised into categories, including Municipality, SCM (Supply Chain Management), LED (Local Economic Development), Media, Vacancies, and Documents. The Vacancies section includes an "Apply Online" option, indicating that the municipality utilises digital recruitment systems. The municipality supports SANESR's goals by utilising ICT to streamline administrative operations and enhance citizens' access to government services.

The figure below demonstrates the implementation of online procurement and SCM in the Municipality.

Figure 13: Online SCM and Budget



Sources: OR Tambo Municipality Website 2025

The implemented features enable users to avoid physical office visits while improving operational speed and user experience. The Municipal Systems Act 32 (2000) and the Promotion of Access to Information Act (PAIA) support these initiatives by requiring municipalities to utilise technology to improve governance and public information disclosure.

The website presents three main service categories: financial management through the Budget & Treasury Office, social development through Community Services, and administrative support through Corporate Services. The online accessibility of these categories follows the Public Service Regulations (2001) and the National Development Plan (NDP) 2030, which promote a digital public sector that delivers transparent services. The categories align with the municipality's strategic goals, allowing users to access essential departmental information directly.

The OR Tambo District Municipality homepage demonstrates the successful implementation of SANESR principles through its design. The platform provides users with an easy-to-use interface through its combination of visual branding, an organised menu system, and digital service capabilities. Through technological implementation, the municipality achieves enhanced communication, improved service delivery, and increased public participation, ultimately resulting in a more effective local government system. The digital platform enables citizens to interact with their municipality efficiently while supporting national policy goals.

3.11 Summary of the Chapter

This chapter established the fundamental elements that support the South African National e-Government Strategy and Roadmap (SANESR) through its conceptual, theoretical, and contextual frameworks. The research analysed all available literature, policy documents, and legislative frameworks to determine how e-Government programmes aim to improve public sector service delivery, operational efficiency, transparency, and citizen engagement. The chapter combined its findings to create a unified system that explains the SANESR goals, conditions, and operational context, thereby identifying researchable problems.

The following chapter describes the research methodology, which conducts empirical analysis to evaluate the effectiveness of the SANESR. The research design, together with the data collection methods and analytical procedures of this study, is fully explained to fulfil its research objectives.

Chapter 4

Research Paradigm, Philosophy, Methodology, and Design

4.1 Introduction

The previous chapter reviewed the existing scholarly literature on the SANESR. This chapter focuses on the research paradigm and methodology employed in this study. This section describes the research design, case selection methods, data collection approaches, and the analytical techniques employed. The chapter contains four distinct sections. The first part of the section explains the research paradigm; the second part addresses the research philosophy; and the final part focuses on the study's research methodology, including the data analysis procedures.

4.2 Research Paradigm, Philosophy, Methodology, and Design

Research methodology refers to the techniques, processes, and procedures adopted to identify and analyse information (Creswell & Poth, 2016; Arbale & Mutisya, 2024). It is a process through which researchers design a study to achieve set objectives using selected research instruments.

This study employed qualitative methods to understand participants' perceptions and experiences with e-Government services, providing rich, detailed insights into the complex realities of service delivery within the selected municipalities, along with a survey for triangulation.

Interviews and surveys were appropriate for studying current events in real-world settings, especially when the research aims to collect data from a large, diverse population (Roulston, 2023). These approaches enable an in-depth exploration and triangulation of the processes affecting SANESR's success and failure within the context of the OR Tambo Municipality. This design enabled in-depth within-case and

between-cases analysis from the service providers' perspectives. The interviews and surveys contained semi-structured questions.

4.3 The Research Paradigm

Paradigms guide research studies. A research paradigm is a complete belief system, worldview, or framework that governs study and practice in a discipline (Creswell, 2017). A paradigm is a philosophical viewpoint that guides researchers' work. Common research paradigms include positivism, interpretivism, realism, and pragmatism (Tamminen & Poucher, 2020).

4.3.1 The Positivist Research Paradigm

Positivism, grounded in the belief that knowledge can only stem from empirical, observable phenomena, fundamentally advocates a structured research approach (Su, 2018). This paradigm emphasises objectivity, statistical analysis, and the establishment of causal relationships, typically using quantitative methodologies. According to Cooper and Schindler, positivist research design reflects a coherent strategy aimed at integrating various constructs to address research problems effectively, often leading to generalisable findings through rigorous hypothesis testing (Butt & Katuse, 2023). While the advantages of this paradigm in yielding quantifiable insights are apparent, its deterministic nature often disregards the complexities and subjective elements of social phenomena, which are crucial for understanding citizen engagement in e-Government initiatives (Nix et al., 2024). Such rigidity can be limiting when examining nuanced aspects of citizen engagement and governmental responsiveness in e-Government initiatives.

4.3.2 Interpretivism Paradigm

Interpretivism focuses on understanding people's subjective meanings and experiences in their social contexts (Junjie & Yingxin, 2022). This paradigm is relevant

for assessing how OR Tambo officials respond to the South African National e-Government strategy.

Tanlaka and Aryal, (2025) argue that interpretivism recognises that researchers can influence interpretation, and therefore, stresses reflexivity alongside the co-construction of meaning with participants. Hence, the interpretivist paradigm was adopted to generate rich, context-specific rather than universal truths and to provide in-depth insight into the effectiveness of e-Government in a municipal context. Interpretivism diverges from the positivist paradigm by focusing on the subjective meanings individuals construct from their experiences (Creswell & Poth, 2016). This approach is crucial for understanding the complexities of user interactions with e-government services, where citizens differ in their comprehension and expectations of digital engagement.

4.3.4 Pragmatic Paradigm

As posited by Mertens (2023), the pragmatic research paradigm is also associated with mixed-methods or multiple-methods research. Hence, in the pragmatic approach, the researcher employs both quantitative and qualitative research methods to gather and explore in-depth information about e-Government for citizens in the local government. Research can use various methods, supporting the pragmatic perspective that both singular and multiple realities can be explored through empirical investigation (Creswell & Plano, 2021). The pragmatist philosophy is based on the knowledge and reality of socially constructed beliefs and habits; therefore, all knowledge is regarded as social (Holma & Huhtala, 2025). Thus, in this study, the social knowledge of e-Government actors and citizens' perspectives on e-services, which could contribute to new knowledge, were obtained by engaging e-Government actors through a survey and by developing a model to assist e-Government actors in implementing e-Government within a socially constructed paradigm.

The research design of this study employs pragmatism to combine qualitative and quantitative methods for studying how the National e-Government Strategy operates and affects the OR Tambo Municipality. The study recognises that objective structures and subjective experiences provide essential insights into the effectiveness of policy frameworks in public administration environments. This interpretivism is particularly suitable for studying e-Government when user experience is the target (Mundzir, 2025). Kamau posits that embracing pragmatism facilitates a more thorough exploration of the intersection of information and communication technology and socioeconomic development, highlighting the necessity of contextual adaptability in e-government research (Mundzir, 2025). Furthermore, the interpretivism approach emphasises the importance of practical implications, calling for research that directly informs policy and practice in the evolving terrain of digital governance (Harun, 2026).

Pragmatism can encourage continuous dialogue among e-Government stakeholders, reinforcing the idea that governance is not merely a top-down imposition but a collaborative process involving various actors (Mariani, et al 2025). This characteristic proves invaluable for developing policies that effectively address the realities of diverse citizen populations, fostering a sense of ownership and accountability within government processes. Emphasising user participation through citizen-centric models fortifies the e-Government discourse, enhancing trust and acceptance among citizens (Mustofa et al., 2023).

The pragmatism paradigm used in this study emphasises the research issue rather than adhering to specific methods. The research incorporates qualitative interviews, document reviews, and quantitative descriptive statistics to examine the effectiveness of e-government in the OR Tambo Municipality, capturing both subjective aspects and objective metrics. The approach recognises that governance effectiveness results from institutional frameworks alongside social interpretations and practical experiences of both users and implementers (Djarmiko et al, 2025).

The next section dealt with ontology in the context of e-Government research, examining the assumptions about the nature of social reality, institutions, and stakeholder experiences that underpin the interpretivist inquiry into the implementation and efficacy of SANESR.

4.4. Ontology in the Context of e-Government Research

The research ontology relies on the effectiveness of the South African e-Government strategy, as outlined in the country's national roadmap, to understand reality. This concept of reality is found across multiple theoretical frameworks that analyse it from different perspectives. The study also considered critical realism as an important philosophical framework to analyse e-Government, as reality exists in many complex forms.

1. Reality exists independently of human understanding and social circumstances according to an objective world understanding. Traditional ontologies align with this perspective by confirming a measurable reality as physical evidence (Zhao & Bailey, 2025). The assessment of government strategies and digital services using quantifiable performance indicators, such as service efficiency and user accessibility, is applicable to e-Government, though specific metrics vary across studies.
2. A critical realist acknowledges that objective realities exist, yet people interpret them through their social experiences in their contexts (Stavrianos, 2025). According to this perspective, the national e-Government strategy demonstrates varying success among population groups and geographic areas. The framework enables researchers to investigate how social factors, including public trust in government and perceptions of e-Government initiatives, influence these strategic outcomes.
3. The research study validates that reality develops from social interactions and depends on context, demonstrating the constant relationship between policy execution and citizen involvement. The approach enables researchers to study e-Government service experiences through qualitative data collection and personal narratives, revealing citizen experiences with these services. The interactions between people and e-Government services differ significantly by socioeconomic status, educational background, and digital literacy (Ramadhani et al., 2023).

4. The ontology allows researchers to understand reality through different perspectives that recognise both systematic and experiential realities as valid (Stavrianos, 2025). The research employs a mixed-methods analysis, combining service performance data with citizen feedback to assess the effectiveness of e-Government systems. The combined research approach enables researchers to understand the full scope of national e-Government strategy performance by evaluating quantitative metrics and qualitative citizen feedback (Mego et al., 2023).
5. The research ontology demonstrates its value for studying governance structures and the effectiveness of public service delivery in digital times. The SANESR is evaluated through technical implementation assessments and its effects on citizen accessibility, equity, and empowerment. Research following this approach aligns with digital governance principles, which require consideration of diverse population realities (Otutu et al., 2023).

4.5 Epistemology in the Study of e-Government Efficacy

The epistemology explains the elements that comprise valid knowledge and the methods for obtaining it (Creswell & Creswell, 2018; Simion, 2025). Epistemological considerations influence public administration research through data collection methods and the interpretation of reality, as these studies examine the South African National e-government Strategy and other policy frameworks. This study uses an interpretivist and pragmatic epistemological framework to understand how knowledge emerges through subjective social processes among diverse stakeholders in specific contexts.

From an interpretivist and epistemological perspective, knowledge emerges through the interpretations and experiences of individuals who interact with the phenomenon under investigation (Acharya, 2025; Watson, 2025). The approach helps researchers

understand how municipal officials, ICT personnel, and citizens understand and interact with e-Government systems in the OR Tambo Municipality.

The epistemology of this study defines the nature of knowledge about the efficacy of e-Government strategy and roadmap in South Africa by describing how e-Government knowledge emerges and gets validated within this field. This research integrates diverse knowledge dimensions to establish a comprehensive understanding of e-government operations and their social outcomes.

1. The research establishes that knowledge originates from tangible and quantifiable facts because it studies the fundamental laws that define e-Government operational characteristics. The practical implementation of e-Government requires collecting empirical data demonstrating service efficiency and accessibility, as well as user engagement, according to Dovhan et al. (2022). A positivist epistemological approach aligns with this investigation, as it evaluates the effectiveness of the e-Government strategy through quantitative metrics and statistical data.
2. The research study reveals that observed knowledge can become altered by both personal and group-based understanding of information. Different stakeholders in the e-Government process interpret information in their own context, so the study investigates their varied experiences. Social environments and individual experiences influence how data gets interpreted, according to Jiang et al. (2021), so researchers need to analyse information from multiple perspectives when studying e-Government systems.
3. The study relies on participants' opinions and experiences to gain an understanding of e-Government strategy. The research indicates that knowledge development arises through social engagement among stakeholders as they share their personal experiences. Critical realism supports this perspective by demonstrating that knowledge emerges from social relationships and environmental factors (Hutahaeen et al., 2023). The perception of e-Government strategies and their use depend on direct

engagement between government officials, citizens, and civil society organisations.

4. The research supports the belief that knowledge emerges from specific circumstances (Felder, 2025). The assessment of e-Government initiatives depends equally on empirical data collection and stakeholder insights. Mkude and Peter (2024) demonstrate that understanding e-Government challenges requires a comprehensive analysis of the social and political factors in the environment. This method enables researchers to gain a deeper understanding of how various environmental factors influence the implementation of e-government systems.

The epistemology of this study demonstrates that a comprehensive assessment of the national e-Government strategy and roadmap's efficacy requires a combination of objective, subjective, and contextual knowledge. The methodological approach enables researchers to evaluate quantitative metrics while deepening their understanding of stakeholder experiences and perceptions. Analysing complex issues remains crucial for developing effective e-Government strategies that boost inclusivity in South African initiatives.

4.6 Axiology in the Study of e-Government in Local Governance

McWilliams, (2025) pinpoints that Axiology is a research philosophy element that examines the influence of values across research activities, the researcher's positionality, and knowledge-creation processes. The study necessitates an axiological examination because it addresses practical challenges, the creation of public value, and the lived experiences of individuals in municipal governance settings.

Axiology examines how values affect research activities and how researchers' beliefs, ethical positions, and value judgments shape their work, from topic selection to data analysis and final result presentation (McWilliams, 2025). The social sciences, through axiology, identify that research data contains non-neutral values because researchers

bring their personal characteristics, which affect how knowledge develops (Gamage, 2025). It therefore requires researchers to be explicit about the values that underpin their inquiry and how these values are managed throughout the study.

In this study, an interpretivist axiological perspective is adopted to explore SANESR. The interpretivist perspective views reality as a product of social processes, making participant interpretations and personal experiences more important than positivist measurement methods (Bryman, 2016). The research study emphasises the actual experiences of stakeholders during SANESR implementation, as their understanding provides essential insights into e-Government policy implementation in specific organisational and social environments. The interpretivist axiology requires researchers to maintain ethical conduct and reflexive thinking throughout their research (Dulal, 2025; McWilliams, 2025). It is through individual beliefs, professional background, and current understanding of public administration and e-Government systems that influence fieldwork activities and research data analysis.

The study upholds ethical values that protect participants' privacy, obtain their consent, respect them, and ensure that all participants receive equal treatment. Participants are considered knowledgeable about social matters, making their voices essential for studying how policies are implemented. The interpretivist axiological stance in this study enables value-based ethical research, producing policy-oriented findings on SANESR implementation and effectiveness rather than general statistical results. Interpretivist axiological perspectives helped deepen the understanding of the problems of policy implementation (Kalita, 2026).

The research values in this study focus on the importance of values when analysing the South African national e-Government strategy and roadmap. The study recognises the impact that values have on research methods, interpretations, and outcomes, as this field combines governance, public policy, and technology. This study examines the complexities of value utilisation while exploring various philosophical approaches to its value.

The values and contextual backgrounds of researchers actively influence the final research results. This subjective approach shows that researchers cannot separate

their personal perspective from the research activity. According to Lim (2025), the researcher's personal beliefs, biases, and experiences shape their interpretation of data and study findings. Reflecting on positionality helps researchers understand how their background may shape their assessment of the effectiveness of national e-Government strategies, particularly with respect to ethical issues in service delivery, equity, and inclusivity.

4.7 Research Approach

This section discusses the research approach that guided this study (Bougie & Sekaran, 2025). The research approach outlines how a researcher collects, interprets and links data to the objectives of a study. This study sought to explore government officials' perceptions, experiences, and opinions regarding the impact of SANESR on public service delivery. In this study, the researcher sought to explore and gain insight into the lived experiences of government officials in their natural settings.

Using a research perspective and an interpretive approach, the research problem was addressed through a qualitative study to gain insight into the organisational realities shaping the e-government environment (Anam, 2025). The study aimed to develop a deeper understanding of the challenges posed by the SANESR implementation, the ways officials make sense of them, and their impact on service delivery. Consequently, the organisational challenges associated with the SANESR implementation were investigated in more detail.

4.7.1 Inductive Approach

Research approaches that adopt an inductive methodology are essential for this e-Government study. The research method employs observational analysis to generate hypotheses and theories. Hayes and Heit (2018) explain how inductive reasoning creates broader generalisations by examining specific instances, enhancing knowledge of e-Government as a tool for public engagement and improving decision-making. The inductive approach prioritises qualitative data collection through

interviews, focus groups, and observational studies to understand citizen experiences and the factors influencing e-Government service adoption.

The primary characteristic of the inductive method lies in its ability to address the complexities of human digital governance alongside the inherent diversity in these interactions. Jiang et al. (2021) emphasise that e-Government research requires alternative approaches that examine both the qualitative aspects of citizen participation and local government service delivery. Research into public engagement with e-government platforms requires an approach that moves beyond quantitative methods, as this is essential for examining the factors that drive public involvement. The inductive approach provides a model for analysing the intricate aspects of citizens' motivations, expectations, and perceived challenges with online government services (Karnsomdee, 2025).

The design and implementation of accessible e-Government services generate new research topics that inductive studies help reveal in this context. Research by Abdurahman and Kabanda supports the use of qualitative methods to examine how developers incorporate accessibility into digital governance systems and demonstrates how user perceptions influence the design of e-Government services (Abdurahman & Kabanda, 2024). The findings of inductive research led to the development of contextual frameworks that reveal the citizen requirements and challenges associated with building inclusive and successful e-Government programs.

Research into e-Government user experience aligns well with this field's rising focus on user experience (UX). Hooda et al. (2022) confirm that e-government service development requires user participation to address mismatches between users' needs and the outcomes of service delivery. Collecting qualitative data on citizen experiences and feelings enables researchers to help policymakers and practitioners enhance service delivery, thereby boosting user satisfaction and building public trust in the government (Mo & Beh, 2025).

The inductive research framework enables scientists to analyse e-Government adoption factors through their causal relationships, while avoiding the restrictions imposed by hypothesis testing. Nyansiro et al. (2021) employ a qualitative meta-

synthesis to investigate e-government project failures in developing countries, revealing essential barriers to successful implementation and important lessons for future endeavours (Nyansiro et al., 2021). Through its inductive analysis, researcher gain access to different data sources, which enhances their understanding of complex social phenomena.

The inductive approach facilitates ongoing discussions about changes in public administration resulting from new technological developments in e-Government. Singh (2023) advocates for participatory governance in e-governance frameworks, calling for research that evaluates these models to better support democratic ideals and citizen involvement. The study of e-Government systems through inductive inquiry reveals essential findings about their ability to support participatory democracy principles, which enhance transparency and accountability.

The inductive research method generates theories from real-life observations and firsthand experiences in e-government studies. Research using the inductive lens helps investigators understand the complexities of digital governance, leading to improved governmental practices.

4.8 Research Methodology

The approach for this study is a mixed-methods approach, integrating qualitative and quantitative techniques to provide comprehensive insights.

The research design in this study employs a mixed-methods approach, combining qualitative and quantitative research methods (Oranga et al, 2025). Integrating research methods through data triangulation enhances the analytical depth and the practical application of the study's findings (Creswell & Plano Clark, 2018; Tang, 2025).

The mixed-methods approach is grounded in a pragmatic philosophy that advocates methodological diversity in addressing research problems (Kayyali, 2026). The mixed-

methods approach stems from pragmatism, as it supports the use of multiple research methods tailored to the needs of the research question (Oranga et al., 2025). The research paradigm of pragmatism enables researchers to employ various methods in seeking the most comprehensive understanding of their research topic. A holistic study requires combining empirical implementation data with qualitative information about stakeholder perceptions, challenges, and adaptive practices (Basheer et al, 2025).

The philosophical flexibility becomes crucial for studying the OR Tambo Municipality because various realities coexist, including technical infrastructure realities alongside socially constructed interpretations by public servants and citizens. The mixed-methods design connects different realities, thereby producing a more precise and practical understanding of the operational aspects of the e-government framework.

Qualitative Component: Capturing Depth through Interviews and Document Reviews
The qualitative component serves as the foundation of the mixed methods design, providing depth and contextual richness to the study. The study gathered in-depth insights from a strategically selected group of stakeholders who interact with or are affected by the e-Government strategy through semi-structured interviews. **See Annexure K.** The research participants include municipal officials who manage ICT resources, frontline staff who use digital systems daily, political representatives who steer local governance, and any employee who deals with e-services. Employees who fall outside these categories were excluded.

4.9 Research Design

The explanatory and case study research designs are suitable for this study because they enable flexible investigation of emerging e-Government issues, including technology adoption, user behaviour, and institutional policies (Gawali, 2023). The claim about the time-efficient and adaptable nature of explanatory research design remains valid; however, the provided citation lacks direct relevance to e-Government or similar fields and should therefore be eliminated.

The explanatory framework is highly valuable because digital governance is rapidly evolving amid changing dynamics. An inductive qualitative approach is ideal for studying citizen e-Government system navigation because it gathers detailed narrative information through interviews, focus groups, and case studies (Qaissi, 2024). The explanatory design employs a combination of inductive and deductive reasoning principles, enabling researchers to develop new theories based on firsthand citizen experiences with digital services.

The research design, based on explanatory methods with inductive and deductive approaches, is appropriate for the study because it considers multiple dimensions that affect implementation across different settings. The study benefits from deductive reasoning because it tests established e-Government success factor models while providing theoretical support for the observed data (Ahmed, 2025). The inductive research method enables researchers to identify new insights from their data collection, thereby expanding current knowledge of e-Government strategies.

The explanatory research design, which combines inductive and deductive methods, enables strong data triangulation, thereby enhancing the reliability and validity of research outcomes. The research collects qualitative data following quantitative analysis to investigate how people and organisations experience e-Government systems. The research design follows Tiika et al.'s (2024) advice to use qualitative data for understanding e-Government service delivery and public administration and governance dynamics. The research design employs explanatory methods, combining inductive and deductive approaches, and conducts a multi-level assessment that examines both the broad scope and detailed aspects of e-Government systems.

From a case study design perspective, the case study research design is a qualitative method that allows researchers to study real-world phenomena through detailed analysis of the complete environment when the exact boundaries between the subject and its environment remain unclear. The case study method is best suited to explanatory studies because it enables researchers to examine intricate social systems and organisational and policy procedures by combining interview data, documentary evidence, and observational findings (Yin, 2018; Greenhalgh, 2025).

The main research approach of case studies produces detailed contextual information that reveals participants' perspectives and personal life stories, meeting the requirements of interpretivist research (Naeem & Thomas, 2025).

Moreover, the research design for this study also employs explanatory and case study methods to evaluate how the South African National e-Government Strategy and Roadmap (SANESR) operate in a specific organisational setting. This design allows researchers to study how e-Government policies are translated into practice through the actions of key stakeholders, while considering the impact of organisational and governance systems and available resources. The study examines a specific case to determine how policy targets affect the implementation of the SANESR programme, producing detailed operational data on programme achievement metrics. The research method aligns with the interpretivist epistemological framework of this study because it prioritises detailed knowledge acquisition over universal patterns and maintains a connection between the research results and their social environment and organisational context (Yin, 2018; Naeem & Thomas, 2025).

The Map and Boundary of the OR Tambo District Municipality

Figure 14: Map of OR Tambo District Municipality and local municipalities



Source: Municipalities.co.za (2025)

4.10. 1 The OR Tambo District Municipality

The OR Tambo District Municipality (O.R. Tambo DM) is located in the northeastern section of the Eastern Cape Province in South Africa. The district borders the local municipalities of King Sabata Dalindyebo (KSD), Nyandeni, Mhlontlo, Port St Johns, and Ingquza Hill. The district extends from the Indian Ocean coastline at Port St Johns to interior settlements, with Mthatha (formerly Umtata) operating as the administrative and economic centre. The district connects coastal settlements to interior regions through essential transportation networks, enabling commercial activities and administrative support between different municipalities (Municipalities.co.za, 2025).

The population of the OR Tambo District is estimated at between 1.4 and 1.5 million people, according to Statistics South Africa's 2021 data, indicating that the area remains predominantly rural. The Xhosa people make up most of the population, which resides in small towns and villages. The urban population of Umtata serves as the district's primary commercial, administrative, and service centre. The district is home to many young people and working-age citizens, yet it struggles with poverty, inadequate infrastructure, and delayed service delivery, which primarily affects rural areas (Statistics South Africa, 2022).

4.10.2 King Sabata Dalindyebo Local (KSDL) Municipality

KSDLM is in the southwestern part of OR Tambo DM, which includes Umtata, the district's largest settlement. The administrative and economic centre of KSD is home to district government facilities, commercial activities, and essential infrastructure (OR Tambo District Municipality, 2022). KSD's urbanisation level is higher than that of other local municipalities, positioning it as the main centre for e-Government programmes, digital service delivery, and administrative transformation.

4.10.3 Nyandeni Local Municipality

The district's central area comprises Nyandeni, which is primarily rural, with many small settlements. The municipality comprises multiple small settlements and villages that are scattered across its territory (Municipalities.co.za, 2025). The rural nature of

Nyandeni presents essential research opportunities to evaluate the implementation of e-Government systems, as the area faces service delivery limitations, digital literacy shortages, and infrastructure shortages.

4.10.4 Port St Johns Municipality

The municipality of Port St Johns is situated on the eastern coast of the district, and its beaches attract tourists due to their stunning beauty along the Wild Coast. The municipality encompasses both urban areas and remote rural territories, creating dual prospects and challenges for implementing e-government systems (Apleni et al, 2020).

The chosen municipalities of KSD, Nyandeni, and Port St Johns were selected for this e-Government study because they present different social and geographical characteristics, enabling researchers to analyse digital service delivery across urban, rural, and coastal environments. The urbanised administrative centre of KSD enables researchers to study institutional preparedness and digital infrastructure capabilities. The rural area of Nyandeni illustrates the challenges rural communities face when adopting e-Government, including limited connectivity, digital skills, and access to services.

4.11 Population and Sampling

Empirical studies require a thorough understanding of population and sampling to produce valid and reliable findings. The population is defined as every member or item that fulfils the established criteria, and a smaller group is selected through sampling procedures (Viswanath et al., 2025). A precise population definition, along with appropriate sampling techniques selection, ensures that research data can be applied to broader contexts, especially when triangulation is used (Meydan, 2024).

As suggested by Ting et al. (2025), inclusion and exclusion criteria were established to ensure the appropriate sample group was selected for the study. Government officials from municipalities in the Eastern Cape Province involved in the implementation, management, and utilisation of e-Government systems and services under the SANESR were included in the study. Officials from areas such as ICT, Municipal Planning, Customer Contact Centres, general administrative services, internal control and monitoring structures, and management and governance structures at the municipality were targeted. They should have knowledge and experience in implementing and managing digital services, including the policies and guidelines that govern service delivery. Excluded from the study were employees not involved in the implementation of e-Government systems and services.

4.11.1 The Research Population

The population of this study consists of employees who implement SANERS with the OR Tambo municipality. This population includes a broad range of stakeholders at various administrative and technical levels within the municipality. In this study, the targeted population included municipal management, administrative, and IT employees, as well as personnel involved in the design, support, or execution of digital public service delivery. This selection ensures a comprehensive representation of both implementers and strategic enablers of e-government initiatives.

4.11.2 Sampling

Understanding population characteristics and sampling approaches lays the foundation for conducting effective e-Government research. The validity and generalizability of the study's findings depend strongly on the selection of the population and the sampling method. The combination of stratified sampling within probability sampling methods provides comprehensive representation, but purposive sampling methods deliver detailed insights into experiences (Ahmad & Wilkins, 2025). The final effectiveness and reliability of the research design depend on a thorough evaluation of these critical elements.

Sampling approaches are divided into two groups: probability and non-probability. A fundamental characteristic of probability sampling is that every member has a known, non-zero selection probability, which enables the results to represent the entire population (Creswell, 2021). According to Kothari et al. (2022), probability sampling includes stratified sampling, which involves dividing the population into subgroups (strata) and randomly sampling from each stratum (Kamanja et al., 2022). The method provides an optimal representation of various population segments, making it an ideal approach for studying diverse user bases, such as those of e-government services.

Non-probability sampling techniques do not ensure equal selection opportunities for all population members (West et al., 2025). Researchers conduct purposive sampling by selecting subjects based on criteria established by the researcher. The purposeful sampling method in e-Government research enables researchers to focus on user groups with unique digital skills or usability barriers, thereby helping them understand the challenges these users face when using government online services. Determining an adequate sample size is a fundamental element of research design development. Upadhyay and Pradhan stress that researchers must select the proper sample size estimation formulas, depending on their study design, to obtain results that maintain reliability and permit generalisation to the population (Upadhyay & Pradhan, 2023). Research outcomes in e-Government studies are more valid because appropriate sample sizes enable researchers to capture the views and experiences of broader audiences.

Sampling methods must adequately represent different demographic groups in their selection process. Pittman et al. noted that minority groups frequently remain underrepresented in clinical research studies (Pittman et al., 2021), a phenomenon similar to the potential demographic underrepresentation in e-government studies regarding digital platform participation. Using samples that match the target population's demographics creates a more inclusive research environment, helping researchers identify more clearly the barriers and facilitators to e-government use.

The study requires participants from diverse departments in the municipality, including IT, service delivery, public engagement, and administrative support. IT staff and

system administrators must be included in the study because they provide insights into technical infrastructure and user experience design, which are important for assessing digital governance. The study includes those responsible for service delivery to understand the experiences and challenges faced by service providers and end users of digital services.

Purposive sampling was the primary method to get diverse yet relevant views. This sampling method is best for qualitative research with small sample sizes that need specific participants with knowledge or experience (Hennink & Kaiser, 2022). The researcher uses purposive sampling to select those individuals who are best placed to provide detailed information about e-Government initiatives in OR Tambo Municipality.

Furthermore, convenience stratified sampling was used for the survey part of the study to address accessibility challenges across the municipality's different departments and geographical locations. This strategy enabled the researcher to classify the participants into appropriate strata, including IT personnel, policy officials, and managers, and then select those willing and available to participate. In qualitative studies, convenience sampling is often considered appropriate despite criticism of bias, as it focuses on conceptual rather than statistical representativeness and enhances the study's practicality (Schreier, 2018).

In qualitative studies, researchers use a smaller group of participants. This approach aims for data saturation, where we uncover all potential themes and insights. It's an exciting journey that allows us to dive deep and discover rich, meaningful perspectives. Daher et al. (2023) note that saturation is a crucial criterion for determining when data collection in qualitative studies can be safely terminated. Additionally, the research employed a survey to validate the study's qualitative data.

4.11.3 Sampling Strategy

A precise sampling plan is essential in this study because it enables the researcher to understand participants' experiences and perceptions of e-Government programs. Qualitative research benefits from combining purposive sampling with other methods, producing high-quality, relevant research data.

Qualitative research often employs purposive sampling to select participants with characteristics or experiences that align with the research goals. The researcher selects participants who have a deep understanding of e-Government strategies within the OR Tambo District Municipality's e-Government implementation framework. The purposive sampling method is effective for qualitative studies because it aligns with the research goals and addresses specific problems (Merkebu, 2025).

The sampling process becomes more effective when researchers use maximum variance sampling as an additional method (Mweshi et al, 2020). The research method enables researchers to gather diverse perspectives on e-Government from community members residing in the KSD, Nyandeni, and Port St. Johns areas, given their varying socio-economic backgrounds. The primary goal of maximum variance sampling in research is to select participants who represent different situations, thereby generating a diverse sample that reveals e-Government effectiveness factors across various community segments (Zhang et al., 2022).

Qualitative research requires selecting participants based on their relevance to the research purpose, while the researcher must recruit enough participants to achieve thematic saturation. The research data collection process ends when no new information is gathered, and no additional themes emerge. The number of participants in qualitative studies remains flexible, according to Nthibeli et al. (2022), because researchers should conduct enough interviews to understand the complete range of experiences within their study population.

The study benefits from combining interviews with surveys to generate extensive qualitative data. The interview process enables the researcher to use structured or semi-structured formats that guide discussions while allowing participants to share

detailed thoughts. The study method enables the researcher to explore specific aspects of e-Government service experiences. Merkebu (2025) explains that qualitative researchers must focus on participants who provide essential information that matches their research questions, especially when studying public service delivery (Merkebu, 2025). The data become more valid because the selection of participants who directly experienced e-Government initiatives was the target population across all municipalities.

The triangulation in the design strengthened the reliability of the study's results. The study's triangulation method combines different approaches and information sources to ensure validity. The combination of interviews and surveys strengthened the qualitative study, delivering a comprehensive understanding of e-Government implementation in the chosen municipalities. **See Annexure K and Annexure L.**

4.11.4 Sample Size

The study uses qualitative methods to achieve a detailed understanding and to provide a statistical representation for validation. The research method of qualitative studies relies on data saturation to determine the number of participants, aiming to achieve maximum information depth (Subedi, 2023). The researcher reached saturation, with no new data emerging from the 25 interviews, as this number provided sufficient diversity to understand the complex environment of the OR Tambo District. The researcher achieved sufficient participant diversity to study e-government experiences across different municipalities, uncovering essential thematic elements that reveal governance problems and local initiatives.

The study further uses 68 survey respondents to enhance both qualitative results and create a larger dataset for analysis. The selection of survey respondents follows established systematic methods that match the characteristics of the studied population. The research design utilises 68 survey participants to expand knowledge of citizen engagement, aligning with interview-based qualitative results. In line with Saunders et al (2019). The 25 participants in semi-structured interviews and 68 participants in a survey combine qualitative insights and quantitative measurements.

This sample size allows diverse voices from different departmental levels and functional areas without losing analytical depth. The diverse sample enables triangulation in the study by confirming the findings through cross-validation from different sources. Interviews were conducted with 25 participants from the selected municipalities, with middle management staff and senior managers, to understand the differences between what is planned and what is happening on the ground regarding the framework.

The qualitative interviews enabled the researcher to study e-Government user experiences and system effectiveness through detailed participant feedback (Subedi, 2023; Bekele & Ago, 2022). The survey data validates research findings through statistical analysis, demonstrating how the district population responds to e-Government initiatives. The research provides a comprehensive evaluation of the national e-Government strategy's performance in the OR Tambo District Municipality by analysing diverse municipal realities.

4.12 Pilot Study

The researcher conducted a pilot study to improve data-collection tools, assessing the implementation of the South African national e-Government strategy and roadmap by analysing the OR Tambo District Municipality. The research tools were tested through participant interviews and surveys in the King Sabata Dalindyebo (KSD) municipality to validate their effectiveness before beginning full-scale data collection.

Before the primary data collection phase, the research instruments were pilot-tested with a small sample of participants from various stakeholder groups. The pilot study helped to evaluate the research instruments to ensure they are clear, relevant, and consistent with the study's philosophical and methodological framework (Orione, 2025). The insights gained from testing the research instrument were valuable for adjusting interview protocols, rephrasing questions, and anticipating challenges that may arise during data collection.

The primary objective of this pilot study was to evaluate the effectiveness of the interview and survey instruments in gathering relevant information. Initial testing of the tools yielded essential feedback, leading to improved versions of the instruments. The research instruments were assessed directly through participant interactions, which helped the researcher pinpoint sections that required additional clarification or changes. The research method adheres to established best practices, which recommend conducting pilot studies to validate study instruments before their widespread implementation (Shabasy et al., 2022).

The researcher, along with his supervisor and the North-West University (NWU) BaSSREC (Business and Social Sciences Research Ethics Committee), conducted a comprehensive review of the study following the pilot study. The joint assessment process identified essential changes to the research instruments. The researcher adjusted the participant age groups to better match the characteristics of the studied population. The pilot study with King Sabata Dalindyebo (KSD) participants revealed major enhancements to the research instruments. The review process, which involved the study's supervisor, NWU BaSSREC members, and me, played a crucial role in improving both instruments. The researcher adjusted the instruments to accurately capture essential participant demographic information, including age, thereby enhancing their usefulness for the study. The researcher updated the terminology, changing "Twitter" to "X," to align with modern usage and maintain instrument relevance in the rapidly evolving digital environment.

The pilot study provided important insights that improved both the research instruments and the overall research design. The researcher obtained essential information about potential obstacles to survey responses through their work with KSD participants who faced technological barriers and difficulties engaging with e-Government services.

The modifications made to the instruments following participant feedback during the pilot study resulted in tools that better aligned with the research goals and the OR Tambo District Municipality environment. Research development benefits from

iterative testing because it creates clear research tools and produces reliable data collection results (Sanromà-Giménez et al., 2021).

The research instruments underwent multiple review cycles with participant feedback, resulting in improved alignment with study goals and a more accurate representation of e-Government service delivery challenges in South African contexts. The updated instruments serve as practical tools for evaluating the national e-Government strategy in the OR Tambo District Municipality.

4.13 Collection Instrument

The instruments used semi-structured questions to elicit participants' experiences with e-government services, enabling a thorough assessment of their experiences (Bhalla, 2023). The research method adopted enables researchers to examine participant responses in detail and seek clarification on important points, which is crucial for qualitative research. The method focuses on participant stories to generate detailed knowledge about how e-Government programs impact public service delivery.

Additionally, the study employed surveys to collect numerical data from multiple participants, while interviews provided qualitative information. The surveys measured participants' opinions on e-Government services and their levels of knowledge. The survey instrument design was informed by literature and previous research, utilising established questions that enabled effective comparison and analysis (Creswell, 2014; Bisaria, 2026).

Combining qualitative interviews with quantitative surveys produces a more detailed understanding of the collected data. The study combines findings from qualitative and quantitative methods to gain a deeper understanding of public e-government participation and to foster a stronger discussion of regional service effectiveness.

4.14 Data Collection

The data for this study were collected from participants through interviews and surveys, which included both unstructured and semi-structured questions. This allowed respondents to provide more information in their responses, yielding the researcher in-depth, meaningful, and contextual feedback, in line with researchers' expectations (Lim, 2025).

The survey instrument was designed to collect quantifiable data from a broader sample of government officials, administrators, and support staff involved in implementing e-government initiatives. It enabled the researcher to assess perceptions, usage patterns, and the framework's effectiveness using standardised rating-scale items. Additionally, municipal ICT personnel and strategic decision-makers need to gain a deeper understanding of the contextual factors, institutional dynamics, and implementation challenges surrounding the e-government strategy. Both instruments employed facilitate data triangulation, thereby enhancing the reliability and depth of the findings (Creswell & Creswell, 2018; Chand, 2025). The data were analysed using the thematic approach in Atlas. ti (version 23).

The interview offers flexibility, as participants freely expressed their experiences, challenges, and perceptions, while the discussion focused on the essential research themes. Through this method, researchers discover how barriers to implementation manifest through restricted infrastructure, insufficient digital knowledge, organisational resistance, and discrepancies in policy and practice.

The study includes a systematic review of policy and implementation materials, including the National e-Government Strategy documents, to validate and contextualise interview findings by demonstrating how policies were intended, what actual accomplishments were achieved, and how institutions responded to challenges. **See Chapter 3 of the study.** The analysis method enables the researcher to identify inconsistencies between official policy documents and real-world operations that qualitative narratives often reveal.

Furthermore, the study obtains a broader reach through descriptive statistics, while qualitative data provides detailed insights into the subject. The study enhances its validity and credibility through descriptive statistics analysis of survey data. The study provides quantitative indicators to evaluate the implementation pace, system performance, and public adoption level. Quantitative data enable researchers to track patterns over time by detecting changes in user engagement, which indicate successful implementation or emerging issues (Creswell & Creswell, 2018).

Using qualitative and quantitative data demonstrates appropriate theoretical support and methodological suitability for studying the SANERS in the OR Tambo Municipality. This method delivers the necessary analytical depth and empirical breadth to analyse the complexities of e-Government implementation.

4.15 Data Collection Technique

The study used different data collection techniques. The research design employed a combination of qualitative and quantitative methods, utilising both interview and survey data collection.

The interviews were a qualitative research method to explore participants' detailed opinions about e-Government services. The interview format provided the researcher with flexibility, allowing them to ask additional questions based on participant responses while focusing on the essential research themes (Chand, 2025). The interviews generated essential qualitative information, revealing how participants experienced e-Government services and the factors that influenced their satisfaction with them.

The survey served as a quantitative instrument for collecting data from numerous participants. The survey assessed how well people understood e-Government programs, their actual usage, and their level of satisfaction with these initiatives. The survey questions were developed based on the research literature, and the research questions, alongside the objectives, aimed to create clear and appropriate questions

(Doran et al, 2026). The survey method enables the researcher to collect data that can be analysed statistically to understand how people perceive e-Government strategies.

The research methodology described by Creswell and Plano Clark (2018) includes three integration strategies: triangulation, embedded design, and explanatory sequential design. In keeping with Bhana (2024), the study employs a convergent parallel design to gather both qualitative and quantitative data independently, producing a unified finding.

Triangulation enables researchers to combine interview data with document insights and statistical findings, thereby helping to validate or extend the research results (Natow, 2020). Interviews revealing dissatisfaction with digital access are supported by quantitative data on system availability and training program statistics. Quantitative trends gain greater credibility and nuance through rich qualitative narratives, which lead to more relevant recommendations for local contexts.

4.16 Data Analysis

The study used ATLAS-ti and SPSS for quantitative survey data analysis. SPSS was used to analyse the quantitative data, whereas the qualitative data were analysed using ATLAS.ti. The dual research method enabled the full achievement of the study's goals by combining qualitative and quantitative data collection techniques to understand participants' experiences and perceptions of e-Government services. The researcher employed reflexive thematic analysis, rather than adhering to established theoretical models, to identify natural patterns and themes in the data. The flexibility of qualitative research methods enables researchers to uncover complex participant narratives with greater precision (Braun & Clarke, 2021).

The researcher transcribed interview recordings into written text before transferring the data into ATLAS. ti for analysis. The software system enabled the researcher to handle the data effectively by providing tools for coding and thematic analysis. The analysis generated multiple themes, revealing how participants experienced e-

government accessibility and usability, as well as their levels of satisfaction with the system. The researcher analysed survey data from 68 participants through SPSS (Statistical Package for the Social Sciences). SPSS enabled the researcher to perform a detailed demographic analysis of e-Government service usage patterns. The research combined qualitative interview-based findings with quantitative data in the analysis. The researcher used SPSS to run descriptive statistics for data summary and inferential statistics with survey-based quantitative data, aiming to create a comprehensive understanding of user experiences.

The analysis of data collected from the qualitative study was conducted through a series of systematic steps that enabled the extraction of meaningful findings. The analysis steps were divided into two distinct processes: qualitative analysis of interview data and quantitative analysis of survey data. Each method was designed to provide complementary insights into the research objectives.

4.16.1 Data Analysis Steps for Interviews

1. **Transcription:** The first step involved the verbatim transcription of all audio-recorded interviews. This process ensured that data were accurately captured, reflecting the participants' spoken words, which was crucial for qualitative analysis (Battaglia, 2024).
2. **Familiarisation with Data:** Once transcription was completed, the researcher thoroughly reviewed the transcripts to immerse themselves in the data. This step is crucial for gaining a deep understanding of the content and context of participants' responses (Lim, 2025).
3. **Coding:** Using ATLAS. Ti, a coding scheme was developed inductively based on recurring themes and concepts identified in the data. In line with Ezmeçi et al., (2022), Each segment of the transcripts was carefully examined and labelled with codes that encapsulated the participants' sentiments regarding e-Government services

4. **Theme Development:** The next step involved aggregating the codes into broader themes that encapsulated the collective experiences and perceptions of the participants. As recommended by Bolgeo et al. (2024), this thematic analysis followed a structured approach,
5. **Reviewing Themes:** The preliminary themes were then reviewed and refined by cross-checking them against the raw data to ensure they accurately represented the participants' viewpoints in line with Zeb, (2025).
6. **Final Analysis and Reporting:** In the final phase, the themes were documented and organised into a coherent narrative that illustrated the study's qualitative findings. Supporting quotes from participants were included to provide evidence and context for each theme, highlighting the intricacies of their experiences with e-Government initiatives in the municipalities (Ahmed, 2025).

4.16.2 Data Analysis Steps for Surveys Using SPSS

1. **Data Entry and Cleaning:** For the survey component, the first step involved the responses collected from about 82 respondents, and 68 of them were found to be useful for the study and transferred to the SPSS software. As suggested by AlSalehy & Bailey (2025), the data were cleaned to address inconsistencies and missing values prior to analysis, ensuring accurate results
2. **Descriptive Statistics:** Descriptive statistical analyses were conducted to summarise the demographic characteristics of the sample and key variables. This included calculating means, frequencies, and percentages to provide a general overview of participant demographics and their engagement (Lea & Cohen, 2025).

- 3. Inferential Statistics:** Following the descriptive analysis, inferential statistics were employed to explore relationships between variables (Naveena, 2025).
- 4. Cross-Tabulations:** Cross-tabulation analyses provide findings on different demographic groups, facilitating a deeper understanding of trends and patterns among various subpopulations within the sample.
- 5. Synthesising Results: The final step involved synthesising** In keeping with Mamme & Seshadri (2025), the quantitative findings with the qualitative insights obtained from the interviews. This integrative approach enabled a comprehensive analysis that linked numerical data with personal accounts, providing a richer context for understanding the efficacy and impact of e-government strategies.

The researcher systematically followed these steps for both qualitative and quantitative data analysis, and the study yielded comprehensive findings that reflect the experiences and perceptions surrounding e-Government strategies in the OR Tambo District Municipality. The combination of detailed thematic insights from the interview data and quantitative evaluations from the survey not only enhances the validity of the conclusions drawn but also facilitates meaningful recommendations for improving e-Government services in the region.

For the survey component of the study, a non-probability purposive sampling strategy was applied. The purpose of this strategy was to support the findings from the qualitative component, not to generalise to a larger population. A total of 82 questionnaires were distributed to municipal officials in the selected municipalities. Of the 82 distributed questionnaires, 68 were useful and included in the study.

The key consideration in identifying participants for the study was that they had the necessary knowledge and experience in e-Government processes, which they could elaborate on. The focus was on obtaining relevant, information-rich data, as recommended for qualitative-dominant and mixed-methods research approaches

(Creswell & Creswell, 2018). In keeping with Salvatore (2023), while 68 responses are considered limited for analytical purposes in quantifying trends within the non-probability sample, they are deemed adequate for descriptive analysis and triangulation with qualitative data.

At this juncture, the table below provides a summary comparison of research philosophies, including positivism, realism, interpretivism, and pragmatism, outlining their core elements. This part evaluated multiple research philosophies and paradigms based on their fundamental assumptions about reality and knowledge, values, and research methods, leading to the selection of pragmatism as the research paradigm. The discussion showed that positivism, realism, and interpretivism offer useful yet limited views of reality, knowledge, and values. The paradigm provides a comprehensive understanding of SANESR implementation by combining technological components with organisational frameworks and individual factors that affect service delivery methods. The table below presents the study's research philosophy, paradigm, and methodology.

Table 10 Table: Research Philosophy and Paradigm

Philosophical Dimension	Positivism	Realism	Interpretivism	Pragmatism (<i>Adopted in This Study</i>)
Ontology (<i>Nature of reality</i>)	Reality is objective, independent, and not shaped by social contexts.	Reality exists independently of human thoughts but may be interpreted through social experiences (critical realism).	Reality is socially constructed and context-dependent.	Reality is viewed from multiple angles; objective systems and subjective experiences are valid. Suitable for studying real-world governance structures and lived experiences in e-government.
Epistemology (<i>Nature of knowledge</i>)	Knowledge comes from observable, measurable facts; focus on laws and causality.	Knowledge is gained through observation but may be distorted by perception; context matters.	Knowledge is subjective, formed through interaction and interpretation.	Knowledge is contextually derived; both empirical data and stakeholder insights are important. Enables a holistic understanding of

				policy impact across technical and social dimensions.
Axiology (<i>Role of values</i>)	Research is value-free; the researcher remains neutral.	The researcher's values and context influence research.	The researcher is inherently part of the research and cannot be neutral.	Researcher values shape interpretation, but practicality and relevance to problem-solving are prioritised. Aligned with the study's aim to generate actionable insights for municipal e-governance.
Methodological Preference	Quantitative, structured, large samples.	Mixed or context-sensitive methods.	Qualitative, detailed, small samples.	Mixed-methods approach integrates qualitative and quantitative techniques to yield richer, more applicable findings. Reflects the study's design, including interviews, document reviews, and descriptive statistics.

Saunders et al., 2019; Creswell et Creswell, 2018; Lincoln et al., 2017; Alvesson et al., 2017; Bryman, 2016; Bhattacharjee, 2018.

In academic research, particularly in disciplines related to social sciences, different paradigms offer varied perspectives, methodologies, and epistemologies that shape how studies are designed, conducted, and interpreted. Among these paradigms, positivism, realism, interpretivism, and pragmatism hold significant positions. At the same time, each paradigm offers unique insights and approaches, but it also has inherent limitations. This discourse elucidates these paradigms and argues for pragmatism as the optimal framework for studying e-Government, while acknowledging the multifaceted challenges in this field.

4.17 Data Quality Control

The study adopts data quality control measures to validate the results. In this regard, the researcher employed semi-structured interviews and surveys to implement these data quality control measures, ensuring high data quality throughout the collection and analysis stages.

The researcher conducted a pilot study to evaluate the interview and survey instruments prior to commencing the primary investigation. The researcher needed this step to detect any problems with question clarity, relevance, and instrument functionality. The researcher utilised participant feedback from King Sabata Dalindyebo (KSD) municipality to refine the interview guide and survey questions, thereby improving data collection for the research objectives.

The researcher also attended research ethics and integrity training (IRIM) training about ethical procedures, data acquisition methods, and instrument usage, and obtained certificates prior to application for ethical clearance for the study. **See Annexure A.**

The researcher conducted interviews, which were later transcribed verbatim. The researcher dedicated special attention to achieving precise transcription because it involves systematic coding and analysis procedures.

The researcher conducted member-checking sessions with some of the participants to verify their interpretations of the findings after completing the analysis. The research maintains its validity by incorporating participant feedback, ensuring that the study results accurately reflect participants' experiences. The research achieved better validity and reliability through its complete data quality control procedures.

4.18 Trustworthiness

Qualitative research depends on trustworthiness as an essential component for validating its results when studying complex social phenomena, such as the national e-Government strategy in the OR Tambo District Municipality (Adler, 2022). The study

maintained its trustworthiness through Lincoln and Guba's (1985) framework, which includes credibility, transferability, dependability, and confirmability (Enworo, 2023). The researcher employed method triangulation to enhance credibility by combining both qualitative interviews and quantitative surveys for data collection from participants. The diverse research methods employed in this study yielded deeper insights from participants, resulting in a more comprehensive understanding of their experiences with e-government services.

The King Sabata Dalindyebo (KSD) municipality served as a testing ground for data-collection instruments during the pilot study phase. The researcher documented all stages of the study to achieve both transferability steps. Research transparency enables other researchers to assess the relevance of the findings across various contexts and their reliability. The research documentation provided comprehensive descriptions of the data collection methods, criteria for participant selection, and the analytical frameworks employed, thereby facilitating the potential replication of future studies as necessary (Almusaed et al., 2025). The research's qualitative findings were strengthened by adherence to trustworthiness principles, which established a robust foundation for understanding the effectiveness of e-government strategies in South Africa.

4.19 Credibility of the Study

Credibility is a cornerstone of qualitative research, ensuring that the findings accurately reflect participants' lived experiences and perceptions (Lim, 2025). The study utilised triangulation through qualitative interviews and quantitative surveys, thereby facilitating a multifaceted understanding of participants' experiences. The rigorous methodology adopted throughout the research process enhances the overall credibility of the outcomes by ensuring that participants' insights are well captured and accurately interpreted. The study created a more nuanced and reliable picture of e-Government services.

Additionally, in line with Orione (2025), the credibility of the findings was further supported by a careful pilot study phase, during which initial data collection instruments were tested with a small sample of participants from the KSD municipality. This preliminary phase highlighted potential areas for improvement and allowed for adjustments before full-scale data collection commenced. Such revisions ensured the language and structure of interview questions and survey items were clear and relevant to the target audience. Refining data collection tools based on participant feedback underscores the necessity of iterative testing to enhance credibility.

The commitment to these credibility-enhancing strategies ensures that the study's findings carry substantial weight and significance within the academic discourse surrounding the effectiveness of e-Government policy.

4.20 Confirmability

Qualitative research also relies on confirmability, as it demonstrates the extent to which data-based evidence underpins the findings, while maintaining researchers' independence from personal opinions (Poedjiastutie, 2021). The researcher employed multiple rigorous methods to enhance confirmability, as these methods directly link results to participant data collection.

The analysis incorporated diverse viewpoints, leading to a deeper understanding of the collected data. The research method adheres to established qualitative research guidelines to yield robust results. The process of member checking, which allowed participants to verify the researcher's interpretations of their responses, increased the study's confirmability. The research process became more authentic because participants participated in the validation process, confirming their original statements and experiences.

The study achieved confirmability through detailed documentation, collaborative analysis, and member checking procedures. The research methods, which included documentation, participant validation, and team-based analysis, yielded results

directly derived from participant data, thereby strengthening the study's credibility. The research methods employed in this study maintain high integrity by adhering to strict procedures, thereby expanding our understanding of e-government service delivery and public governance participation.

4.21 Transferability of the Study

The ability to transfer qualitative research results between different study environments represents the core concept of transferability (Drisko, 2025). The study's research design included transferability as a vital element. The study enhanced the transferability of its results by providing detailed contextual information, enabling readers to understand how the findings can be applied to other South African municipalities and international locations.

The study achieved greater transferability by including extensive, detailed descriptions throughout its research. The study provides detailed information about research locations, participant characteristics, and implementation obstacles of e-Government strategies, enabling different readers to connect with the results. The study provides detailed information on the diverse socioeconomic conditions, technological resources, and administrative hurdles in the OR Tambo District. It enables the researcher to compare it with other areas that share comparable characteristics or address similar problems. The detailed descriptions in the study strengthen the validity of the research results, enabling researchers at different locations to determine how the findings address their specific needs.

4.22 Dependability of the Study

The dependability of qualitative research data refers to how well the information remains stable across different time periods and settings. The research process became dependable by implementing a defined methodology that remained constant throughout the study. The researcher meticulously documented all stages of data

collection and analysis throughout the study. The audit trail system provided researchers with a clear path to verify research procedures, allowing them to assess the stability of study results (Janis, 2022).

The analysis results became more reliable through the use of multiple analytical methods. The researcher conducted peer debriefing sessions to review the findings and methodological choices, thereby strengthening the reliability and trustworthiness of the research methods.

This iterative method makes the research process more stable by ensuring that findings accurately reflect participants' experiences and perceptions, rather than the researcher's biases. The study's dependability methods create reliable results (Janis, 2022).

4.23 Reliability

Qualitative research reliability refers to the ability of study results to maintain consistency when researchers conduct the study at different times and settings (Mosbah, 2024). The researcher worked to achieve reliable results that other researchers could duplicate when studying the effectiveness of the national e-Government strategy in other municipalities. The researcher used detailed documentation as their primary method to increase reliability throughout the entire research process. The researcher maintained complete documentation of their choices and data collection procedures, which served as evidence to verify their results. The researcher's collaborative work improved analytical quality and confirmed the accuracy of participants' realities through inter-rater reliability (Mosbah, 2024).

4.24 Data Saturation

The saturation point in qualitative research occurs when researchers obtain all the necessary information to answer their research question (Daher, 2023). The study required saturation as a vital factor to achieve a comprehensive understanding of participants' experiences with e-Government services. The qualitative research design enabled researchers to collect data repeatedly and analyse them until saturation was achieved.

The researcher used both qualitative interviews and surveys to assess saturation. The researcher evaluated thematic saturation through qualitative interviews, in which themes were identified from participants' narratives. The researcher observed that interviews with 20 to 25 participants yielded no new information or themes, suggesting that saturation was near. The researcher determined that further interviews would not yield meaningful contributions to the study, as no new information emerged from the data. This is in keeping with researchers (Tran et al, 2017).

The study utilised survey data to gather various participant views, which supported the interview-based themes. The triangulation of data sources validated the identified themes and deepened the analysis. The research methods employed in this study collectively established strong evidence for data saturation, demonstrating a detailed understanding of the phenomenon.

4.25 Data Cleaning

Survey research relies on data cleaning as an essential step to ensure accurate, consistent, and reliable data collection results (Fink, 2024). The researcher conducted multiple thorough procedures to clean survey data for analysis while maintaining its integrity throughout this study.

The first step of data cleaning involved checking how survey data was entered into the system. The researcher reviewed all 82 survey responses to detect missing information, verify data entry accuracy, and identify any entry mistakes. Of these, 68

were found to be helpful. Survey research quality depends on the excellence of questionnaire design and proper data management practices (Fink, 2024). Survey results become unreliable and invalid when researchers fail to properly handle data entry mistakes and inconsistencies. The researcher performed cross-validation checks on all responses, implementing range and scale validation to prevent invalid data points from distorting the results (Kortteinen, 2024).

The survey responses were reviewed to verify their compliance with the established response patterns and survey design criteria. The researcher excluded participants who displayed random answering behaviour or disengagement, as indicated by question skipping and single-option selection, because these patterns suggested poor data quality. The research design combines quantitative and qualitative methods through this organisational system, enabling integration. The researcher used SPSS to analyse the cleaned and verified data.

The survey data quality improved substantially through a detailed cleaning process that included verification steps, duplicate elimination, response authentication, and thematic classification of open-ended responses. The implemented measures ensure that research findings are dependable and trustworthy, while also presenting actual participant experiences with e-government platforms.

4.26 Ethical Consideration

The research adheres to ethical standards because it involves human participants, including municipal officials and community members, to protect their rights and dignity and ensure their well-being throughout the study. The study benefits from ethical standards because they foster participant trust, enhance research credibility, and ensure the accuracy of results.

The study participants remain safe from harm and exploitation through ethical compliance, data transparency, and accountability for analysis. The study adheres to

academic standards and professional conduct codes, taking these into account to produce accurate and socially beneficial results. **See Annexure A, J, K**

4.26.1 Permission to conduct the study

This SANESR study in the OR Tambo Municipality requires permission from relevant authorities and stakeholders before commencing the research. Researchers must follow ethical guidelines and obtain proper consent from participants in public policy research. Research ethics require participants to receive complete information about the study's goals and methods, as well as the possible risks and benefits they may face. The study's legitimacy depends on researcher-participant transparency, which Hall (2024) shows can be achieved through proper informed consent procedures. A study will become unreliable and untrustworthy when researchers fail to obtain authorisation before starting the work, because it prevents them from collecting authentic data.

The research project requires broad consent practices, as outlined by Azahar et al. (2022), because participants need to understand the governance structures governing the research project. The process of obtaining consent requires researchers to explain all the risks and benefits that participants will encounter, enabling them to make an informed decision about participating in the study (Nusbaum et al, 2017). The process of obtaining permissions and engaging stakeholders helps researchers follow governing body ethical guidelines, which builds trust and legitimacy throughout the research process.

Permission to conduct the study was obtained. Ethical clearance was obtained from the NWU research ethics committee. Formal letters were sent to the appropriate municipal managers where the study was to be conducted, and permission was also obtained. **See Annexure C, D, E, F, G, and H, respectively.**

The study's permission acquisition demonstrates a commitment to ethical research methods, which builds participants' confidence and ensures the accuracy of the results.

4.26.2 Informed Consent

The ethical practice of research depends on informed consent as its fundamental principle when working with human participants (Hall, 2024). In this regard, the researcher must explain all aspects of the study to participants through accessible language and formats to build trust and maintain ethical standards (Pajuk et al, 2024). The research participants maintain their respect and value through transparent practices, which lead them to actively participate in the research activities.

The process of obtaining informed consent faces multiple difficulties because various situational factors create obstacles to both participant understanding and ethical research conduct. Implementing informed consent protocols can be challenging for researchers because consent documents often contain complex information that can confuse participants and bias results (Pajuk et al., 2024).

The study employs modern consent methods that support ethical research principles and adhere to contemporary standards, thereby maximising participants' self-determination and comprehension during research activities. The informed consent framework of this study demonstrates how ethical principles protect participant rights while validating the study's legitimacy. To obtain informed consent from participants, they were informed about the study, what involvement would entail, and why it was being conducted before deciding whether to participate. Participants were told that their participation was voluntary and that they could withdraw from the study at any time. Before data collection, consent forms were provided to potential participants. They were reassured that anything they revealed would be held in strictest confidence and that, in addition to their records being anonymous, the study was for academic purposes only. Participants were then able to voluntarily decide to participate in the study. **See Annexure J**

4.26.3 Voluntary participation

Research studies involving human participants must be voluntary in principle, given the sensitive ethical issues they examine. The research principle requires participants

to join the study voluntarily, without experiencing any form of pressure or deceptive tactics. Mondal et al. (2023) state that participant understanding of their voluntary participation rights creates ethical research spaces, making recruitment processes more transparent. Researchers must emphasise that study participation remains voluntary, as service access and care delivery remain unchanged even if participants decline to participate, according to Morain et al. (2023). The study's validity depends on participants' voluntary participation without adverse consequences, which supports ethical research practices.

The development of trust relationships between researchers and participants is essential for achieving voluntary research engagement. Voluntary participation was ensured by making it clear to all participants that their involvement in the study was entirely voluntary and free of coercion or undue influence. Participants were informed that they had the right to decline participation or withdraw from the study at any stage without any negative consequences or impact on their professional standing. See **Annexure A and F**.

4.26.4 Anonymity and Privacy

Protecting human subjects in research studies depends on anonymity and privacy standards when evaluating the SANERS in the OR Tambo Municipality. The protection of participant identities, along with their personal details, remains vital because it ensures their safety and motivates them to participate in studies without worrying about negative consequences. Participants were assured of anonymity and that all information would be kept confidential. All data were stored securely and accessed only by the researcher. **See Annexures J, K, and L**. Researchers must employ robust privacy protocols and informed consent procedures to safeguard participants' anonymity (Clifford, 2024).

4.26.5 Confidentiality

The study implemented multiple protective measures to guarantee participant identity and personal data confidentiality (Petrova et al., 2016). The researcher obtained consent from participants before commencing the study, while explaining data protection measures, participant rights, and privacy safeguards. The researcher protected participant privacy by anonymising data using unique identifiers and storing personal information separately from the main data files. All data provided by participants will be stored in password-protected files or locked folders in the researcher's office. Participants were anonymised in reports of this study, and any data or descriptions of departments or units were provided in an anonymous. **See Annexures J, K, and L**

4.26.6 Honesty

The ethical principle of honesty forms a fundamental basis for trust and integrity in research and business operations (Gupta & Mishra, 2024). Research integrity relies on implementing principles of honesty and transparency throughout every stage of research to produce credible results that meet ethical standards. The practice of honesty demonstrates ethical compliance, building trust that enables successful stakeholder partnerships. Pursuing truth is the essential foundation for maintaining credibility and accountability in scientific research and business operations, fostering relationships based on mutual respect and ethical conduct.

Honesty was ensured by conducting the study with integrity, transparency, and accuracy throughout the research process. The researcher presented the study's purpose truthfully to participants and reported the findings objectively, without fabrication, falsification, or misrepresentation of data.

4.27 Limitations and delimitations of the study

Research limitations refer to the weaknesses and constraints of the study, often arising from variables beyond the researcher's control (Galvan & Pyrczak, 2023). Like any research project, this study faced time constraints and the distance between the areas where data were collected. To reduce the impact of these constraints on the study.

The study faces multiple constraints that reduce its operational efficiency and restrict the ability to apply findings to other contexts. The research boundaries defined in this study focus on the four specified municipalities, while excluding two other areas in the OR Tambo District municipality. The research restricts itself to the OR Tambo, KSD, Nyandeni, and Port St Johns municipalities, which may result in missing essential elements and themes that exist in other regions regarding e-Government efficacy and failure. To address this, the researcher incorporated survey data to support the findings. The research findings are limited to the specific municipalities because the subjective research design relies on participant selection and data interpretation, which can introduce biases into the results.

This study is delimited to the O.R. Tambo District Municipality through collecting data in its 3 local municipalities: King Sabata Dalindyebo Local Municipality, Nyandeni Local Municipality, and Port Saint John's Local Municipality. Hence, the findings may not be applicable to other municipalities, as the sample was drawn from three municipalities within the OR Tambo District Municipality, including the OR Tambo District Municipality itself. The findings will not represent all municipalities or local governments in South Africa.

The study was purely for academic purposes, and their anonymity and confidentiality were ensured. Moreover, the study was not intended to tarnish the reputation or plight of the municipalities where it was conducted, but rather to contribute to the body of knowledge.

4.28 Summary

This chapter of the study focused on the research philosophy and methodology section, which explained why the study used interpretivist methods with pragmatist elements to combine qualitative and quantitative research approaches. The research design section explains why a case study approach was chosen, as it enables a detailed examination of local implementation methods. The methodology section explained how researchers selected participants and their methods for data collection and ethical procedures to achieve reliable and valid results. The chapter describes planned data analysis methods for both qualitative and quantitative data, while discussing potential research constraints and strategies to minimise bias. The following chapter presents the empirical data, with analysis and interpretation, after the researchers explain their data collection methods and research principles. The research findings from Chapter Five data analysis presents results that link to the research questions and objectives through the methodological approach used in the study.

Chapter 5

Data Presentation, Interpretation, and Discussion of Findings

5.1 Introduction

The previous chapter focused on the research philosophy, paradigm, and methodology. The data analysis in this study is conducted in three phases. The first part focuses on qualitative data analysis, followed by the quantitative data that was used to support the qualitative findings. The chapter further evaluated the empirical data collected on the SANESR's effectiveness in the OR Tambo District Municipality. The study examined the impact of e-Government implementation on institutional performance, service delivery, and accountability standards. The research methodology presented in Chapter Four serves as the basis for this chapter, which analyses and interprets data collected through qualitative interviews and a supplementary quantitative survey. The study employs the Logical Framework Approach (LOGFRAME), the Service Quality Model (SERVQUAL), and the Theory of Change framework to assess the alignment between national policy goals and municipal operational practices.

The study's findings, as presented in this chapter, demonstrate the combined contribution of interviews and surveys to understanding the research questions and objectives. The qualitative data provide detailed insights into stakeholder views and interactions, while the quantitative data corroborate these findings and enhance their trustworthiness. The combination of qualitative and quantitative data, achieved through triangulation methods, produces a comprehensive understanding of e-Government strategy implementation and its impact on municipal service delivery.

Data analysis commenced by properly organising and preparing all collected interview and survey information. Followed by conducting multiple readings of interview transcripts to identify essential patterns and ideas before starting the data analysis process. The combination of qualitative and quantitative data through methodological triangulation enhanced the research's credibility by verifying multiple data sources and supporting the emerging themes regarding the effectiveness of the e-Government Strategy and Roadmap Framework in the OR Tambo District Municipality.

5.2 Presentation of Qualitative Findings (Demographic)

The following section presents the demographic data analysis of the qualitative part of the study

Table 11: Gender of participants

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	14	56,0	56,0	56,0
	Female	11	44,0	44,0	100,0
	Total	25	100,0	100,0	

Source: Author's own compilation from SPSS data analysis, 2025

This study included 25 participants, comprising 14 males (56%) and 11 females (44%), which demonstrates a balanced gender distribution. The male participants outnumbered female participants, but the distribution shows equal representation of both genders in the municipal workforce. The study achieves better results due to its gender balance, which enables researchers to understand different perspectives on the implementation of SANESR and the effectiveness of the South African National e-Government Strategy and Roadmap (SANESR) in municipal digital transformation.

Table 12: Participants by age.

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-29	5	20,0	20,0	20,0
	30-39	10	40,0	40,0	60,0
	40-49	7	28,0	28,0	88,0
	50-Above	3	12,0	12,0	100,0
	Total	25	100,0	100,0	

Source: Author's own compilation from SPSS data analysis, 2025

The survey results show that most participants belong to the working population segment based on their age distribution. The research data show that participants aged 30-39 account for 40% of the study participants, while those aged 40-49 account for 28%. The majority of research participants belong to the mature adult category, having gained substantial life experience through their professional and personal activities. The 18–29 age group accounts for 20% of respondents, the fewest of all age groups, while the 50+ age group has the lowest percentage at 12%. The survey data show that 88% of participants are in the 18 to 49 age group, which is crucial for this study because this age group uses public services and interacts with e-Government systems to access essential information on platform adoption and usage. The study benefits from the dominance of younger participants, as this age group understands technology better, thereby strengthening the research findings on ICT adoption and public service innovation through SANESR.

Table 13: Distribution of respondents by educational level.

		Educational Level			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Matric	1	4,0	4,0	4,0
	Diploma	6	24,0	24,0	28,0
	Advanced Diploma	4	16,0	16,0	44,0
	Honours	7	28,0	28,0	72,0
	Masters	4	16,0	16,0	88,0
	Doctorate	3	12,0	12,0	100,0
	Total	25	100,0	100,0	

Source: Author's own compilation from SPSS data analysis, 2025

The participants demonstrate high educational qualifications: 28% hold Honours degrees, 24% hold Diplomas, 16% hold Advanced Diplomas, 16% hold master's degrees, 12% hold Doctorates, and 4% hold Matric qualifications. Most participants have a tertiary education, as they work on e-government initiatives at a professional

level. The large number of postgraduate qualifications among participants demonstrates their ability to understand and support the South African National e-Government Strategy and Roadmap (SANESR) through their technical expertise and analytical skills, which strengthens the study's results.

Table 14: Distribution of participants by designation.

		Position			Cumulative Percent
		Frequency	Percent	Valid Percent	
Valid	Senior Management	2	8,0	8,0	8,0
	Mid-level management	6	24,0	24,0	32,0
	IT/Tecnical Staff	9	36,0	36,0	68,0
	Administrative Staff	8	32,0	32,0	100,0
	Total	25	100,0	100,0	

Source: Author's own compilation from SPSS data analysis, 2025

The study shows that IT/Technical staff represent the largest group at 36%, followed by administrative staff at 32%, mid-level management at 24%, and Senior management at 8%. The composition shows a proper distribution of operational, technical, and managerial elements that represent the municipality. The study includes direct feedback from IT and administrative staff who actively work with e-government system implementation and support. The research involves managers to gain strategic insights into policy alignment and decision-making processes, resulting in comprehensive knowledge about the operational and institutional factors that affect the effectiveness of the South African National e-Government Strategy and Roadmap (SANESR).

Table 15: Distribution of participants by years of experience

Years Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-6 Months	2	8,0	8,0	8,0
	6 Months-1 Year	3	12,0	12,0	20,0
	1- 3 Years	6	24,0	24,0	44,0
	3 - 5 Years	7	28,0	28,0	72,0
	5 Years and Above	7	28,0	28,0	100,0
	Total	25	100,0	100,0	

Source: Author's own compilation from SPSS data analysis, 2025

The distribution of participants by years of experience shows that the largest groups have 3–5 years (28%) and over 5 years (28%) of work experience, followed by those with 1–3 years (24%), while 12% have 6 months to 1 year, and 8% have less than 6 months of experience. The survey results indicate that participants have extensive work experience, as they serve in municipal roles that require them to provide public services effectively. Reliable information on the South African National e-Government Strategy and Roadmap (SANESR) implementation comes from experienced staff members with the knowledge to evaluate digital governance systems and the municipality's strategic elements.

Section 2

5.2 Qualitative data analysis

The following section analyses empirical data using the essential themes identified by researchers during their investigation of research questions and qualitative data collection activities. The analysis identified patterns, meanings, and relationships in the data, leading to the development of themes that captured common experiences and perceptions of the implementation of the SANESR.

5.2. 1 Knowledge of e-Government Strategy and Roadmap

When respondents were asked about their familiarity with the SANESR, responses revealed a broad spectrum of familiarity and engagement with the South African National e-Government Strategy and Roadmap among participants from the OR Tambo District Municipality. Multiple participants demonstrated their understanding of the document and its role in directing the deployment of digital practice within their organisation. One participant stated, *“I have knowledge of the policy. The digital governance strategy serves as a fundamental tool that enables digital government initiatives”*. Another participant highlighted that *“I think strategy functions through SOLAR and ESS in the OR Tambo Municipality”*. The response demonstrates both theoretical knowledge and practical skills, as it shows that the respondent understands how national policy affects municipal digital systems through strategic implementation. Similarly, another respondent added, *“I studied the document during my training sessions that I attended, where we were introduced to mSCOA and the ESS system and billing portal now offer mobile accessibility because of this requirement”*. The evidence demonstrates that the municipal staff gained valuable experience through past training, during which they were introduced to the fundamental elements of the municipality's strategy.

The participants expressed their support for SANESR's success, citing its digital communication system and service-monitoring features, which would reduce administrative delays and boost public satisfaction. One official observed that, "*The system allows us to serve citizens faster because most of the requests now go through online channels instead of manual files*". The system operates effectively when it functions properly, reducing office transfers and enabling more transparent service delivery. A research participant confirmed that "*the strategy shows promise*", but its full potential remains far from being realised because some departments continue to use their outdated manual operations.

The participants demonstrated varying levels of comprehension of the policy document, focusing on operational aspects rather than grasping its overall structure. One respondent noted, "*I understand the main concept of the strategy, but I do not have complete knowledge of its details... The ESS system enables leave application processing, which reduces the time needed for this task*". This suggests a practical awareness of the benefits of digitalisation without deep familiarity with the policy structure. A participant stated that: "*We had basic knowledge of the subject because Solar and online billing systems operated within the system to boost service quality*". **See figure 7.** The provided excerpts suggest that employees have some level of involvement, as they observe how e-Government tools impact operations; however, they do not fully comprehend the strategic theory underlying the approach. One participant remarked, "*We are aware of the e-Government strategy, but most of us have received proper training to use the platforms effectively*". Another official stated, "*Sometimes we only get introduced to the system when it is already running, and we learn through trial and error*". The excerpts demonstrate that SANESR awareness exists as a theoretical concept, but organisations struggle to put it into practice because they need better training and digital capacity development programs.

Several participants based their knowledge on their professional work experience and learning from one another within the workplace. One participant from one of the local municipalities stated, "*I have worked on multiple projects which followed the roadmap's objectives... EDMS systems execute the strategy's recommendations for secure document management and simple access.*" Another commented. The IT

policy development process included a review of this document, which outlines our current system upgrades for EDMS and Solar and aligns with the strategic plan. The research findings indicate that staff members involved in ICT policy and project implementation are increasingly engaged as national strategy objectives become operationalised through digital programs at the local level.

On the other hand, some participants confirmed that they had not personally viewed the document, yet they recognised its effects on their work activities. In this regard, one participant revealed that they had not read the document at all, but *“The training programme we attended did not include this document, but we were taken through e-Government strategies”*. The EDMS system for file management has brought major transformations to our existing work procedures. Another added, *“I don’t have extensive knowledge of SANESR,” but the IT department provided me with all the necessary information about system changes”*.

Overall, the majority of responses indicate that while the South African National e-Government Strategy and Roadmap is relatively well-known within the OR Tambo District Municipality, the depth of understanding varies significantly. The document reveals higher levels of understanding among ICT, finance, and management professionals, whereas other staff members possess only basic or unrelated knowledge. The research indicates that the municipality has successfully implemented the strategy through EDMS, ESS Solar, and Promun platforms. However, their effectiveness remains limited by unequal access to knowledge, insufficient training programmes, and inadequate infrastructure support.

5.2.2 Municipality e-portal and information services

The responses to the description of the municipality’s official e-portal reveal both positive developments and notable limitations in the implementation of digital service delivery within the OR Tambo District Municipality. The e-portal serves users well by providing vital municipal information and enabling them to complete their necessary tasks. One respondent noted, *“The municipal website is basically the official online*

gateway that the municipality communicates internally and also relates with the residents". Another respondent added that: *"The portal is user-friendly and easy to navigate. It provides information about the SCM unit, vacancies, important municipal documents like annual reports and financial reports"*. **See figure 14**. The portal provides service applications, payment functionality, and customer support services, according to the statement. The portal system enables better service delivery and improved operational performance for citizens. A participant expressed this view through a statement that described the portal as *".... It allows users to access all sections without difficulty, and the e-platform provides information about the SCM Unit, vacancies, important municipal documents like annual reports"*. **See figures 10 and 14**, respectively. This is consistent with the information on the municipal websites. **See Figures 7 and 8. And 9** respectively. The e-portal enables users to access vital municipal reports and documents through its information display function.

The e-portal serves as a platform for participatory governance and citizen engagement, according to multiple participants who demonstrated their understanding of its functionality. A respondent gave an extensive account of the e-portal system, which offers vital information and essential services through its platform. A participant mentioned that *"The platform includes news and announcements sections, which display council meeting schedules and tender advertising"*. This claim is supported by **Figure 11**, which shows that the platform serves as a communication channel between residents and the municipality and also provides users with access to administrative data. This feedback suggests that the national e-government objectives of digital transparency, accountability, and platform-based responsiveness have made some progress.

The responses that emerge indicate that *"The municipal website contains fundamental information about notices and tenders and council documents"*. The platform operates as a basic information storage system, rather than providing transactional services, including payment processing and application functionality. Again, another participant highlighted *"Our municipality's official e-portal is a relatively Comprehensive platform that provides various service information to Citizens"*. **See figures 23, 24, and 25**.

The official e-portals in the municipalities received support from internal ICT systems, including Promun, ESS, and PayDay for administrative and financial operations. One participant alluded that, *“We use Promun in KSDLM as the platform that supports most of the online activities and engagements in the municipality”*. Another participant noted, *“Employee self-service (ESS) replaces the system where you have to go to HR to submit your leave application”*. This platform enables employees to perform various tasks independently, including submitting leave applications. The e-portal delivers citizen services through separate internal e-Government systems operated by the municipality to boost operational efficiency and staff productivity.

The e-portal is designed for multiple users and provides them with access to their account statements. *“With the portals, users can access useful information about municipal rates, service delivery plans, and budget summaries”*. **See Figure 14**. Users can currently perform transactions or make online payments through the e-portals.

The current state of the e-portal operates as an information gateway rather than fulfilling its potential as a comprehensive digital service platform. *“Users can access notices and tenders and reports through the system, but it lacks interactive features and complete online services which citizens expect from contemporary e-government platforms”*. **See Figure 9**. The participants stated that Promun and EDRS serve as tools for internal municipality transformation”. As one respondent put it, *“There is still a belief among some colleagues that computers complicate the work instead of making it easier”*. This sentiment underscores the cultural dimensions of digital readiness, where attitudes, motivation, and leadership support play pivotal roles in shaping adoption behaviour

The municipality demonstrates digital advancement through its adoption of digital transformation initiatives. The responses indicate that the OR Tambo District Municipality operates an e-portal system, which continues to evolve as it enhances service delivery, system integration, and user interaction. *The participant stated that “the municipality continues its digital transformation, as the Solar and ESS system integration remains operational”*. The organisation demonstrates its dedication to

digital transformation through this initiative, which supports the e-Government Strategy.

Several participants noted the portal's limited interactive capabilities. The platform serves two main purposes, according to one respondent, who stated that users visit the platform to view available tenders and job openings. *"I assist with uploading specific notices to the system"*. Another participant added that *"The system provides useful information, but citizens hardly interact with it"*. **See Figure 11.**

A participant alluded that *"The integration of EDMS in the portal enhances public record sharing capabilities according to records management standards"*. The responses indicate that multiple internal systems, including Solar and EDMS, exist, and they connect to the main municipal portal.

The portal appears to serve employees who need it for administrative tasks involving both internal and personal matters. One respondent shared, *"I check the website primarily for HR announcements and job vacancy listings"*. **See Figure 9.** The statement indicates that the external e-portal system does not fully integrate with Employee Self-Service (ESS) and other internal systems, thereby limiting the usability of both the staff and citizen systems.

The responses indicate that the e-portal provides vital municipal data through tenders, announcements, and reports. The municipality demonstrates progress in system integration through its ongoing work on integrating the Solar and EDRS systems. The portal needs to evolve into a comprehensive digital environment that facilitates citizen interaction and maintains transparency by integrating public services and internal operations.

5.2.3 Introduction of SANESR within the departments of the municipality

The responses reveal that awareness and introduction of the South African National e-Government Strategy and Roadmap (SANERS) within the OR Tambo District Municipality have been inconsistent and largely informal. The survey results showed that many participants were unfamiliar with SANERS and did not know its implementation process. Statements such as *"I have never heard about the SANERS"* and *"I never heard of the SANERS"* clearly demonstrate a complete lack of awareness among some municipal officials. The user expressed confusion about the introduction procedures because they stated they had no memory of the process, as they were working in a different department at that time. The responses indicate that SANER's information dissemination varied across departments, and staff transfers between units reduced their understanding of the strategy's implementation.

Several participants confirmed that there was little to no formal introduction of SANERS at their workplace. The comments *"It was not introduced to the framework"* and *"No formal communication in our municipality about the e-Government strategy"* show that the strategy adoption process lacked proper communication channels. The organisation failed to establish official communication channels, which indicates that top management implemented the change without proper employee participation. The report indicates that the city did not assign its municipal staff members across departments to facilitate the execution of the national digital transformation program.

On the other hand, one participant stressed that: *"I attended one of the e-Government summits where we were informed about the strategy and its objectives. They also gave us the role plan. Like the one for the automated audit action plan. We were also trained on the FMCMM Financial Management Capability Maturity Model. It is monitored by the national treasurer."* Another participant alluded that: *"The training for mSCOA implementation brought up the topic. The facilitator explained that SANERS implementation requires financial transparency and reporting standards."*

The excerpt demonstrates that digital tools connected to SANESR received managerial training; however, lower-level staff members require more comprehensive education or support. Multiple participants provided short positive feedback about the

process through their comments. The survey participants explained that their restricted access to e-government platforms was due to their organisations continuing to use traditional, manual procedures in some respects. One participant explained that *“We have a system for billing in the municipality. For example, traffic violations can be recorded, and offenders can receive the fines on their cell phone so that they can pay face to face or online at the KSDLM”*. Another participant stated that *“We are not yet fully online as a municipality”*. An official added that *“They submit face-to-face, and we capture... we don’t have a system that will allow the community to make payments online”*. Another added, *“For tenders, we do advertise online, but the applications come to us manually... we gave the feedback manually”*. **See Figure 10.** The examples demonstrate that digital systems exist, but e-Government processes remain incomplete because physical interactions continue to dominate, which creates efficiency and accessibility issues.

Multiple responses identified missing training programs and inadequate information distribution about SANERS, which affected users who were already familiar with digital tools. One participant noted, *“The training program lacked any official session about the topic”*. Some municipal officials learn about SANERS through discussions on mSCOA and other frameworks, rather than receiving specific e-government training.

A few respondents, particularly those in technical or managerial positions, described more structured introductions to SANERS. One shared, *“The strategy introduction took place during a combined planning meeting between infrastructure and ICT teams. The system administrators informed us that our reporting tools needed to connect with Solar for effective monitoring purposes”*. Another participant, the team conducted departmental workshops to demonstrate how EDRS and Promun systems support the achievement of national digital targets.

Some employees became aware of SANERS for the first time through general staff meetings. One respondent explained, *“The staff meeting was the first time I learned about this initiative. The presentation briefly explained that digital transformation drives*

the shift toward electronic processes". This suggests that while such meetings provided initial exposure, the brief nature of these sessions likely limited deeper comprehension and follow-up discussions on how SANERS directly influence municipal service delivery. Another one stated that *"Our ICT manager delivered an internal presentation about SANERS, which demonstrated its relationship with Solar and EDMS and additional platforms. The presentation delivered valuable information to the audience"*. The different levels of departmental exposure indicate that departmental leadership and initiative play a greater role than municipal communication plans do in enhancing public awareness and understanding.

5.2.4 The components of e-Government being prioritised.

The responses on the implementation of the South African National e-Government Strategy and Roadmap (SANERS) within the OR Tambo District Municipality suggest partial and uneven adoption across departments. Multiple participants indicate that the recruitment method is often advertised in job advertisements found on digital platforms or municipal websites. One respondent stated, *"Yes, it has. Job advertisement. You can also apply for the job through the E-portal"*. **See Figure 8**. The municipality is digitally enabled through the use of social platforms like *"Facebook and TikTok"*. Refer to **Figure 13** for an example of **TikTok** usage. The SANERS' goal to improve participatory governance and accessible communication is supported by these excerpts, which demonstrate how digital channels foster transparency and facilitate citizen participation. Yet they also suggest that digitalisation efforts are currently fragmented, with an emphasis on communication rather than on integrated e-service delivery systems.

A respondent at a higher level explained that their organisation used a systematic institutional method to implement SANERS through work with provincial and national agencies. The participant explained, *"The COGTA organised a provincial ICT forum, which elaborated the system to the participants in the forum"*. The organisation conducted an internal workshop to establish connections between its ICT strategy and SANERS requirements.

The majority of Participants discovered SANERS through other training programs and national initiatives, which raised their awareness of the program. One respondent stated, *“The mSCOA training program included information about SANERS. The facilitator stated that SANERS needs these systems to improve financial reporting and transparency capabilities”*.

Some participants described their exposure to SANERS through brief explanations of system transitions that occurred in various situations. They received no complete explanation about the program, according to one respondent. *“The SCM head explained to staff that the eTender system migration to online operations supported the e-Government strategy during the transition period”*. **See figure 10**. This indicates that SANERS functioned as a support system for digital system adoption; however, users did not fully understand its core operational structure. The partial communication reveals how operational changes are implemented through e-Government initiatives without a proper understanding of their strategic foundation.

The different departments received varying levels of benefit from their training sessions. One participant recalled, *“Our ICT manager delivered a presentation about Solar, EDMS and other platforms we use”*. The presentation delivered vital information to all attendees. The participant explained that the organisation implemented structured implementation measures through municipal planning and reporting systems at an advanced level of institutionalisation. The organisation delivered SANERS training to departments and incorporated it into the HODs' strategic planning documents. The organisation requires all departments to submit e-Government compliance reports quarterly throughout each year. The system advancement brings operational integration closer, as SANERS now operates as an active system that tracks departmental performance and enforces accountability.

5.2.5 Municipal services and currently available online e-platforms

The responses indicate that the OR Tambo District Municipality has begun implementing parts of the South African National e-Government Strategy and Roadmap (SANERS), although the progress is incomplete and limited to basic online services for information sharing and billing, as well as restricted service delivery. Many participants mentioned the availability of specific digital services such as “*Online Job application, job advertisement, bill payment, News and Events*” and “*Bill payments, application services and customer services*”. **See Figure 9.** These examples suggest that the municipality has made initial strides in digitising basic administrative and public-facing services. The system focuses on specific functions but lacks the comprehensive strategic vision needed for a fully integrated digital governance system.

The billing and payment systems were the digital components that received the most mentions. Several respondents noted that “*Bill payment is available via easy pay*”. **See figure 31.** The references demonstrate that financial transactions were among the first services to move online, a trend that is likely to occur in various municipalities as they need to collect revenue for their operations. The digitalisation process shows varying levels of development because students need to attend physical meetings to submit their work for specific subjects. The current partial automation system contains multiple structural and operational weaknesses that prevent a full transition to online, cashless municipal payment systems. The findings also revealed that the potential of digital platforms for civic engagement is far from fully realised. The officials noticed that citizen participation remains low because most people lack digital skills and because the municipality experiences irregular internet access. As one respondent noted, “*Most people in rural wards don’t have access to reliable internet, so they can’t use these platforms effectively*”. Another added, “*We post information, but only a few people engage because they are not used to online platforms*”. **See Figure 10.**

Other respondents pointed to the municipality's use of digital tools for information dissemination and administrative efficiency. One participant noted that the system contains various types of documents and information, including budget data and performance reports. Council meeting reports and information". The portal serves as a tool to enhance the accessibility and transparency of governance information, which represents a primary goal of SANERS. The platform fails to engage citizens because users can only access documents through its non-interactive interface, which does not support transactions.

Some participants, however, indicated that digital transformation remains incomplete, with no meaningful online service provision available to the public. This was reflected in responses such as "*None*" and "*None of the above*". The statements indicate that staff members lack knowledge of digital systems because they do not have access to them, which supports previous research on inconsistent departmental communication and training.

Multiple participants described how their organisations united internal operations with external customer interfaces through digital transformation projects. One participant explained, "*Our organisation has established fundamental online services which include our billing portal. We also have Solar. Staff members use ESS to handle their HR needs, which allows them to view payslips and request leave of absence*". **See Figure 12.**

A participant explained ESS operations in internal HR systems by sharing their experience with leave applications. "*Immediately you apply, the relevant line manager will still see it and approve it if the applicant is eligible for the leave*", another participant exclaimed, "*Oh! I don't know the full meaning of ESS. I think you should ask the managers or ICT*"

The survey results indicate that the municipality has begun utilising SANERS through its financial management systems, HR automation, and digital communication platforms. The systems Easy Pay Solar and ESS demonstrate evidence of digital service development and administrative system updates. The current system operates without coordination because its separate systems run independently from both public service platforms and each other. The current staff awareness and capacity problems indicate that SANERS must build human resources and organisational systems at the same rate as its technological progress to achieve complete digital governance implementation.

The responses demonstrate that the OR Tambo District Municipality has achieved significant progress in SANERS implementation through its efforts to enhance digital operations and information access within the organisation.

A participant highlighted that *“The organisation has implemented that members can use ESS to check their leave status and view their payslips through the system. digital solutions for internal operations while continuing to shift citizen services toward online platforms. The portal enables users to access their statements online, and the SCM page provides digital access to specific procurement functions.* Another participant indicated that *“The website provides current municipal rates and job application downloads as well as tender bulletin access to the public...”. See figure 10.* The organisation maintains a low level of public engagement through its digital services. The available online information from the municipality shows that digital process completion for citizens remains unavailable despite their success in providing online access. The persistence of manual submissions and phone-based requests demonstrates that public service digitalisation remains in a transitional phase, as highlighted by one of the participants who stated that: *“The SCM system has achieved progress by allowing users to access tender documents online while receiving digital inquiries through email. The submission process remains manual at the time of writing. The organisation operates without a complete eProcurement portal, although it remains under active discussion for implementation. See figure 14.*

The responses indicate that the OR Tambo District Municipality has achieved significant success in digitalising its administrative work; however, its online services for citizens lack interactivity and remain basic. The South African National e-Government Strategy and Roadmap (SANESR) has introduced digital transformation to the municipality through its effects on multiple departments. This claim is supported by a participant who emphasised that *“The EDMS system enables us to handle our internal record management effectively. The officials can access council resolutions and IDPs through the online platform, but all other public records remain available only through manual requests”*.

Multiple participants stated that Solar, ESS, EDMS, and Payday systems have enhanced both administrative workflows and internal document storage. The organisation tracks performance through Solar while using EDMS for report management within its internal operations, according to one respondent. The public has access to budget documents and notices but cannot use interactive services to submit service requests. On the other hand, *“The website displays job openings, tender opportunities, and public statements*. The organisation achieved digital transformation of its internal operations through ESS for HR management, EDMS for records management, and Solar for reporting, according to the statement. The systems which serve the public sector remain underdeveloped. The submission process remains manual at some municipalities within the OR Tambo district municipality.

5.2.6 e-Government buy-in or support from leadership and staff

The responses reveal mixed perceptions regarding the level of buy-in and support from leadership and staff toward the implementation of the South African National e-Government Strategy and Roadmap (SANERS) within the OR Tambo District Municipality. The participants exhibited varying reactions to their teamwork and leadership experience, as some found value in it, while others encountered challenges with communication and resistance to digital change.

A few respondents described a cooperative and supportive working relationship between management and staff. One participant shared, *“Leadership and staff*

members work together perfectly to exchange knowledge and best practices, which helps them advance and solve problems". The response suggests that knowledge sharing among team members is more prevalent in certain departments, thereby increasing the adoption of digital systems. The state provides complete backing to these initiatives because our project leadership team fully supports them, according to another participant. The strategic and project-specific leadership support has been visible and received positively, according to this participant.

The participants stated their organisations provided backing for their work, yet this support ended at basic approval without active participation. One respondent observed, *"Leadership shows moderate support through approval of proposals for training employees"*. Another official explained, *"There is a clear national framework, but at the municipal level, we don't have a specific local policy that guides how to implement SANESR"*. Another added, *"Some managers don't fully understand the importance of e-Government, so they don't push for it."*

The responses further indicate that OR Tambo District Municipality staff members have varying levels of support for digital transformation and SANERS implementation: senior leaders endorse it, while operational staff exhibit opposition. The municipality has implemented new systems, but system integration remains limited due to ongoing issues with change management, training, and behavioural adaptation.

Multiple participants identified executive and managerial leaders who demonstrated robust dedication to e-Government programs. The organisation supports digital transformation through Solar and EDMS platforms; however, different departments continue to use paper-based systems. The results show that leadership enthusiasm does not currently translate at the same level throughout all departments.

Leadership support also appears to vary depending on the system introduced. The HR department received full backing from leadership when they deployed ESS

throughout the entire organisation. The management team at our organisation actively supported the adoption of ESS for leave and payslip management for all staff members. Despite this, the respondent went on to acknowledge, “*Staff members continue to bring physical documents to the office instead of using the digital system*”. The research results show that leadership support enables system deployment, yet staff members face challenges when trying to change their work behaviours.

The municipality's Electronic Document and Records System (EDRS) has started automating its leave application feature. The system implementation continues to face challenges because staff members persist in using their preferred traditional methods, while others adopt the digital platform. Another emphasised, “*Staff members show hesitation when they need to use new digital platforms, which include online submission tools. Staff members remain uncertain about online operations because they fear making mistakes during digital transactions*”. The statements indicate that staff members oppose change because they require better training and digital skills, rather than any aversion to digital transformation.

The municipality faces multiple obstacles; yet digital practices continue to be integrated into operational systems as staff increasingly adopt contemporary technology. One participant observed, “*The organisation received better leadership support because we learned about ESS and PayDay operations*”. The first assumption that e-Government operated only through the IT department caused staff members to oppose the system. The research results demonstrate that digital transformation training programs and system-based education now recognise that digital transformation operates as an organisational-wide business initiative which extends beyond IT functions. The organisation supports digital transformation initiatives at a moderate level, yet some team leaders continue to use paper-based documentation methods, according to this respondent. The process demonstrates evidence of institutional learning development; however, its progress remains slow due to existing practices and bureaucratic opposition to change.

The study further shows that the municipality is demonstrating increasing dedication to e-Government transformation through its leadership, but the entire organisation has not yet fully accepted this change. Senior managers have integrated SANERS-related goals into their strategic plans and actively supported the deployment of ESS, EDMS, and Solar systems. The implementation process continues to face obstacles because staff members oppose change, the organisation lacks adequate change management systems, employees require digital skills training, and financial limitations extend the project duration. Organisations need to maintain digital literacy education programs and establish performance-based incentive systems, as well as systematic change management systems, to preserve employee motivation and foster leadership development. The municipality needs to enhance its institutional alignment and practical support systems to achieve a comprehensive digital transformation, according to SANERS.

The institutionalisation of capacity development has created a foundation for increased support, according to one respondent, who explained that "*The organisation has established ongoing training as its fundamental organisational development approach*". The statement revealed two opposing facts about training: staff members need additional training, yet the organisation plans to discontinue its training program. The system produces unpredictable results because leadership supports training initiatives, yet staff lack the skills to operate it effectively.

Training deficiencies emerged as a recurring barrier to staff buy-in. One participant noted, "The absence of proper training has forced certain employees to perform their work using available resources or manually. This occurs when managers who operate the systems fail to provide sufficient training to their staff on how to use them. The observation reveals a major problem: trained managers fail to effectively transfer their knowledge to subordinates, resulting in inconsistent implementation across the municipality.

Multiple responses show that leadership backing for digital transformation initiatives became more visible during and after the COVID-19 pandemic. The pandemic

highlighted the critical operational value of digital systems to business operations, leading to increased leadership support for these systems. One of the participants supports this claim by saying that *“The ESS systems became essential for maintaining operational continuity when the organisation went into lockdown during the pandemic”*. The pandemic created a critical moment, demonstrating that e-platforms must be utilised for remote work, record management, and service continuity.

Some Staff members continue to demonstrate resistance, which remains an ongoing problem. One participant stated bluntly, *“The organisation does not have full backing from all its employees. Some staff members choose to ignore digital systems while performing their work through manual methods”*. Some participants expressed appreciation for their managers, who supported digital transformation projects that benefited their teams.

5.2.7 User-friendliness of the government e-portals

The responses on the user-friendliness of government e-portals in the OR Tambo District Municipality reveal two dominant perspectives: while several participants consider the portals easy to use and accessible, others point out significant usability and design challenges, with implementation focused more within the organisation, and a small portion of the community used them.

Some of the participants expressed satisfaction with the usability of the existing digital platforms, describing them as straightforward, intuitive, and well-organised. A participant stated that: *“The platforms have user-friendly interfaces which make them easy to use. The platforms operate with the same simplicity as ATM cash withdrawals and computer usage, so anyone who can use these systems will find no difficulty in operating them. The platform is simple to use and requires minimal training to learn its functions. The systems we use have friendly interfaces, which make them easy to operate despite our need for additional employee training.”* **See Figure 24.**

The system enables users to perform simple subtraction operations through its search functions, providing quick access to the necessary information. The system offers user-friendly navigation, enabling users to access all information easily while gaining a clear understanding of the collected data. The portal design enables users to locate information quickly due to its structured layout. Similarly, others stated, *“They are user-friendly. The portal is easy to navigate and use,”* and *“Easy to use and one can adapt to it quickly”*. Users with average digital skills find the systems easy to use for performing fundamental operations, including document retrieval and information display.

The participants evaluated the portal's user-friendliness through their experience with common technological interfaces. One participant explained, *“The platforms have user-friendly interfaces, which make them easy to use. The platforms operate with the same simplicity as ATM cash withdrawal and computer usage, so any person who can use these systems will find no difficulty in operating them”*. The platform is simple to use, requiring minimal training to learn its functions, according to this user. The systems we use have friendly interfaces, which make them easy to operate despite our need for additional employee training. The portal design meets essential user needs but requires standardised training programs to enable all staff members and residents to learn how to use it. One of the participants alluded that *“Users can find tenders on the website without any problems, which makes it useful. Users struggle to find archived documents via the website search. The website maintains its organised structure”*. **See Figure 23.**

In contrast, other respondents highlighted serious usability limitations, particularly in navigation and the clarity of the structure. A study participant identified user confusion about system operations as the main problem with the system. A few respondents admitted unfamiliarity with the portals altogether, as indicated by one comment: *“I’ve never used it before, so I’m not familiar with it”*. Another participant pointed the system lacks proper metadata organisation and effective search functionality. Furthermore, multiple participants reported technical issues affecting system operation and connectivity. One respondent stated, *“The system operates with modern elements*

which meet current operational needs. The system needs a new design framework which should enhance its loading speed performance."

5.2.8 Improvements in service delivery through e-Government strategy

Many responses suggest that, while service delivery systems are in place, they require better evaluation and measurement. One participant stated, *"Our Local Municipality (LM) does not possess enough data to evaluate e-Government progress."* These statements reveal that the municipality lacks established systems to track institutional performance, collect feedback on SANERS' impact on service delivery, or gauge public satisfaction. The municipality faces a challenge due to the lack of empirical data, which hampers progress monitoring, supports informed funding decisions, and identifies management or technical issues that require solutions.

Several participants illustrated, through examples, how digital transformation has led to specific operational improvements. One stated, *"The system demonstrates better service delivery because it offers vital information and essential services, including public consultation, management updates, indigent systems, and council meeting reports."* Online platforms have enhanced service delivery by facilitating improved communication and transparent access to records. A respondent described operational progress through expanded service delivery, which has grown significantly over recent years. Our role as specialists in municipal work supports service operations through administrative assistance, although we do not directly perform these services. Our support enables the successful completion of road and infrastructure projects and maintenance work. The system improves service delivery by enhancing planning, coordination, and reporting capabilities, supporting operations even as some physical services remain manual.

5.2.9 Noticeable changes in turnaround time, accessibility, and satisfaction

The responses when participants were asked about changes in turnaround time, accessibility, and satisfaction indicate that the e-Government Strategy in the OR Tambo District Municipality has led to improved turnaround times, user satisfaction, and service access; however, these gains remain inconsistent due to network problems, user skill deficits, and delayed service digitisation.

Multiple participants confirmed that accessibility, together with operational efficiency, has demonstrated growth. The platform works to decrease administrative expenses for public institutions and citizens, according to one respondent. The platform enables customers to make account payments through a simplified process. A participant stated that *“They can easily access the account statement”*. These views suggest that online portals and billing systems have simplified administrative interactions, enabling faster access to information and reducing the need for in-person visits. Some also observed that the system allows communities to, as indicated by one participant who stated that *“Easy access to things faster and communities are easily accessing information from the municipality”*. implying improved communication channels between the municipality and residents.

Multiple answers indicate that rural areas continue to face accessibility issues, particularly in network coverage, hindering people's ability to access services. One participant pointed out, *“Many citizens, specifically in the rural areas, still lack affordable internet, devices or digital skills. Not all services are available online; some still need in-person follow-up”*. Remote communities face ongoing digital barriers that prevent their access to e-government services, thereby reducing their level of inclusiveness. The situation highlights how digital public services encounter challenges due to inadequate infrastructure and high costs, particularly in rural areas.

The data show that internal administrative work has become more efficient, yet public service delivery outcomes remain unpredictable. The Solar, Payday, and ESS platforms have streamlined the internal approval and reporting processes, according to one participant. The new system allows online signature approvals. Similarly, another explained, *“The EDMS and Payday automated systems have shortened the time needed to finish internal processes”*. Staff members now have access to a simple platform which enables them to request leave and submit their payroll details. The

municipality demonstrates operational efficiency through its internal processes, utilising automation systems and digital record management systems. However, as the same respondents noted, these gains have not fully extended to external-facing services *“The public service sector demonstrates slow digital transformation because we have not digitised permit applications and billing payment systems here at Nyandeni Local Municipality”*. The data indicate that citizen satisfaction has increased slightly; however, residents still experience dissatisfaction because online services operate at only partial capacity. For instance, while one respondent observed that *“The public can access online notices and job postings through digital channels,”* they also acknowledged that *“service satisfaction remains unpredictable because multiple services remain unavailable online, especially in the rural areas where the network is not stable”*. The public needs all services to be permanently available and to have mobile-friendly interfaces. For the OR Tambo District Municipality to fully benefit from SANERS, further investments in infrastructure, user training, and comprehensive online service integration will be essential.

The e-government strategy, implemented through ESS, EDMS, and Solar, has achieved internal performance enhancements through faster processing times and higher employee satisfaction; however, these improvements do not impact external service delivery. The main theme suggests that digital transformation has improved administrative processes and increased employee satisfaction but has not enhanced public service delivery.

Multiple participants stated their organisation achieved improved speed and operational efficiency through their internal processes. One respondent explained, *“The ESS system enables staff members to receive their leave requests and payslips at a faster rate”*. The elimination of extended waiting periods has led to positive changes in work environments, boosting employee satisfaction.

The EDMS system enables staff members to monitor their work activities, leading to quicker task completion, according to one respondent. The EDMS system enables staff members to access records quickly for audit work and reporting; however, it restricts public access to these records, according to another respondent. The

Electronic Document and Records Management System now plays a vital role in enhancing document access, ensuring audit compliance, and facilitating task achievement at the municipal level.

The survey results indicate that staff operations become more efficient; however, there is no evidence that these improvements benefit the public. As one participant admitted, *“The public services have not experienced any major changes.”* Another stated, *“The document approval process now operates at a faster pace, but public services continue to function at a slow rate”*. The current pattern indicates that SANERS prioritises administrative tasks over delivering essential services to citizens, resulting in a service gap between internal and external users.

The public required improved systems which would enable citizens to participate in the process. One respondent suggested, *“The organisation achieved faster reporting times and better online document access, which improved specific operational workflows. Our organisation needs to establish support programs for citizens who want to use digital services”*. The recognition demonstrates that staff members understand that digital transformation success depends on the effective deployment of technology, community outreach, and training programs, which provide equal access to all people.

The research indicates that the OR Tambo District Municipality operates with better institutional efficiency; however, it should focus more on integrating its internal digital systems with external public service delivery platforms. e-Government systems require improved accessibility platforms, user-friendly interfaces, and training programs to achieve higher citizen adoption and satisfaction rates in their future development.

The survey participants agreed that the organisation's internal development efforts did not lead to equivalent improvements in public service delivery. A participant highlighted that *“The payroll systems have shortened the time needed for internal processing of staff requests”*. A participant revealed that the organisation runs more efficiently internally, but its public service delivery times continue to increase. This is evident in the testimony of one participant who claimed that: *“The implementation of*

e-Government services for citizens remains sluggish because users encounter two main barriers, which include limited internet access and insufficient digital literacy”.

The research findings indicate that the municipality needs e-Government service development that extends beyond administrative functions through digital platform accessibility, targeted outreach initiatives, and scheduled digital education programmes. Implementing this approach would enable the benefits of SANERS, such as faster processing times, enhanced visibility, and easier access, to be more widely distributed among all stakeholders interacting with the institution.

5.2.10 Resistance to Technological Change

The findings revealed that resistance to technological change among some government officials is a persistent challenge that hinders the effective implementation of the SANESR framework within the OR Tambo District Municipality. Multiple participants observed that staff members understand the advantages of the e-government system, yet they continue to use their conventional manual procedures. A research participant shared his personal belief in his statement: “Some colleagues keep using paper-based systems because they believe these methods provide better security and a user-friendly experience.” Another official added, *“Whenever we introduce a new system, there is always resistance; people complain that it complicates their work”*. The selected text sections illustrate how people encounter mental blocks due to their preference for current habits, scepticism about digital technology, and concerns about adopting new methods. The resistance movement creates delays in implementation while simultaneously undermining the long-term sustainability of SANESR-driven reforms across various departments.

The research showed that organisational and psychological elements create change resistance, rather than producing direct opposition to change. Workers believe that implementing new technology creates workplace instability because they worry that automated systems will take over their administrative work. As one participant noted, *“People think that once everything is automated, some of us will lose our jobs”*. The way people perceive these changes leads to passive resistance and decreased motivation, resulting in limited participation in system rollout. The problem worsens

because staff members lack ongoing training, incentives, and leadership support, which leads them to doubt the value of new systems. Organisations need to adopt a specific change management system that includes communication, inclusion, and reassurance methods to overcome employee resistance, according to the data. Management needs to lead digital transformation by demonstrating tangible value, recognising key milestones, and involving staff in decision-making. The municipality needs to establish a versatile learning environment that will transition from following rules to generating innovative solutions that achieve the core goals of the SANESR framework.

5.2.11 Feedback from citizens on e-services provided

One respondent shared thoughtful insights into the challenges holding back e-Government adoption. He highlighted three main obstacles: *“Many people don’t have internet access, digital skills are limited, and there aren’t enough public education initiatives. This really sums up the main issues facing the municipality”*. Despite these challenges, the participant expressed optimism about their organisation’s outreach efforts to teach people how to use the portal system, underscoring the importance of user feedback for improving the system.

The data further suggests that institutions are starting to realise that the success of e-Government relies on ongoing community engagement, digital skills training, and a feedback system; it's not just about putting technology in place. There’s significant untapped potential here. The municipality has vital systems that promote transparency and efficiency, such as tender and procurement portals, but these benefits are often underutilised. A participant added that, *“Many citizens simply don’t know about these systems, struggle with how to use them.”* As a result, employees often resort to manual processes, which can erode public trust and hinder the system's full integration.

5.2.12 Former and current digital infrastructure comparison

The answers illustrate how the OR Tambo District Municipality transitioned from separate, manual operations with limited digital access to an integrated, technology-based system after adopting the South African National e-Government Strategy and Roadmap (SANERS). The municipality operated with independent systems, which failed to integrate, requiring physical meetings and paper documentation for every process. The implementation of Solar, EDMS, Promun, Payday, and SCOA systems has improved connectivity, data sharing, and operational automation; however, rural areas continue to experience connectivity issues.

Several respondents noted that, prior to implementation, digital infrastructure was minimal and largely administrative rather than service-oriented. One respondent recalled, *“Face-to-face interaction with the citizens,”* reflecting that citizen engagement and transactions were almost entirely physical. A research participant described that: *“previously we used Venus in the OR Tambo municipality, but the new e-platforms in use are more efficient”*. The municipality now uses interactive systems that enable transactions and departmental coordination through its platform transformation from static information platforms.

A participant explained that: *“The municipality used paper-based systems and manual work procedures until the system deployment took place”*. The respondent added that *“The municipality achieved better network connectivity and centralised document storage and digital document accessibility through its implementation of Solar platforms”*. The system enables fast document sharing, significantly reducing the need for physical document management. This statement captures one of the most tangible outcomes of the digital transition: the move toward centralised and paperless record management, which not only improves operational speed but also aligns with SANERS' goals of reducing administrative inefficiency and promoting environmentally sustainable governance.

Several participants identified infrastructure improvements which occurred during the digital transformation process. The SCOA and Payday systems introduced automated operations and departmental data sharing to the organisation, enhancing its operational performance. *“The transition from manual to automated financial processing has enhanced internal control while simultaneously improving data precision and shortening processing times, which serve as essential digital governance development metrics”*. A participant alluded that: *“Now there are One-stop Online gateways, Digital transactions enabled and improved integration.”*

The municipality achieved substantial infrastructure development through its SANERS-aligned systems, which established centralised databases, integrated networks, and real-time access. As one respondent noted, *“The organisation achieved a digital platform through ESS and Solar, which delivers protected document management and employee self-service and financial tracking capabilities”*. The organisation achieved better connectivity and established centralised databases through the implementation of the Payday and mSCOA platforms, according to another confirmed report of similar progress. The municipality initiated its transition to develop a single digital system that adheres to e-Government framework requirements, aiming to enhance operational efficiency and security, as well as foster departmental collaboration.

The municipality's network infrastructure has evolved from separate connections to advanced systems, enabling the operation of online platforms. One respondent stated that the organisation operated via network connectivity, using individual PCs for its operations. The organisation now utilises internet connectivity and system connectivity. Another noted, *“The municipality previously operated with limited internet speed and no system integration during that time”*. The system operates at high speeds because all components remain connected.

The digital transformation of departments has advanced through the implementation of specialised systems which serve industries. A participant stated that: *“Our*

department uses eNATIS as its electronic system for the Traffic department operations". Similarly, another reported, "The supply chain management system operated through manual paper-based processes previously. And now, the advertising process takes place through digital platforms". See Figure 14. Digital transformation has expanded to operational departments, which utilise their capabilities to enhance the efficiency and transparency of the service delivery chain.

5.2.13 Adequacy of the current ICT infrastructure to support the e-Government services

The responses indicate a mixed assessment of the adequacy of the current ICT infrastructure in supporting e-Government services within the OR Tambo District Municipality. The survey results show that some participants believe their municipality's digital capabilities are strong, while others highlight ongoing service delivery problems that result in unreliable service. The system operates effectively but exhibits uneven performance: urban administrative centres achieve high results, while rural and underfunded areas continue to face ongoing difficulties.

The participants provided direct, positive feedback, indicating their contentment with current developments and stable infrastructure. The ICT environment meets the current operational requirements of departments and locations, as indicated by responses of "Yes" and "Yes, it is adequate". The participant supported this optimism by stating, "Yes, it is easy. The assessment shows that the network operates at high speed while being accessible and dependable. The assessment reveals that municipal offices equipped with better equipment now enjoy enhanced system reliability and improved network connectivity.

The OR Tambo District Municipality requires these strategic investments to transition from basic, manual systems to a comprehensive digital e-Governance model that delivers integrated, efficient services to its citizens.

5.2.14 Staff training to manage digital services

The responses on staff training at OR Tambo District Municipality reveal an uneven and inconsistent approach to capacity-building for managing and sustaining digital services. One of the participants highlighted that: *“The system operates successfully for daily operations, including billing and payroll processing”*. Most employees confirmed that training was available and that the e-platforms used in the municipalities are effective. The following excerpts support this claim:

“The system operates at present but needs future development to achieve its service expansion goals”.

“The system operates without issues, but users sometimes face delayed responses when using the system”.

“The system operates effectively, but users experience occasional slow speeds and service interruptions”.

“The system operates successfully for internal operations, yet public access requires additional infrastructure development”.

The uneven implementation of digital systems has led to operational e-government systems; however, staff members often lack the proper skills and confidence to use them effectively, which threatens the long-term success of these initiatives. Another respondent stated, *“There is no continuous development programme; we mostly get training when there’s a new system rollout.”* The responses suggest that organisations face sustainability challenges due to the lack of ongoing professional development, resulting in skill degradation over several years.

The responses indicate that the municipality achieved technological progress, but its staff members lack ongoing digital learning skills development. Comments such as *“Not really. The training is still needed”* and *“None”* indicate that staff members understand digital literacy requires continuous development, as systems continue to evolve. The lack of scheduled refresher training sessions leads to knowledge degradation, as employees lose their initial training information rapidly due to frequent updates to the Solar and Payday systems and software changes.

5.2.15 Keeping online information accurate and up to date

The municipality continues to work to maintain accurate online data; however, its success remains limited due to varying levels of data accuracy across departments and platforms. The survey participants found the update process to be both efficient and reliable; however, others encountered delays, uneven departmental participation, and insufficient staff resources, leading to outdated or incomplete information on municipal e-platforms.

Multiple participants showed their confidence that the municipality maintains up-to-date digital information. Statements such as *“Very accurate and up to date,”* *“Effective current information is mostly available on the website,”* and *“The municipality updates all information, uploads current documents, and provides users with relevant information”* reflect positive perceptions of data accuracy and commitment to transparency. **See Figure 28.** Others, like *“There is an individual who always updates”* and *“On our website, they are very effective,”* suggest that dedicated staff members or teams ensure timely updates, at least within certain departments such as communications or finance. The comments indicate that information management systems operate within specific domains, handling essential administrative data such as council meetings, tender notices, and job advertisements.

The responses indicate that the OR Tambo District Municipality maintains systems for updating and verifying online information; however, its ability to maintain accurate and up-to-date information varies across departments and platforms. The municipality has made progress in developing scheduled update systems for financial management tools and records management systems; however, the reliability of updates is hampered by departmental coordination failures, insufficient resources, and unclear responsibilities. The organisation maintains accurate data, but its performance varies because different operations have different levels of efficiency and follow different procedures. A participant indicated that: *“I think the website appears to be moderately effective in keeping online information accurate and updated with recent notices and updates on council meetings, tenders and public consultations”*. Another added, *“Before, some documents would disappear, but now we can track every stage online, which reduces corruption”*. The selected excerpts demonstrate how e-government

platforms generate digital audit trails, enhancing transparency and reducing unethical behaviour.

Multiple participants highlighted specific departments that have achieved excellent results in this domain. The supply chain data system runs regular updates, but other information systems face irregular delays when updating their data. The statement indicates that supply chain management operates efficiently due to its well-organised data management system, but other sections face delays because they rely on manual data entry. The system displays different performance levels throughout the municipality due to variations in how departments allocate resources, their digital skills, and their management structures.

The responses revealed positive views about technological capabilities, yet users expressed discontent with how these features currently exist. The information system processes updates at high speed, demonstrating its ability to handle multiple content updates efficiently. The system updates its content, but users cannot predict when these updates will occur, according to another user. The system updates its content, but the timing of these updates remains unpredictable because human and procedural factors, rather than technological capacity, cause the irregular updates. The system yields different results than those organisations do, which demonstrates a typical problem that occurs when cities transition from traditional methods to digital governance.

The municipality demonstrates achievement in information management by valuing accurate data and maintaining verification systems. Additionally, its EDMS Solar and supply chain portal systems operate continuously. The system faces three major challenges that prevent it from reaching its full potential: departments update their information at different times, staff numbers vary between departments, and teams do not work together effectively. The municipality needs to create accountability systems that align with update periods to build dependable e-Government systems that serve as instant communication tools for staff and community members.

5.2.16 Digital channels that the municipality uses to communicate with citizens

The responses indicate that the OR Tambo District Municipality utilises multiple digital communication channels to engage citizens, although the reach and coordination of these channels vary across departments. The municipality has embraced platforms such as email, Facebook, WhatsApp, and even emerging tools like TikTok, reflecting an evolving communication strategy that blends formal and informal modes to reach different segments of the community. However, the findings also reveal that while digital tools are available and increasingly utilised, their integration and responsiveness are still developing, and certain communication methods remain underused or fragmented.

Several participants confirmed that email and social media form the backbone of the municipality's digital communication system. Responses such as *"Emails, social media, Facebook, and newspapers,"* and *"Email, Facebook, Teams, Twitter, Social Media,"* suggest that these platforms are used for both official communication and public outreach. **See Figure 13.** The inclusion of Microsoft Teams suggests that internal digital communication has also become more structured, likely to facilitate coordination among staff and stakeholders. Similarly, *"Facebook, Twitter, and emails,"* and *"Social media, SMS, and municipal website"* illustrate that the municipality combines formal communication channels (email, SMS) with more accessible, community-friendly tools like social media and the official website to keep citizens informed about events, tenders, or public consultations.

Other responses emphasised social media's growing prominence as the municipality's most visible communication tool. Multiple participants referred specifically to Facebook, Twitter, and TikTok as popular outreach platforms, for example: *"WhatsApp, Facebook, Twitter, and TikTok,"* and *"The municipality used various media platforms, including TikTok"*. The adoption of TikTok and WhatsApp signals an awareness of the changing media landscape and the need to reach younger or more digitally active audiences. These platforms enable the municipality to share visual and interactive content, thereby improving accessibility and engagement, particularly among young people.

The use of SMS notifications also appears to be a crucial element in the municipality's communication strategy, particularly for disseminating service-related alerts. One detailed response explained, *"The official correspondence system uses email for standard communication, but SMS sends immediate alerts about service interruptions."* This demonstrates an effort to provide timely, direct communication about issues affecting citizens' daily lives, such as water outages, power outages, or billing notices. The same respondent noted that *"The municipality operates social media accounts on Facebook to spread news updates and maintain contact with local community members."* This reflects a multi-channel approach where different tools serve complementary functions, including emails for documentation, SMS for alerts, and social media for broad, informal engagement. This finding is consistent with the results presented in **Figure 33**.

Another participant highlighted the departmental use of WhatsApp for both internal and community communication, noting that *"Departments that need immediate communication use WhatsApp groups as their main communication channel."* This suggests that while WhatsApp primarily serves as an internal coordination tool, it also bridges the gaps in direct communication between field staff and community groups. It offers immediacy and familiarity but lacks the formal structure of official platforms, which could pose challenges for record-keeping and accountability.

The municipality's e-portal is still evolving as part of this digital communication ecosystem. According to one response, *"The e-portal development team continues to work on adding online chat functionality, but the system remains unfinished."* **See Figure 23**. This highlights ongoing efforts to expand into interactive, two-way digital communication, where citizens can engage directly with municipal officials through real-time chat. However, the fact that the feature remains incomplete reflects broader implementation delays that affect the municipality's ability to deliver fully integrated digital services.

Another respondent reaffirmed this multi-channel communication pattern, stating, *"The official communication system operates through email, but SMS serves as the channel for delivering payment and service notification alerts to citizens."* This demonstrates a functional, though compartmentalised, communication system in which specific channels serve narrowly defined purposes. While effective for delivering updates, this

structure limits cross-platform synchronisation, resulting in fragmented information flows where citizens might receive updates through one channel but not another.

Furthermore, the responses reveal that the OR Tambo District Municipality has made significant strides in adopting diverse digital tools to strengthen citizen communication. Platforms such as Facebook, WhatsApp, and SMS are actively used to enhance transparency and information flow, while formal tools like email and the website provide credibility and documentation. The inclusion of newer platforms, such as TikTok, also suggests a willingness to adapt to evolving digital habits. Yet, despite this progress, coordination, responsiveness, and integration remain key challenges. Some departments communicate effectively, while others lag, resulting in uneven citizen experiences and occasional delays in information dissemination.

The municipality's digital communication system can therefore be described as multi-channel but fragmented, effective in reach but inconsistent in frequency and depth. To enhance communication effectiveness, the municipality would benefit from consolidating its digital tools under a unified communication framework, establishing content management guidelines, and ensuring regular updates across all channels. Additionally, investing in staff training for social media management and digital engagement could improve responsiveness and ensure that information remains accurate, timely, and accessible to all citizens, including those in rural areas with limited digital literacy.

In essence, the OR Tambo District Municipality has adopted a range of communication tools that reflect a growing commitment to digital interaction with its citizens. However, for these platforms to function as true instruments of e-Governance beyond mere information dissemination, they require stronger coordination, consistent updates, and deeper integration across departments, ensuring that every citizen receives clear, current, and responsive communication regardless of their preferred channel.

The responses indicate that the OR Tambo District Municipality employs a multi-channel digital communication strategy that combines formal, semi-formal, and social platforms to connect with both staff and citizens. The dominant tools across all responses are email, SMS, and Facebook, with growing mentions of and exploratory interest in online chat or chatbot systems. This combination reflects a municipality that

has established foundational communication channels for both internal correspondence and public engagement but continues to face challenges in coordinating, managing resources, and fully leveraging these tools.

Across responses, email and SMS emerge as the primary communication channels for official correspondence and service notifications. One participant noted that *“The system distributes billing and payment details through email and SMS messages,”* while another reiterated that *“The organisation depends on email and SMS for communication needs and Facebook for public information dissemination.”* **See Figure 33.** These statements suggest that formal communication, particularly around billing, payments, and internal updates, is handled through structured, recordable channels. The reliance on SMS for alerts, such as service disruptions or payment reminders, demonstrates the municipality’s effort to reach citizens directly and promptly, even in areas with limited internet access.

Several respondents also underscored the municipality’s heavy use of Facebook for public-facing communication. Repeated phrases such as *“Facebook operates as the platform which distributes announcements and updates to the public”* and *“Facebook serves as an additional platform for information sharing”* highlight that Facebook functions as the primary bridge between the municipality and its citizens. **See figure 29.** Through this platform, the municipality shares public notices, job advertisements, community announcements, and emergency alerts. This focus on Facebook reflects an understanding that social media offers a cost-effective, wide-reaching tool for real-time communication, especially in a district where formal digital literacy levels vary.

Other respondents emphasised that communication channels have become more diversified, incorporating multiple tools for different purposes. For instance, one participant explained, *“The official communication channels at our organisation consist of ESS and Solar email systems and Solar SMS alerts and Facebook and X social media pages for community outreach.”* The same respondent added that *“The departments use WhatsApp groups to provide citizens with quick access to communication,”* demonstrating that even informal messaging platforms are being utilised to bridge communication gaps, particularly for expedited departmental responses and community coordination.

The responses also point to the municipality's ongoing experimentation with advanced communication technologies. One participant noted, *"The municipality enables public interaction through Facebook and other social media platforms like TikTok"*. These remarks suggest a forward-looking approach where the municipality is exploring interactive communication tools to improve responsiveness, transparency, and two-way dialogue, key principles of e-Government communication. However, these tools remain at the planning or pilot stage, revealing a gap between strategic intent and operational implementation.

At the same time, several responses suggest capacity and resource challenges that hinder consistent communication. In this regard, one respondent acknowledged that *"The municipality conducts official business through emails while using SMS for urgent alerts and Facebook for public announcements. The organisation struggles to maintain active communication channels because it lacks sufficient staff resources."* This reflects a broader pattern observed in other municipal operations; technological systems may exist, but human capacity and staffing shortages prevent them from being fully optimised. Maintaining regular engagement across multiple platforms requires dedicated personnel, content management skills, and monitoring systems, which the municipality appears to lack.

The repeated references to a combination of email, SMS, and Facebook suggest that the municipality's communication strategy has achieved functional integration but limited interactivity. The system is effective for pushing information outward, sending alerts, announcements, and updates, but is less effective in facilitating two-way engagement or feedback from citizens. For instance, while *"The combination of SMS alerts with Facebook social media platforms enables citizens to access important information updates,"* there is little evidence that citizens can easily respond, raise concerns, or track requests digitally.

Collectively, the responses depict a municipality that has embraced digital communication tools pragmatically. Email provides official correspondence; SMS ensures immediacy; Facebook enable mass outreach; WhatsApp supports localised and informal communication; and systems like ESS and Solar facilitate internal coordination. However, this ecosystem remains somewhat disconnected and unevenly managed, lacking unified oversight and real-time responsiveness.

In summary, the municipality has made commendable progress in adopting multiple digital channels to communicate with citizens and stakeholders. Yet, to maximise their impact, it needs to shift from a multi-channel approach to an integrated communication framework that ensures message consistency, efficient content management, and two-way digital participation. The gradual introduction of chatbots and online chat systems signals an important next step toward interactive e-Governance, but these innovations will require strong institutional support, staff training, and dedicated communication policies to function effectively.

Thus, while the OR Tambo District Municipality has successfully diversified its communication platforms, its next challenge lies in consolidating them into a coherent, responsive, and citizen-focused digital communication strategy that truly aligns with the goals of transparency, efficiency, and inclusiveness envisioned in the South African National e-Government Strategy and Roadmap.

5.2.17 Ways of handling digital literacy, internet connectivity, and cybersecurity

The responses indicate that the OR Tambo District Municipality has made some progress in addressing digital literacy, internet connectivity, and cybersecurity; however, these efforts remain fragmented and unevenly implemented, with limited impact. The municipality has introduced awareness campaigns, training workshops, and network upgrades to strengthen digital capacity; yet, several challenges, including inconsistent internet access, limited digital literacy among staff, and uneven cybersecurity enforcement, continue to affect the full realisation of a secure and digitally empowered environment.

Many participants confirmed that these issues have been tackled through training and awareness initiatives, reflecting an understanding of their importance within the organisation's digital transformation agenda. Responses such as *"In workshops and meetings," "In workshops and via emails and day-to-day meetings,"* and *"Through awareness & training"* indicate that the municipality uses formal and informal forums to promote digital skills and cybersecurity awareness. Staff appear to receive

information through both physical gatherings and electronic communication channels. However, these interventions are ad hoc rather than structured, with no indication of a sustained digital skills development programme for all employees. The system experiences extended downtime, forcing officials to perform tasks manually for several hours or an entire day, especially when employees are working from home or remote areas. Another participant stated, *“Many of our rural offices don’t have stable internet”*. The provided excerpts demonstrate how structural issues cause service interruptions that prevent government personnel and users from accessing digital platforms.

A more detailed response revealed uneven progress, noting that *“Digital literacy hasn’t been addressed for all employees. The network infrastructure update has been completed, and users can now connect to most sites. Cybersecurity is being addressed, and firewalls and network security are in place”*. This statement captures the mixed reality of partial achievement: the municipality has improved its network infrastructure and basic security defences, but the human dimension of digital literacy in e-Government remains underdeveloped. The failure to provide comprehensive training to all employees creates a digital divide within the institution, where technologically confident staff members operate effectively, while others struggle to navigate systems such as Solar, Promun, and EDMS.

Some participants suggested that cybersecurity awareness is actively managed, at least at a basic level. For instance, one respondent stated, *“They always alert the staff via email about cybersecurity,”* and another echoed, *“Yes, through awareness”*. These comments imply that the municipality’s ICT division regularly disseminates alerts and reminders regarding cyber threats, potentially in response to phishing or malware risks. A more detailed response elaborated, *“The organisation implements cybersecurity measures through its internal structure, which includes the ICT departments, antivirus software and employee training sessions for digital security awareness”*. *The organisation provides ongoing assistance to staff members who need help stopping cyber-attacks from affecting their work activities.”* This suggests that cybersecurity is being institutionalised through both technical (e.g., firewalls, antivirus software) and human (e.g., training and awareness) measures, aligning with broader public-sector standards for data protection and risk management. As one participant pointed out, *“The system is very effective when it’s working, but we had an*

incident where the platform went off, froze or went offline, and we have to wait for the ICT team". The team experiences continuous delays because different departments use separate systems, which makes it difficult to coordinate information.

Despite these steps, the responses also reveal significant ongoing challenges, particularly in terms of internet connectivity and equitable access. One participant noted bluntly that *"A week can end without being able to connect to the internet, but in my community, which is rural, but not in the office"*. illustrating that reliable network access remains a persistent challenge, especially in rural or resource-constrained areas of the municipality. This undermines the effectiveness of e-Government systems, since even trained and security-aware staff cannot function effectively without stable connectivity. Another respondent assessed that *"For me, the current level of implementation stands at 60%/30% of potential offence."* This statement highlights gaps in project management and follow-up, suggesting that digital initiatives have not been fully integrated or localised within the municipality's operational structure.

Digital literacy initiatives have not reached all employees, and internet connectivity remains unreliable in certain areas. Although cybersecurity measures are in place, they require ongoing investment in both infrastructure and human awareness.

The responses collectively suggest that the municipality's digital maturity stands at an intermediate stage: the systems and awareness frameworks exist, but they are not yet comprehensive, coordinated, or sustainable. To move forward, the municipality must establish continuous digital literacy programmes for all staff, strengthen broadband infrastructure (especially for rural offices), and institutionalise cybersecurity governance with clear policies and monitoring mechanisms. Without addressing these foundational elements, even the most advanced e-Government platforms will continue to face operational bottlenecks and security vulnerabilities.

The municipality demonstrates digital transformation progress through its institutional efforts; however, its full success depends on resolving ongoing digital access issues, which will enable all staff members and citizens to use e-Government systems securely and efficiently, in line with the South African National e-Government Strategy and Roadmap Framework.

5.2.18 Measurable outcomes or performance indicators for tracking implementation

The responses indicate that the OR Tambo District Municipality monitors performance indicators from its e-Government initiatives, although these metrics remain limited to organisational use and demonstrate irregular success rates. The departments utilise Solar and EDMS, as well as Payday and ESS systems, for monitoring; however, they lack a unified performance assessment system that evaluates the e-Government

The results indicate that municipalities did not establish effective measurement systems and that their employees remain uninformed about them. The statements *"I have not yet seen them"*, *"No information regarding that"*, and *"Not applicable"* indicate that employees either ignore performance data or that their organisation does not share it with all staff members. The current situation indicates that technical and managerial monitoring systems exist, but they have not become established as performance culture elements throughout the organisation. Staff members fail to learn from one another and maintain team accountability because performance metrics are shared without sufficient transparency and clarity.

The limited tracking of measurable outcomes highlights the problems identified in previous responses: staff receive inadequate training, data management remains disorganised, and the infrastructure is insufficient. Users face difficulties in collecting accurate performance data because their internet stability varies and their digital skills differ significantly.

The research indicates that the OR Tambo District Municipality has begun establishing performance monitoring systems that connect to its e-Government projects at the beginning to middle levels. The implementation of Solar and EDMS platforms for uptime monitoring, response time tracking, and service request management demonstrates how organisations move toward data-based operational decisions. The

municipality needs a comprehensive performance framework that connects technical performance indicators to citizen satisfaction, service accessibility, and sustainable service delivery outcomes. A participant alluded that *“I think the municipality can depend on ESS staff usage statistics and ESS training completion rates as vital performance indicators for digital adoption”*. Performance and service delivery patterns. The municipality demonstrates stronger digital operations monitoring capabilities, but it continues to focus on internal organisational tracking of administrative performance, technical stability, and employee participation, rather than on external metrics that assess citizen experience and the social impacts of digital transformation.

5.2.19 What worked well in implementing the e-Government strategy

The public considers the implementation of the online payment system to be their most significant achievement. One respondent explained, *“It is, for the fact that now people are able to pay their bills and renew their licenses online, I believe this implementation was a success.”* This example demonstrates how digital transformation has enhanced citizen convenience through modernised municipal operations, which now utilise digital billing and licensing services. The online payment system enables the municipality to process transactions more efficiently, make financial information more accessible, and improve its revenue management.

The respondent stated that better communication and improved access to services have become available because problems no longer force community members to visit the municipality. Digital communication tools, including municipal websites, email, and social media platforms, have facilitated better information exchange between residents and their local governments. This indicates that digital communication enables quicker responses, as there is no longer a need for face-to-face meetings.

The positive impact of developing digital infrastructure is evident in the statement about reliable internet access. The online operations of Promun Solar and EDMS depend on stable internet connectivity to function effectively. The municipality has

achieved greater administrative efficiency through improved infrastructure, enabling it to deliver online services more effectively.

The development of institutions, alongside human resource management, has also proven successful. As one participant noted, *“I think the continuous engagement. And, the training that is always taking place and refresher trainings where employees are divided into groups, and in terms of information management.”* The organisation supports staff development through ongoing training programmes, helping employees to develop their digital skills and professional competencies. The municipality demonstrates an understanding of technological change through continuous engagement and refresher programmes, recognising that system implementation requires staff members with both competence and confidence in using these systems. These initiatives showcase proactive learning and adaptability.

The implementation of the South African e-Government Strategy appears promising, driven by three key elements: political support, digital system development, and public participation. The statement illustrates how national government backing, through political commitment and infrastructure investment, has enabled the OR Tambo District Municipality to make progress within the national framework. The digital trend of citizen engagement aligns with the pattern described in this text; however, digital participation continues to exhibit an unequal distribution between urban and rural regions.

Section B

5.3 Quantitative Data (Survey)

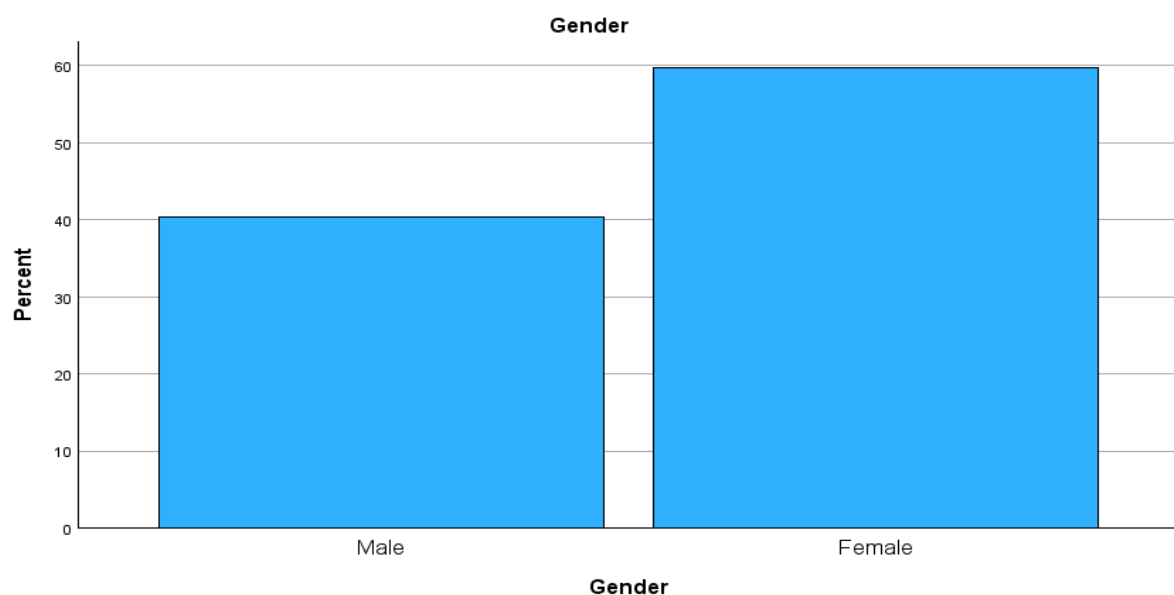
This study supports its qualitative results with quantitative data analysis, providing statistical evidence of South African nationality. The research evaluates municipal officials' survey responses to understand their demographic characteristics and their assessment of the SANES e-Government Strategy and Roadmap (SANESR) operating in the OR Tambo District Municipality, using structured questionnaires. The quantitative analysis employs descriptive and inferential statistical methods to support the findings. The statistical results help quantify the aspects identified in the qualitative

research regarding institutional capacity, digital readiness, policy alignment, and service efficiency. The quantitative analysis supports the research objectives by integrating survey data with qualitative results, creating a comprehensive understanding. The research becomes more reliable and applicable through quantitative data analysis, which confirms qualitative findings through numerical measurements. The quantitative assessment verifies interview-based perceptions through statistical evidence, which supports the findings.

5.3.1 Distribution of Respondents by Gender

The section below provides the demographic analysis of the respondents of the study

Figure 15: Gender of the Participants



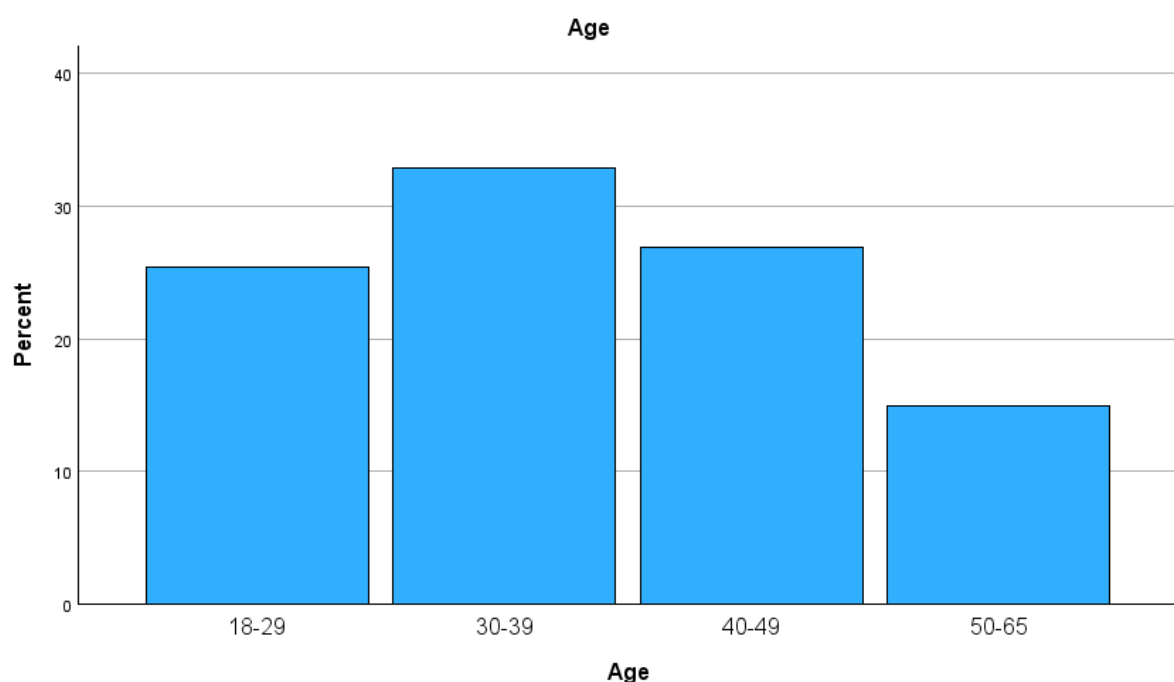
Source: Author's own data, analysed using SPSS

The survey results indicate that females comprise the largest group, accounting for 58.8% of participants (59.7% of valid responses), while males account for 39.7% (40.3% of valid responses). A total of 68 participants were included; 1.5% did not report their gender, and 67 provided valid gender data. The total percentage reaches 100% when female respondents are included in the analysis, demonstrating that all valid

cases are represented by gender. The study sample shows a higher female participation rate because women either joined the survey more frequently or showed better interest in participating through the survey platform. The gender breakdown of participants provides a balanced, female-heavy perspective that helps researchers understand how gender affects e-government service use and perception.

5.3.2 Distribution of respondents by Age

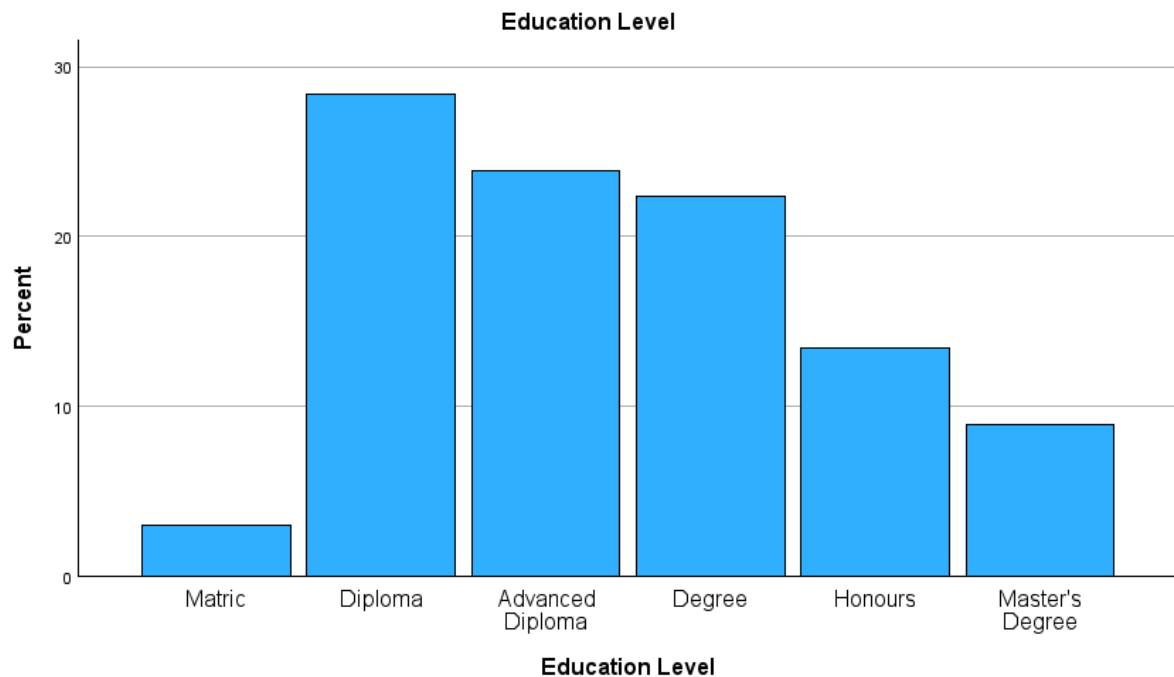
Figure 16: Age of the Participants



Source: Author's own data, analysed using SPSS

The survey results show that most users of e-Government systems at the municipality belong to the young adult to middle-aged category, since 33% of respondents fall between 30 and 39 years old. The 40–49 and 18–29 age ranges are roughly equal in size, with 27% and 26%, respectively, indicating that most users belong to the digital age groups. The smallest group consists of people aged 50-65, who make up about 15% of the respondents. Older citizens and employees exhibit low participation because they lack digital skills and tend to avoid using new ICT systems.

Figure 17: Educational Level



Source: Author's own compilation from SPSS data analysis

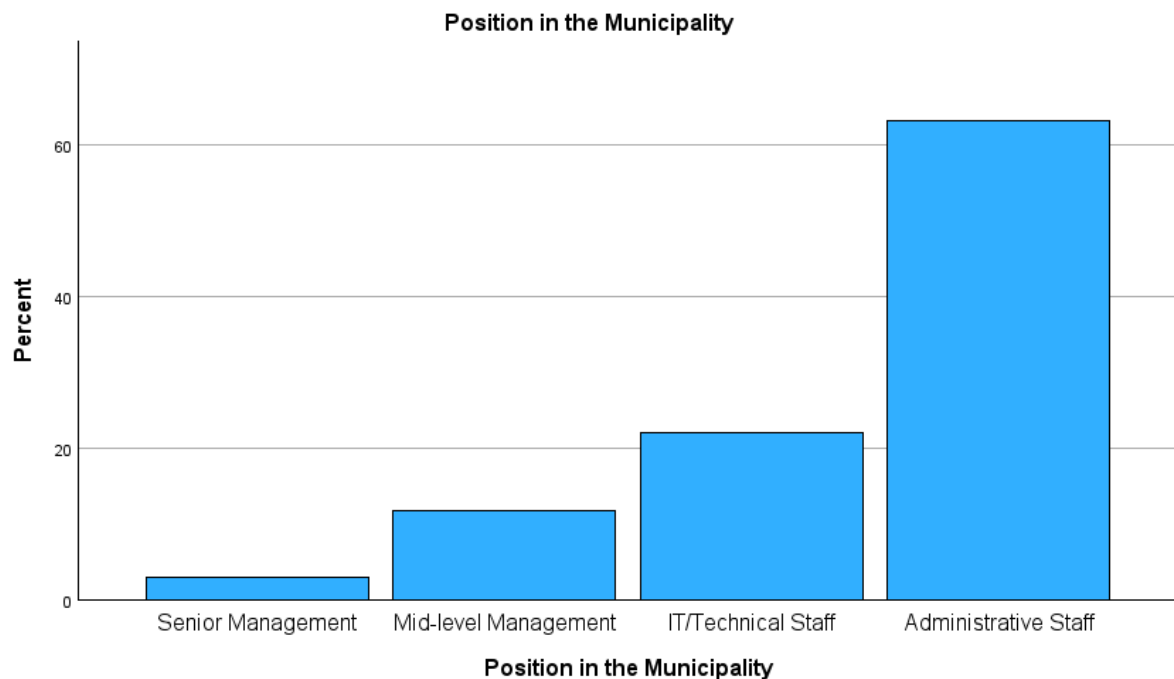
5.3.3 Distribution of Respondents by Educational Level

The educational backgrounds of participants in the e-Government study indicate a highly literate, diverse professional group, thereby strengthening both data quality and the depth of the research findings. The 68 participants returned 67 valid responses (98.5%), with Diplomas being the most common qualification at 28.4% followed by Advanced Diplomas at 23.9% and Degrees at 22.4% while 13.4% held Honours degrees, 9.0% had master's degrees, and only 3.0% had Matric as their highest educational achievement. The participants' educational level indicates that more than 97% hold tertiary qualifications, suggesting they can effectively assess the South African National e-Government Strategy and Roadmap Framework. The respondents' educational background indicates that they can evaluate e-Government systems based on accessibility, user experience, system efficiency, and transparency within the OR Tambo District Municipality. The study benefits from their expert knowledge

because their informed opinions validate the qualitative research results, which stem from their understanding of administrative and technological systems.

5.3.4 Distribution of respondents by position in the Municipality?

Figure 19: Position



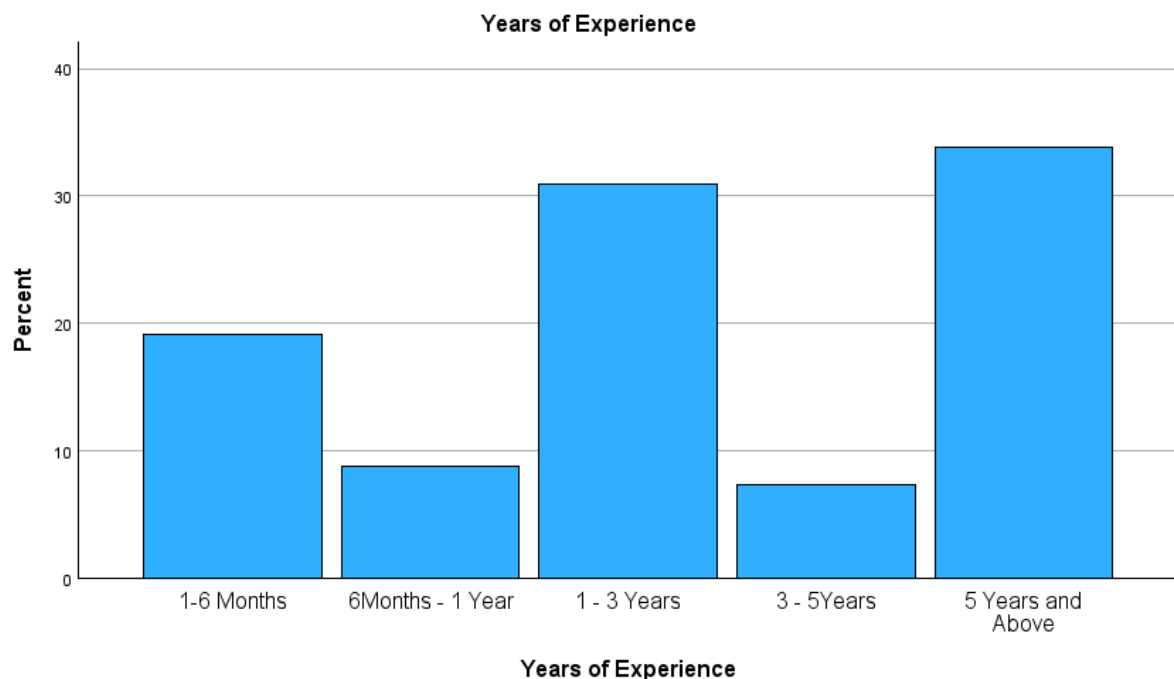
Source: Author's own data, analysed using SPSS

The 68 participants in the survey represent all positions within the OR Tambo District Municipality, as they work at various levels of administration and operations. The survey participants consist of 63.2% Administrative Staff members, followed by 22.1% IT/Technical Staff, 11.8% Mid-level Management personnel, and 2.9% Senior Management staff. The majority of survey participants work directly with e-Government platforms, which allows them to provide essential information about system usability, operational efficiency, and service delivery effectiveness. The study benefits from IT personnel's participation because they directly work with digital systems that align with the South African National e-Government Strategy and Roadmap Framework. The study benefits from managerial staff participation, although their numbers are limited, because their input shows how leaders understand and support digital governance initiatives. The study achieves complete validity and

comprehensive results regarding the effectiveness of e-Government implementation in the municipality, as it includes participants from all operational and managerial levels.

5.3.4 Distribution of respondents by years of working experience

Figure 20: Year of Experience



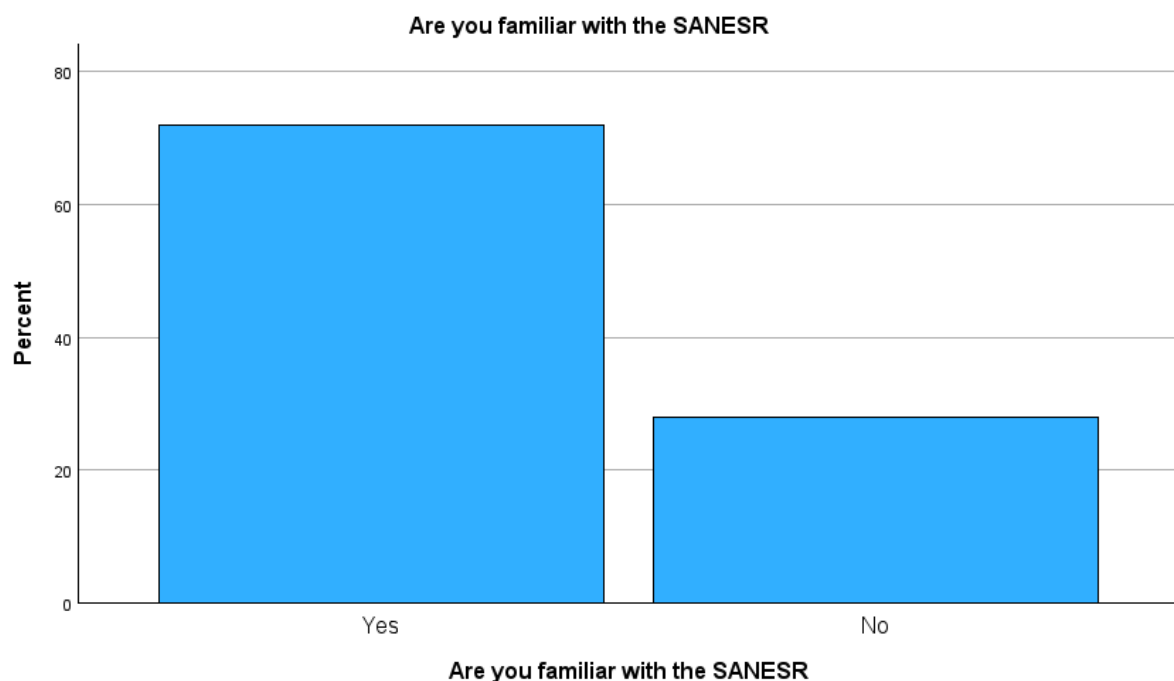
Source: Author's own data, analysed using SPSS

The survey results reveal a wide range of experience levels among municipal staff, encompassing both new employees and long-term workers, providing a comprehensive view of e-Government system implementation and operation. The 68 survey participants consist of 33.8% who have worked for more than five years, 30.9% who have 1–3 years of experience, 19.1% with 1–6 months of experience, 8.8% with 6 months to 1 year of experience, and 7.4% with 3–5 years of experience. The participant distribution indicates that most employees joined the institution recently; however, a substantial number of staff members have spent many years working there, providing the study with insights from both old and new employees. Long-term employees contribute institutional knowledge and a deep understanding of historical administrative processes, which enables them to evaluate the long-term impact of eGovernment reforms on service delivery and communication. The study benefits from new employees' perspectives on system usability, digital integration, and training

effectiveness, as they are typically more tech-savvy. The study achieves greater reliability in assessing the effectiveness of the South African National e-Government Strategy and Roadmap Framework in the OR Tambo District Municipality by combining data from employees at various stages of digital governance adaptation.

5.3.5 Respondents' familiarity with the South African National e-Government Strategy and Roadmap (SANESRS)?

Figure 18: familiarity with SANESR



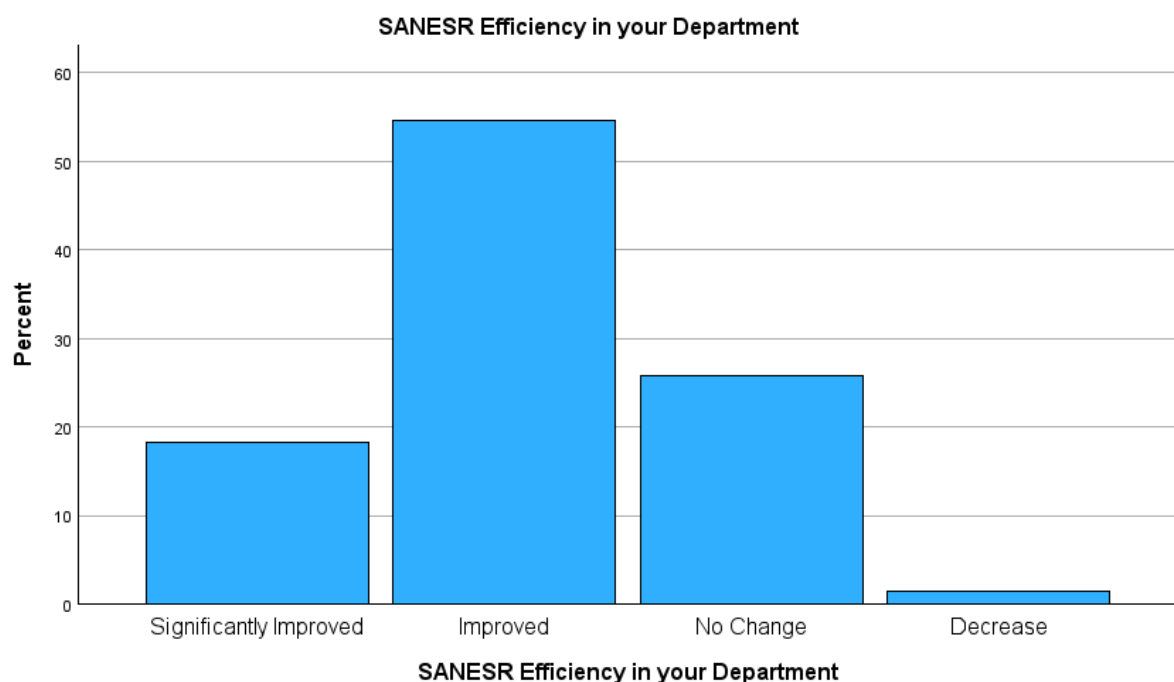
Source: Author's own data, analysed using SPSS

The survey results regarding municipal staff's understanding of the South African National e-Government Strategy and Roadmap (SANESR) indicate that 72.1% of 68 participants have a good understanding of SANESR, while 27.9% lack knowledge of it. This suggests that most employees possess a solid understanding of the framework. The survey results show that about the strategy. The majority of staff members demonstrate some understanding of the strategic framework that guides public service delivery and digital transformation. The national blueprint for SANESR requires staff awareness, as it outlines the framework for building efficient and

transparent e-Government systems that serve citizens. The high number of informed respondents indicates that the OR Tambo District Municipality successfully implemented SANESR principles across its operations, particularly among administrative and IT staff and mid-level management. The 27.9% of staff who lack knowledge about the strategy indicates poor internal communication and training practices, which obstruct uniform policy execution and digital system adoption. The study's goal to evaluate SANESR effectiveness receives support from general employee awareness but reveals a need for ongoing training and information distribution to achieve a complete understanding of their e-Government responsibilities among staff.

5.3.6 SANESR Impact on Efficiency in the Department.

Figure 19: SANESR Impact on Efficiency in the Department



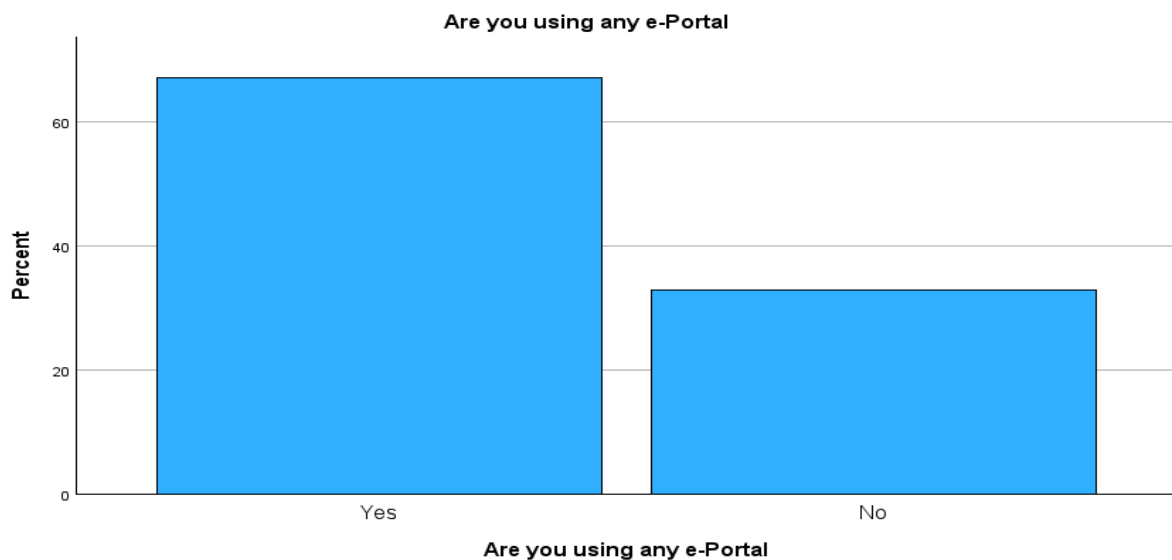
Source: Author's own data, analysed using SPSS

The survey results indicate that the implementation of SANESR in the departmental operations of the OR Tambo District Municipality has yielded mostly beneficial results for operational performance. The survey results from 68 participants showed that 66

valid responses were collected, with 54.5% reporting improved efficiency and 18.2% reporting substantial improvement. The survey results indicate that 72% of participants observed some level of improvement, as the SANESR framework has a positive impact on municipal service delivery, digital system coordination, and operational efficiency. The survey results indicate that 25.8% of respondents observed no changes, while 1.5% reported decreased efficiency due to potential implementation issues, including insufficient training, inadequate resources, and difficulties with system integration. The study confirms the effectiveness of the South African National e-Government Strategy and Roadmap Framework, as it has begun to produce concrete improvements in internal operations and service delivery performance. The minority of respondents who reported no change or decline in efficiency require additional capacity development and infrastructure support, as well as continuous monitoring, to achieve widespread departmental adoption and sustained performance improvements.

5.3.7 Usage of municipal e-portal

Figure 20: Usage of municipal e-portal

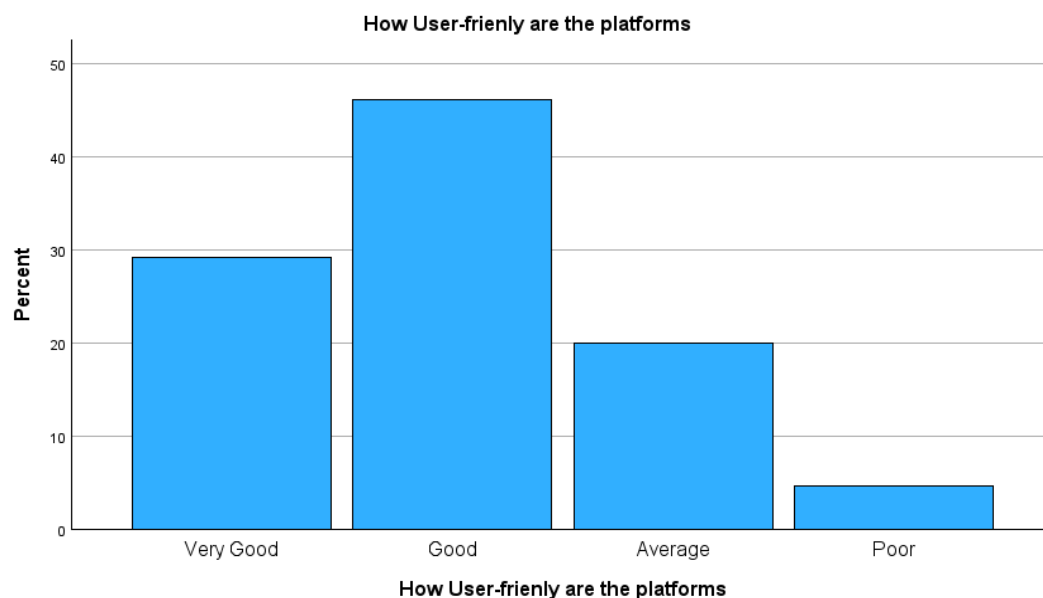


Source: Author's own data, analysed using SPSS

The OR Tambo District Municipality employee survey indicates that staff members actively utilise e-Portals because they have adopted e-Government tools, as outlined in the South African National e-Government Strategy and Roadmap Framework (SANESR). The survey results indicate that 67.2% of 68 respondents utilise e-Portals for administrative and service-related purposes, while 32.8% do not. The majority of municipal staff members (67.2%) utilise e-portals for administrative work and service delivery, indicating that digital governance adoption is increasing. The broad adoption of e-Portals supports operational efficiency, data management, and transparency goals, which form the core of SANESR. The 32.8% of employees who do not use e-Portals indicate a need for additional support, as they may lack access to digital resources or proper training. The high rate of e-government adoption indicates significant progress; however, SANESR requires sustained investment in ICT infrastructure development, user training, and system accessibility to achieve complete staff participation in digital transformation.

5.3.8 User-friendliness of e-portals

Figure 21: User-friendliness of e-portals



Source: Author's own data, analysed using SPSS

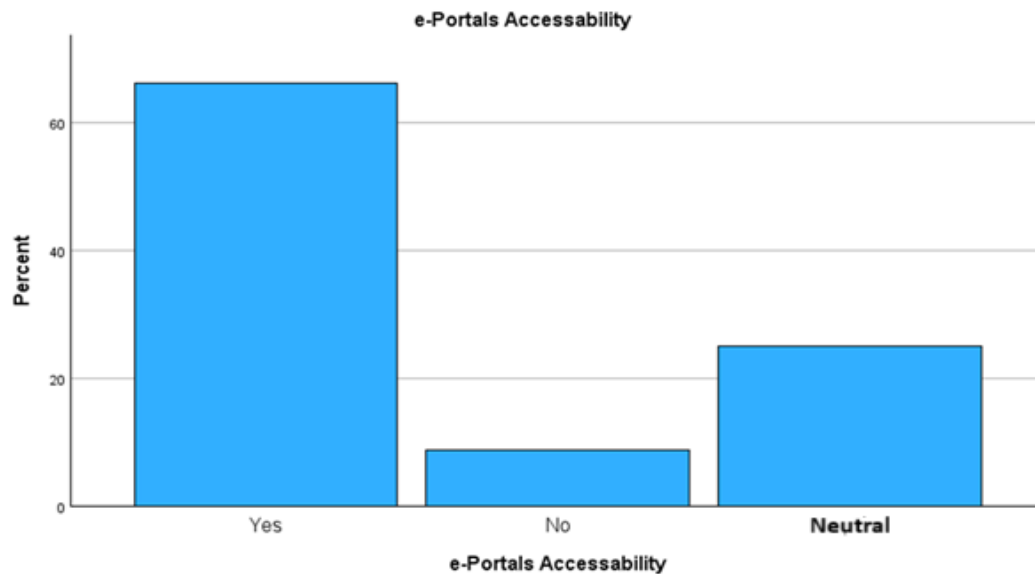
The user-friendliness assessment of OR Tambo District Municipality's e-Government platforms shows that most staff members find these systems easy to use and accessible, which aligns with the usability goals of the South African National e-Government Strategy and Roadmap Framework (SANESR). The survey results from 68 participants showed that 65 valid responses were collected, with 46.2% of participants rating the platforms as "good" and 75.4% rating them as "good."

The survey results show that 75.4% of participants found the platforms easy to use, with 46.2% rating them Good, 29.2% Very Good, and 29.2% Good, resulting in a total satisfaction rate of Very Good. The remaining 20% of participants rated the platforms as Average, while 4.6% rated them Poor. According to the survey results, most users experience smooth interactions with e-government systems, supporting SANESR's goal to improve digital service delivery through accessible, efficient digital tools. The small number of users who rated the systems poorly and those who rated them as average may experience usability issues due to slow system responses, inadequate technical support, and insufficient training.

The results demonstrate that the systems achieve a satisfactory level of user-friendliness. The municipality has achieved commendable progress in implementing user-friendly e-platforms. Ongoing efforts to improve interface design, user support, and continuous digital literacy training will further enhance the accessibility and overall user experience of these platforms.

5.3.9 E-portal Accessibility on Mobile Devices

Figure 22: E-portal Accessibility on Mobile Devices

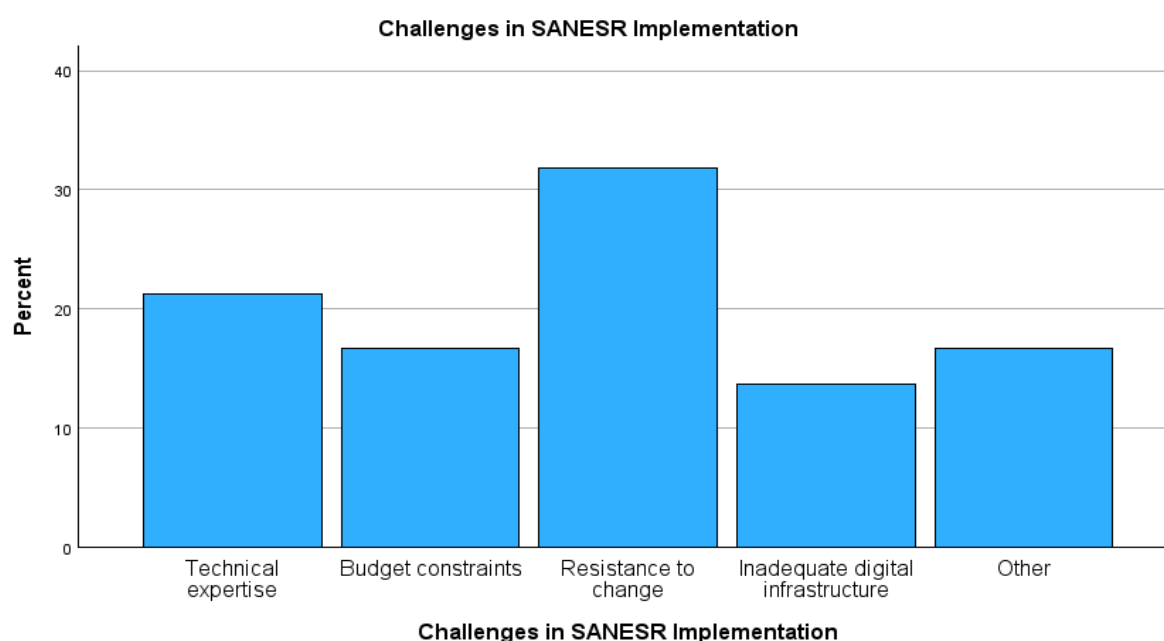


Source: Author's own data, analysed using SPSS

The assessment of e-Portal accessibility in the OR Tambo District Municipality yields positive results, but with inconsistent user experiences, as the implementation of the South African National e-Government Strategy and Roadmap Framework (SANESR) has made some progress while still requiring further development. The survey results show that 66.2% of the 68 participants found e-Portals accessible, 8.8% found them inaccessible, and 25% chose the neutral rating, indicating variable accessibility levels. The positive responses from most participants indicate that the municipality has successfully enhanced digital access to administrative services through its platforms, which supports SANESR's goals for inclusive and efficient government operations. The remaining third of respondents who reported difficulties or uncertainty about portal accessibility indicate ongoing system-related problems stemming from inadequate internet access, unreliable devices, and inconsistent performance of the departmental platform. The unequal distribution of ICT resources and support throughout the municipality seems to contribute to these observed differences. The study confirms that e-Portals are accessible to most users, but complete e-Government benefits require better ICT infrastructure development, standardised departmental access, and reliable connectivity.

5.3.10 Challenges Faced in Implementing the e-Government Strategy in Your Department

Figure 23: Challenges Faced in Implementing the e-Government Strategy in Your Department



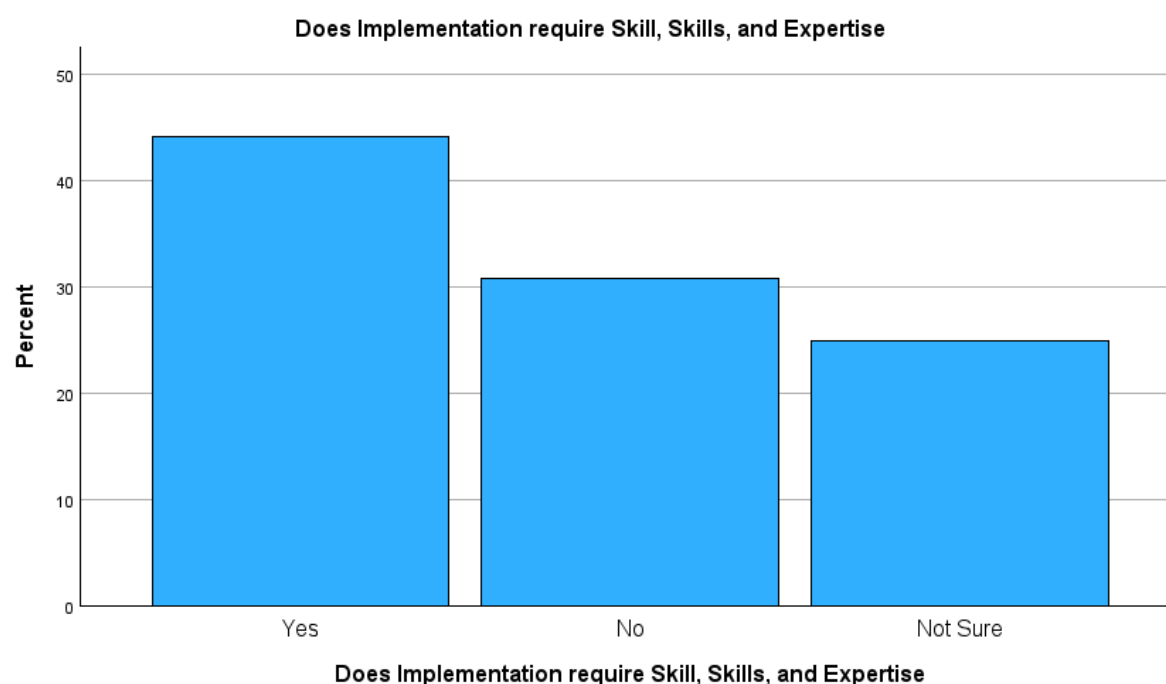
Source: Author's own data, analysed using SPSS

The SANESR faces multiple essential obstacles to complete digital transformation in the OR Tambo District Municipality. The survey results from 68 participants revealed that resistance to change was the leading challenge, at 31.8%, followed by insufficient technical expertise at 21.2%, budget restrictions at 16.7%, insufficient digital infrastructure at 13.6%, and miscellaneous factors at 16.7%. The dominant resistance to change indicates that organisational culture and human elements present major obstacles, as staff members avoid adopting new technology due to concerns about job security, skill deficits, and uncertainty about their roles. The municipality faces additional challenges because it lacks a sufficient technical staff to properly manage and support its digital systems. The municipality faces two main challenges stemming from budgetary and infrastructure limitations that prevent the acquisition of modern ICT tools, reliable internet access, and the maintenance of the systems necessary for effective e-Government operations. The research demonstrates that SANESR has brought about positive changes to digital service delivery; however, its sustained

success in the municipality requires dedicated funding for capacity development, change management, and ICT infrastructure improvement, as well as stakeholder awareness programs to address institutional, financial, and technical hurdles.

5.3.11 e-Government requiring Special Skills, Knowledge and Expertise.

Figure 24: e-Government requiring Special Skills, Knowledge, and Expertise



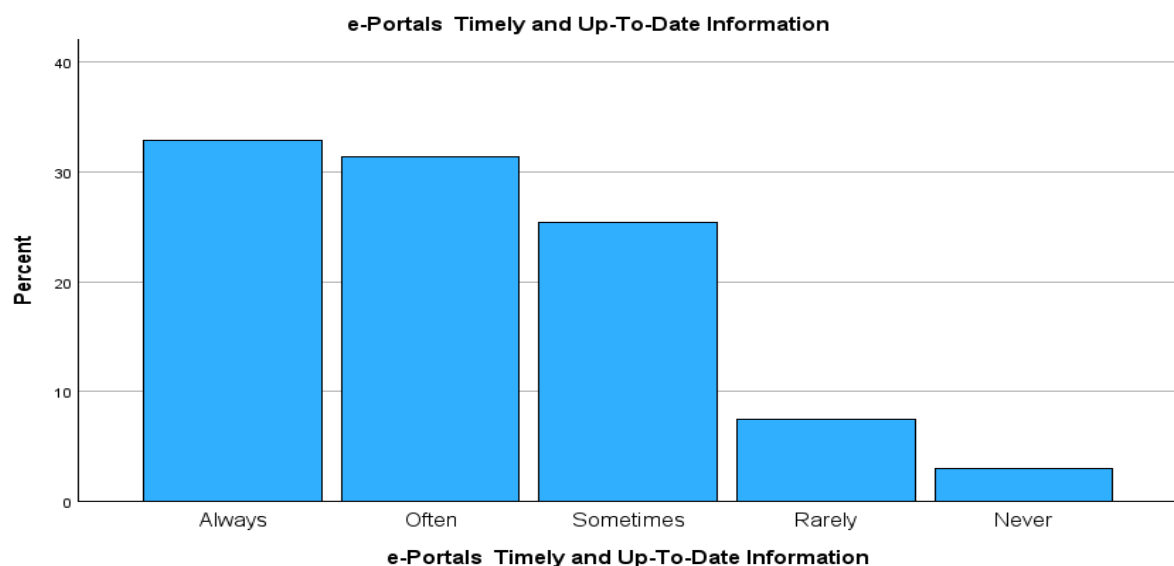
Source: Author's own data, analysed using SPSS

The implementation process of the SANESR requires particular skills and expertise, according to 44.1% of respondents from the OR Tambo District Municipality. However, 30.9% disagree, and 25.0% remain uncertain about the technical requirements. The results show that 44.1% of 68 participants agree that specialised skills and expertise are needed for SANESR implementation, while 30.9% disagree and 25.0% remain uncertain. The low percentage of respondents who understand the necessary technical competencies for e-Government system maintenance indicates a knowledge deficit or insufficient comprehension of required skills. The perception might result from insufficient training programs, insufficient awareness initiatives, and unclear role definitions during implementation. The high number of employees who answered "No"

and "Not Sure" shows they lack proper training or do not recognise their connection to technical e-Government operations. The municipality needs to establish training programs for capacity development, implement ongoing ICT literacy education, and establish precise SANESR implementation responsibilities for all staff members. The municipality will achieve better system functionality and stronger digital governance by implementing the SANESR goals and developing strong technical and managerial competencies.

5.3.12 e-Government Providing Timely and Up-to-date Information

Figure 25: Timely and Up-to-date Information



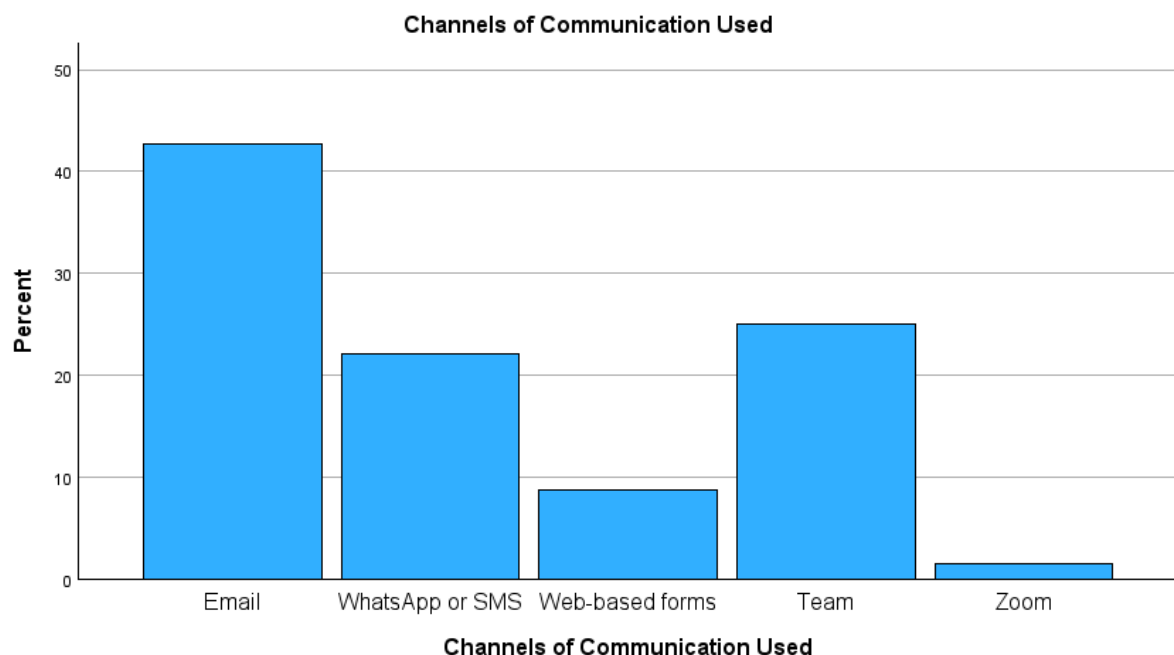
Source: Author's own data, analysed using SPSS

The assessment of e-Portals' information timeliness and currency in the OR Tambo District Municipality shows that most users find the systems reliable, but they still encounter occasional inconsistencies. The survey results from 68 participants showed that 67 participants provided valid answers about portal updates, with 32.8% reporting that they always received up-to-date information, 31.3% stating that they often did, and 25.4% indicating that they sometimes did. The survey results show that 7.5% of participants reported updates happen infrequently, while 3.0% never experience updates. The survey results show that 64% of participants believe the e-Portals receive regular updates, which indicates SANESR has successfully improved

information delivery and real-time service performance. The remaining 36% of users who experience sporadic or infrequent updates indicate that digital content management and administrative oversight need improvement. The problems stem from insufficient ICT personnel, inadequate monitoring systems, and delayed interdepartmental coordination for uploading new information. The study confirms that SANESR has improved the accessibility and accuracy of municipal online information. However, the results demonstrate the need for scheduled system checks, automated update systems, and performance tracking systems to maintain the reliability and current status of e-Portals, thereby enhancing citizen trust and institutional transparency.

5.3.13 Preferred channels of communication

Figure 26: Preferred channels of communication



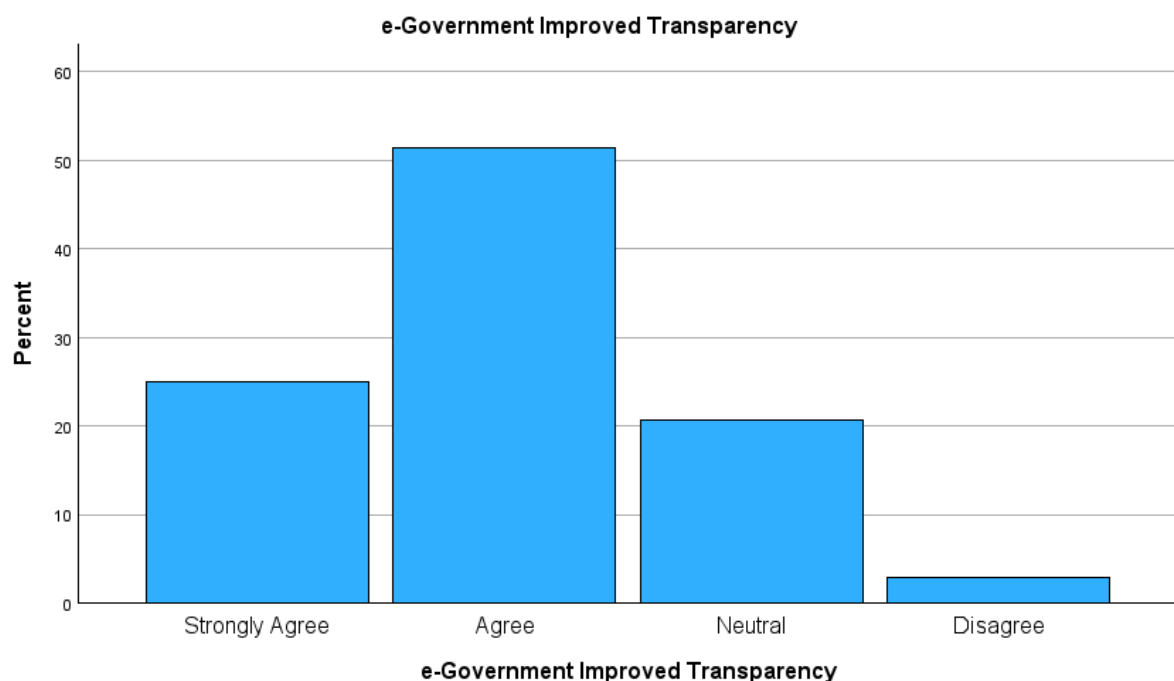
Source: Author's own data, analysed using SPSS

The OR Tambo District Municipality employs various communication methods in accordance with the South African National e-Government Strategy and Roadmap Framework (SANESR), yet these channels exhibit differing levels of digital adoption.

The survey data indicate that email is the primary communication method for 42.6% of respondents, followed by Microsoft Teams at 25.0%, WhatsApp or SMS at 22.1%, web-based forms at 8.8%, and Zoom at 1.5%. The survey results indicate that employees choose email as their primary communication method because they want to utilise official institutional systems, which support SANESR's mission to enhance efficiency and accountability through ICT-based communication systems. The municipality is making progress in building a comprehensive digital communication system by increasing its use of Teams and other collaborative platforms, which facilitate instant departmental communication and virtual meetings. The use of WhatsApp and SMS demonstrates that organisations maintain essential, fast information exchange functions through these informal channels, as they are well-suited for situations where internet access is limited or when immediate messages need to be delivered.

5.3.14 e-Government transparency

Figure 27: e-Government transparency

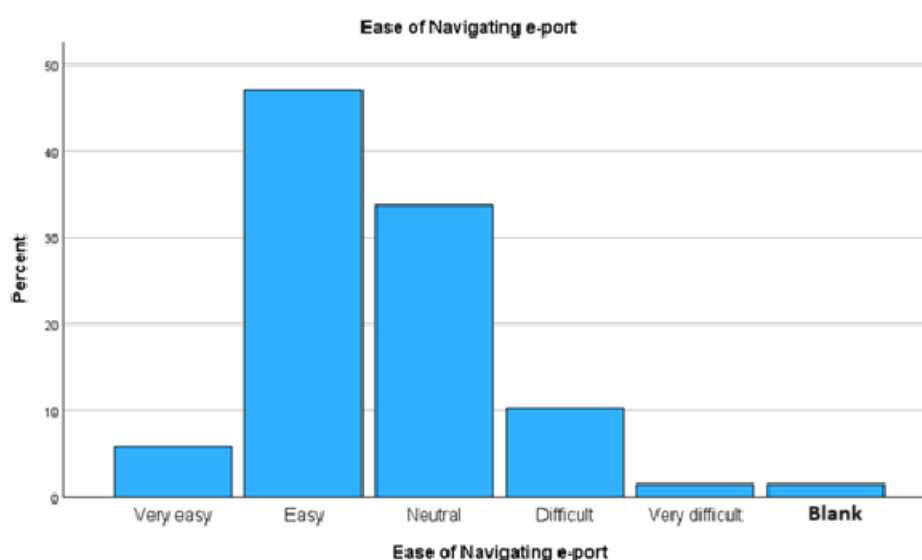


Source: Author's own data, analysed using SPSS

The OR Tambo District Municipality employee survey yields positive results regarding improvements in e-government transparency, which align with the South African National e-Government Strategy and Roadmap Framework (SANESR) and support the enhancement of public sector openness and accountability. The survey results showed that 51.5% of the 68 participants agreed that e-Government improved transparency, with 25.0% strongly agreeing, 20.6% remaining neutral, and 2.9% disagreeing. The survey results show that 76.5% of participants believe e-Government platforms have created transparent processes, simplified access to information, and reduced opportunities for administrative corruption. The strong agreement among respondents indicates that digital platforms have made municipal operations more transparent, while also improving public reporting and communication between departments and citizens. The 20.6% neutral responses indicate that staff members lack direct experience with transparency improvements or work in departments where e-government system integration remains ongoing. The study demonstrates that SANESR implementation has established substantial transparency, accountability, and trust-based governance across the municipality, supporting national objectives to improve technology-based public service delivery.

5.3.15 Ease of navigating e-portals

Figure 28: Ease of navigating e-portals

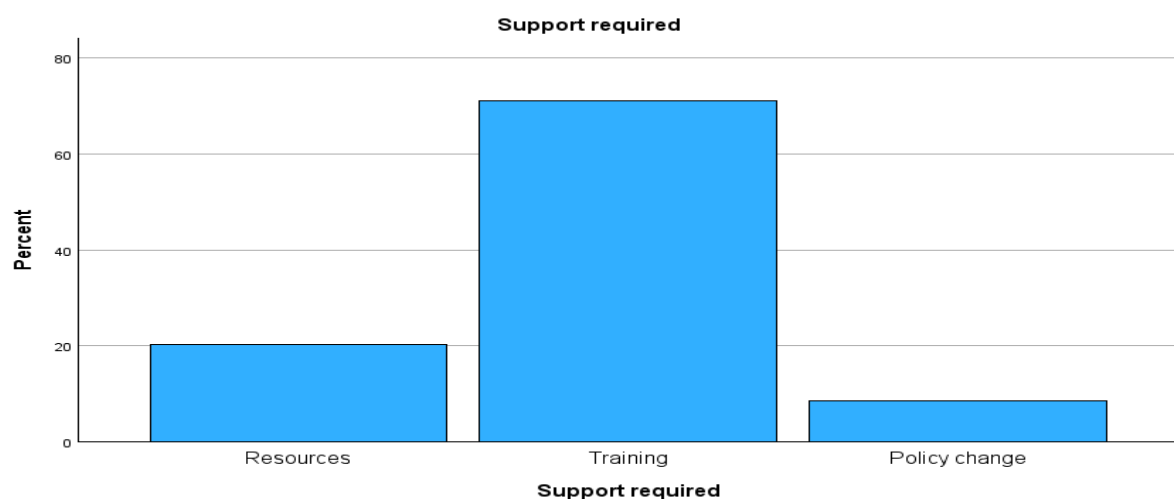


Source: Author's own data, analysed using SPSS

The assessment of the OR Tambo District Municipality e-Portal navigation indicates that most staff members find the digital systems easy to use, which aligns with the usability goals of the South African National e-Government Strategy and Roadmap Framework (SANESR). The survey results show that 53% of 68 participants found the e-Portals easy to use, and 5.9% found them very easy to navigate. The survey results show that 33.8% of users had a neutral experience with e-Portals, while 10.3% found them difficult to use and 1.5% found them very difficult to use. The remaining 1.5% of respondents who received a Blank code most likely experienced a system error during data entry. The survey results indicate that e-Portals are generally easy to use; however, users encounter challenges with navigation due to design inconsistencies and inadequate training and support. The majority of users support SANESR's goal to enhance service delivery through digital systems, yet the system requires ongoing user training, interface optimisation, and technical assistance to achieve full accessibility. The study demonstrates that e-Portals have improved digital accessibility and operational convenience, yet organisations need to continue developing standardised designs and training users to achieve complete navigation simplicity across all municipal departments.

5.3.16 Supports to Enhance e-Government Strategy

Figure 29: Supports to Enhance e-Government Strategy

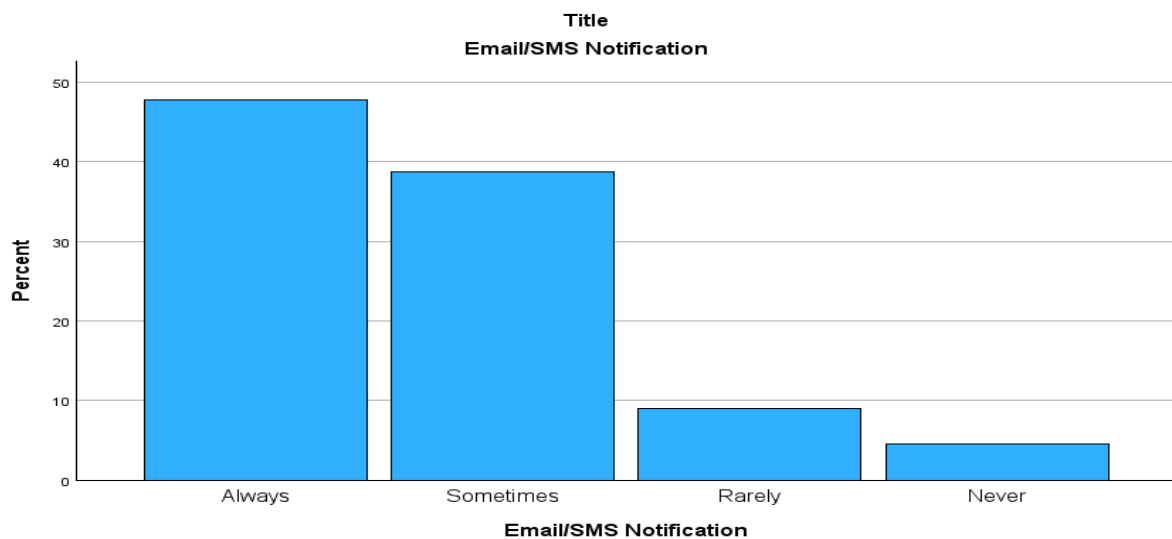


Source: Author's own data, analysed using SPSS

The research into SANESR implementation support for the OR Tambo District Municipality demonstrates that staff training represents the primary requirement for successful execution of the South African National e-Government Strategy and Roadmap Framework (SANESR). The survey results from 68 participants showed that 71.2% of 59 valid responses selected training as their top priority, 20.3% requested more resources, and 8.5% requested policy modifications. The high demand for training demonstrates that the municipality successfully deployed digital systems, yet its employees need stronger technical skills and greater confidence to operate e-Government platforms effectively. The survey results confirm previous research, as many participants remained uncertain about the need for specialised skills to implement SANESR, thereby revealing ongoing human resource deficiencies. The request for additional resources indicates that infrastructure and technology constraints, including outdated hardware, unreliable network connections, and inadequate ICT support systems, hinder the complete operation of the digital system. The small number of participants who requested policy changes indicates that current institutional frameworks exist but need adjustments to optimise their support for implementation. The results demonstrate that human resource development, combined with resource improvement and supportive organisational policies, forms the essential foundation for achieving SANESR's mission to deliver efficient, transparent, and inclusive e-government services in the municipality.

5.3.17 Email/SMS Notifications for Updates

Figure 30: Email/SMS Notifications for Updates



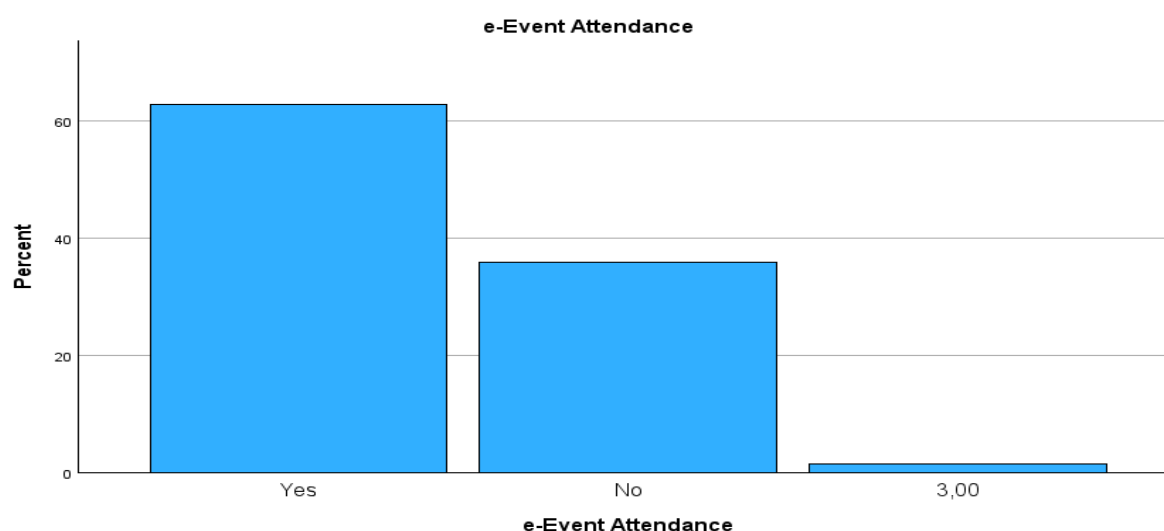
Source: Author's own data, analysed using SPSS

The OR Tambo District Municipality demonstrates established digital alert communication, yet inconsistent practices across departments, indicating limited achievement of the South African National e-Government Strategy and Roadmap Framework (SANESR) communication requirements. The survey results from 68 participants showed that 67 participants gave valid answers, while 47.8% always receive notifications, 38.8% receive them sometimes, and 9.0% and 4.5% receive them rarely or never. The survey results indicate that digital communication systems, including automated emails and SMS alerts, are effective in distributing information, task reminders, and service updates to 86.6% of respondents who receive notifications at least occasionally. The system reliability and user inclusion and integration problems become evident through the mixed responses of "sometimes" and "rarely" from participants. The system faces potential issues stemming from missing contact information in databases, technical system failures, and varying usage of the notification system across departments. The study indicates that SANESR has improved digital communication efficiency and responsiveness; however, the municipality requires greater system automation, improved data management, and greater user inclusion to deliver complete and consistent notifications, thereby

enhancing coordination and service delivery effectiveness in line with e-Government goals.

5.3.18 Attendance of e-Government event

Figure 31: Attendance of e-Government event



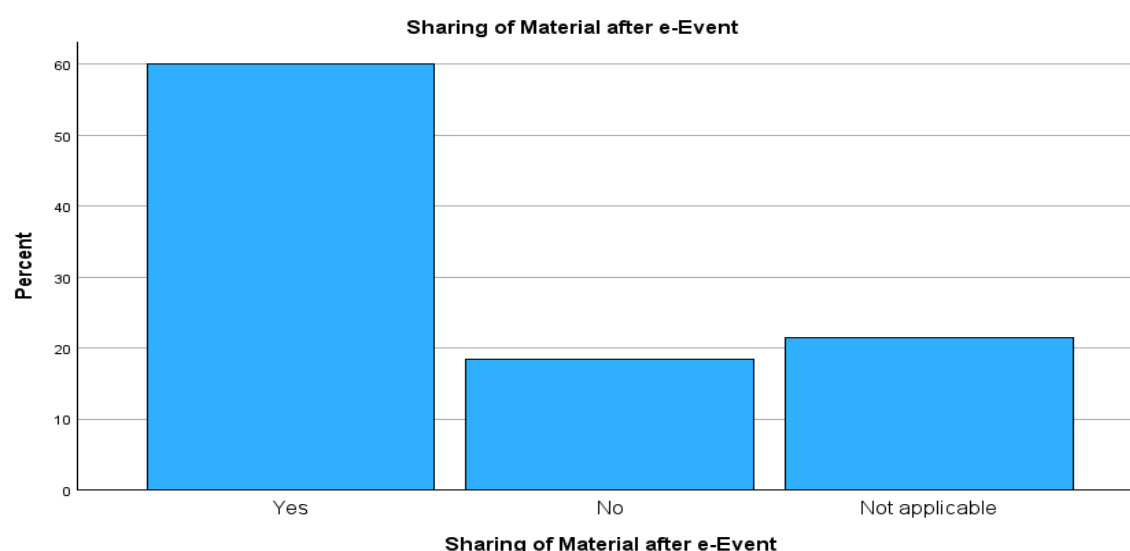
Source: Author's own data, analysed using SPSS

The OR Tambo District Municipality exhibits a moderate level of digital event attendance through e-event participation, largely due to South Africa's National e-Government Strategy and Roadmap Framework (SANESR), which promotes e-government adoption. The survey, completed by 68 participants, yielded 67 valid responses, with 62.7% of respondents attending e-Events. However, 35.8% did not participate, and 1.5% provided unclear responses, which were assigned the code "3.00." The high number of participants indicates that virtual and digital events, including training sessions, departmental briefings, and public meetings, have become essential to the municipality's administrative operations, as they enhance accessibility and minimise logistical challenges. The observed trend supports the notion that the municipality is following SANESR's mission to utilise technology for improved government operations through enhanced communication, increased efficiency, and inclusivity. 35.8% of employees who did not participate in virtual activities report encountering barriers, including restricted internet access, insufficient digital

equipment, inadequate technical support, limited digital literacy, and a lack of awareness. The findings show positive digital event engagement but reveal the need for expanded inclusivity and improved infrastructure and training programs to enable complete staff participation in e-government initiatives. Improving these areas will enhance internal communication, helping SANESR achieve its mission to establish digital engagement across all levels of government.

5.3.19 Receiving Material (Recordings, Slides, Notes) after e-Government Event

Figure 32: Receiving Material (Recordings, Slides, Notes) after e-Government Event



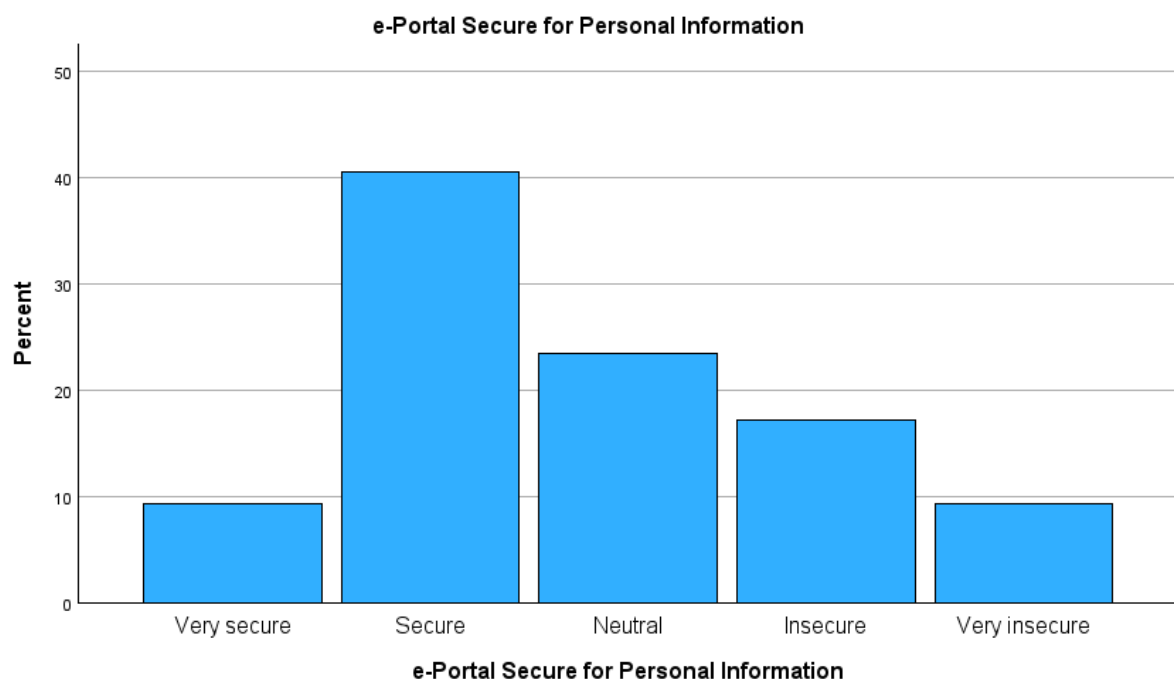
Source: Author's own data, analysed using SPSS, 2025

The OR Tambo District Municipality's analysis of material sharing following e-Events reveals that digital knowledge sharing exists, but it does not reach all departments uniformly, suggesting limited progress in achieving the targets of the South African National e-Government Strategy and Roadmap Framework (SANESR). The survey results from 68 participants revealed that 60.0% of respondents confirmed sharing materials after e-Events, while 18.5% denied sharing, and 21.5% chose not to answer due to a lack of experience with such events. Most employees access post-event resources, including presentations, reports, and training materials, which help maintain institutional knowledge and support ongoing digital capacity development.

The data also shows that 40% of respondents either did not receive materials or responded that the question was not applicable, highlighting the need for better standardisation of knowledge-sharing practices following virtual meetings. The inconsistent sharing of materials post-events is likely due to inadequate central coordination, weak follow-up systems, and insufficient digital storage and distribution platforms. While the municipality has made good progress in digital engagement and post-event documentation, it still requires a formal digital archiving system to enhance knowledge sharing. Implementing such a system would improve organisational learning, accountability, and operational efficiency, thereby supporting SANESR's mission to establish transparent, accessible, knowledge-based e-Government operations.

5.3.20 How Secure are the e-Portals?

Figure 33: How Secure are the e-Portals



Source: Author's own data, analysed using SPSS

The evaluation of e-portals' security for personal information protection in the OR Tambo District Municipality yields mixed results, with respondents acknowledging progress while expressing ongoing doubts about data protection under the South African National e-Government Strategy and Roadmap Framework (SANESR). The survey results from 68 participants showed that 64 people answered correctly, with 50% believing the e-Portals are secure, and 40.6% and 9.4% indicating they are secure and very secure, respectively. The survey results show that 17.2% of participants believe the portals are insecure, while 9.4% consider them very insecure, and 23.4% remain uncertain about data security measures. The survey results indicate that half of the participants trust the municipality's digital systems to protect personal and institutional data, but a substantial number of people remain uncertain about the current cybersecurity measures. The SANESR requires organisations to enhance their cybersecurity frameworks through system audits and staff data privacy training to comply with the POPIA Act. The municipality has successfully built secure digital platforms but needs to improve data protection, transparency, and communication to gain user trust and achieve full compliance with national e-Government and information security standards.

In Table 17 below, the inferential analysis is built on the statistics. The inferential analysis provides insight into respondents' thoughts, feelings, and actions, particularly regarding the components of the SANESR within the OR Tambo District Municipality. We examine the means, deviations, skewness, and kurtosis for each variable. The variables include familiarity with SANESR, departmental efficiency, user experience with e-portals, accessibility, implementation challenges, communication channels, transparency, system security and service completion. The analysis provides insight into the tendency and distribution of the data. The statistical indicators highlight areas where users agree or strongly disagree. The statistical indicators also reveal patterns of behaviour, usability concerns, and structural gaps in the implementation. The inferential exploration is essential. Inferential exploration helps us find relationships. Inferential exploration helps us predict trends. Inferential exploration enables us to provide recommendations that enhance the municipality's governance capabilities and overall service delivery.

5.4.21 Table 16: Descriptive Analysis

	Descriptive Statistics						
	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Are you familiar with the SANESR	68	1,2794	,45205	1,006	,291	-1,020	,574
SANESR Efficiency in your Department	66	2,1061	,70446	,121	,295	-,288	,582
Are you using any e-Portal	67	1,3284	,47316	,748	,293	-1,486	,578
How user-friendly are the platforms	65	2,0000	,82916	,509	,297	-,241	,586
e-Portals Accessibility	68	1,5882	,86792	,919	,291	-1,037	,574
Challenges in SANESR Implementation	66	2,8788	1,35323	,111	,295	-1,041	,582
Does Implementation require Skill, Skills, and Expertise	68	1,8088	,81511	,369	,291	-1,398	,574
e-Portals timely and Up-To-Date Information	67	2,1642	1,06738	,664	,293	-,139	,578
Channels of Communication Used	68	2,2059	1,27617	,533	,291	-1,288	,574
e-Government Improved Transparency	68	2,0147	,76280	,391	,291	-,136	,574
Ease of Navigating e-port	68	2,8088	2,38313	6,819	,291	52,329	,574
Support required	59	1,8814	,52800	-,139	,311	,548	,613
Email/SMS Notification	67	1,7015	,81677	1,124	,293	,913	,578
e-Event Attendance	67	1,3881	,52093	,799	,293	-,647	,578
Sharing of Material after e-Event	65	1,6154	,82334	,831	,297	-1,006	,586
Completed Services Online	66	1,3182	,50105	1,173	,295	,224	,582
e-Portal Secure for Personal Information	64	2,7656	1,13728	,480	,299	-,619	,590

Source: Author's own data, analysed using SPSS, 2025

5.4.21.1 Familiarity, Efficiency, and Usage of SANESR

The descriptive results show that respondents exhibit low familiarity with the SANESR framework (Mean = 1.28), as indicated by a positively skewed distribution (Skewness = 1.006), suggesting that the majority rated themselves at the lower end of the scale. This indicates a significant knowledge gap among municipal employees regarding the National e-Government Strategy. Similarly, SANESR efficiency within departments received a moderate rating (Mean = 2.11) and a near-symmetric distribution (Skewness = 0.121), suggesting mixed perceptions of its implementation internally. Regarding system usage, respondents reported low engagement with e-portals (Mean = 1.33), as evidenced by positive skewness (0.748) and negative kurtosis (-1.486), indicating limited adoption and a flat distribution. These patterns collectively highlight an early-stage digital transformation environment with uneven awareness and usage across departments.

5.4.21.2 User Experience, Accessibility, and Operational Challenges

The user experience indicators reveal moderate concerns among participants. The perceived user-friendliness of platforms (Mean = 2.00) and the accessibility of e-portals (Mean = 1.59) indicate that systems are not sufficiently intuitive or accessible, as evidenced by strong positive skewness values (0.509 and 0.919, respectively). High skewness indicates that many respondents chose the lower satisfaction options. Significant challenges in SANESR implementation (Mean = 2.88) highlight operational and procedural difficulties, but the distribution remains relatively symmetrical (Skewness = 0.111), suggesting consistent experiences among employees. These results indicate that, despite moderate awareness, employees encounter significant barriers in utilising SANESR-aligned systems, which may be attributed to infrastructure limitations, system design issues, or inadequate support frameworks.

5.4.21.3 Skills Requirements, Information Quality, and Communication Channels

A key finding from the data concerns skills and expertise: respondents agree that SANESR implementation requires substantial digital competence (Mean = 1.81). The data is positively skewed (0.369), indicating that many employees rated the skills requirements as high, which signals a digital capacity deficit within the municipality. The timeliness of information on e-portals (Mean = 2.16) and the availability of communication channels (Mean = 2.21) received moderate ratings, suggesting partial functionality of information-sharing mechanisms. Nonetheless, both variables show noticeable positive skewness, indicating that a significant portion of staff perceive these communication and information systems as less effective and less reliable. Transparency improvements linked to e-government (Mean = 2.01) also scored moderately, implying that while SANESR may be improving accountability, its impact is not yet widespread or consistently experienced.

5.4.21.4 Navigation, Support, Security, and Digital Service Completion

On functional performance indicators, ease of navigating e-portals shows the **highest mean score** (Mean = 2.81) but also extreme skewness (6.819) and unusually high kurtosis (52.329). This indicates **significant variability**, suggesting that navigation experiences differ widely, likely due to inconsistent system design, device differences, or varying levels of digital literacy among users. Support requirements also scored moderately (Mean = 1.88) and showed a relatively flat distribution, indicating a general need for stronger user support structures. Notifications via email/SMS (Mean = 1.70) and e-event attendance (Mean = 1.39) indicate that communication technologies are not fully optimised. Importantly, respondents rated the completion of services online as very low (Mean = 1.31), indicating that most services are still performed manually. Lastly, perceptions of the security of e-portals for personal information are moderate (Mean = 2.77), suggesting that trust in digital platforms remains fragile but developing, which is crucial for SANESR-driven transformation.

The section above presents the qualitative and quantitative data analysis, which revealed important research findings. The following section combines these two data sets through analysis with the theoretical frameworks and concepts discussed in the literature review, in keeping with researchers (Creswell & Plano Clark, 2018; Yin, 2018; Ghamrawi et al., 2025) strongly emphasise that the key feature of mixed methods is integration of datasets to generate a deeper understanding than either method alone. The research consolidation process enables us to better understand the research subject by combining experimental data with previous academic studies (Saunders et al., 2019; Bryman, 2016). The research will analyse data to confirm or contradict literature-based findings, helping create a complete understanding of the subject.

5.5 Discussion of Findings

The discussion of findings section presents an integrated interpretation of the study results by combining both the qualitative and quantitative data sets. The research data is evaluated using established theoretical frameworks that maintain their connection to vital concepts from the literature review to support the academic discussion's value. The section uses a combined research method to achieve its goals, including data consolidation and triangulation. The discussion aligns with the key themes that emerged in the study.

To maintain coherence and ensure analytical relevance, the final stage of the analysis was designed to align with the study's objectives, ensuring that each objective was addressed with evidence-based findings. This aligns with research (Khan et al, 2025).

5.5.1 Enhancing Public Service Delivery through the SANESR Framework

The study found that most government officials view the SANESR as an innovative policy tool that aims to enhance public service delivery by improving efficiency, transparency, and accessibility. The qualitative data showed that respondents

recognised SANESR's potential to enhance service responsiveness through digitalisation, despite existing structural and capacity limitations. The system enables citizens to access faster service delivery by allowing online request submission, eliminating the need to visit multiple offices. The system operates effectively when e-platforms function correctly, leading to reduced physical activity and increased responsibility. The officials view SANESR as a technological system that also serves as a framework for transforming administrative practices to deliver better services and build public trust.

The survey results showed that 78% of participants agreed that the SANESR framework enhanced both internal communication and information exchange, and 71% confirmed that it accelerated service delivery. The research data showed that most officials (68%) experienced improved access to digital information and records through SANESR, thereby enhancing administrative transparency (**see figures 22 and 23**). However, 32% of respondents still perceived minimal improvement, indicating uneven adoption across departments. The research results confirm the qualitative findings that SANESR holds value; however, its full potential remains unattainable due to insufficient infrastructure and personnel.

The study findings align with the SERVQUAL Model, which evaluates service quality through five service dimensions: reliability and responsiveness, assurance and empathy, and tangibles (Parasuraman et al., 1988). The officials focus on quick response times, open systems, and improved oversight, which aligns with the reliability and responsiveness elements of SERVQUAL. However, gaps in digital literacy and infrastructure reduce the assurance component, as some staff still lack confidence in using E-Systems. The Logical Framework Approach (LOGFRAME) confirms these results, as SANESR's inputs of ICT systems, policy guidelines, and capacity development programs have begun to produce better communication and workflow efficiency; however, citizen satisfaction and governance transformation remain only partially successful. The Theory of Change shows that SANESR needs both technical system deployment and behavioural and institutional changes from staff and citizens to succeed.

The research results support the ICT White Paper (2016), which promotes digital transformation in the public sector to achieve better inclusivity, transparency, and innovation. The Electronic Communications and Transactions Act (ECTA, 2002) establish a legal framework that enables public institutions to conduct secure electronic transactions. The National Cybersecurity Policy Framework (NCPF, 2012) and SANESR (2017) highlight ICT as a key factor in achieving accountability, enhancing citizen participation, and improving operational efficiency across all government sectors. The OR Tambo Municipality has begun implementing SANESR principles but faces ongoing challenges due to users not utilising the system reliably and requiring improved training. The partial achievements in these cases align with research by Nkohkwo and Islam (2013) and Bwalya (2018), which shows African municipalities face challenges in e-government implementation because they lack sufficient resources and skilled personnel.

The findings also support Mutula (2015), who demonstrated that digital transformation enables developing nations to improve the speed and quality of public service delivery when they establish suitable infrastructure and sustain political commitment. The officials in this study supported SANESR's potential, though they acknowledged operational problems. The organisation demonstrates a positive institutional mindset, a vital factor in achieving sustainable digital transformation.

The research data indicate that government officials perceive SANESR as an effective strategic framework that enhances public service delivery by improving operational efficiency, transparency, and response times. **See Figure 22.** The system shows promise, but its full potential remains out of reach due to uneven infrastructure development, varying digital skills, and inadequate policy implementation. The successful operation of SANESR requires institutions to have strong, modern ICT systems and national digital governance policies, as indicated by theoretical frameworks, legal requirements, and statistical evidence.

Figure 34: Enhancing Services delivery through ICT



Source: Author's Own Word cloud of key themes generated using Atlas. Ti, 2025.

The word cloud illustrates employees' views of the digital workplace environment through its most prominent themes, including engagement, digital, and ICT. This suggests that employees view active engagement and the use of digital and ICT tools as central to improving municipal operations and service delivery. **See Figure 37.** The staff members understand the value of digital transformation because they use terms that include interoperability, integration, innovation, and technology to improve organisational efficiency, communication, and coordination. The document demonstrates an understanding of ongoing learning needs through its repeated references to knowledge development, literacy enhancement, and readiness for e-government system sustainability.

The data contains the terms trust, accountability, transparency, and empowerment because staff members predict digital systems will improve ethical governance and public sector relationships with citizens. The employee responses demonstrate that leadership dedication, along with digital strategy coordination and policy execution, serve as vital elements that support organisational change initiatives. The inclusion of sustainability performance and evaluation indicators shows that staff members consider ICT-based engagement as a lasting institutional success factor that generates public value. The figure shows a workforce that understands that digital

governance brings both advantages and responsibilities, while making employee participation, digital innovation, and ethical practices essential for business success.

5.5.2 Challenges in Implementing the SANESR Framework

The findings revealed that officials recognise SANESR as an advanced digital system; yet its operational success remains limited due to institutional challenges and employee conduct, see **Figure 38**. The qualitative findings revealed that officials repeatedly cited inadequate funding for training all staff, a lack of skills, and employee resistance to change as their primary obstacles.

A participant shared his personal opinion that: *“Some colleagues keep using paper-based systems because they believe these methods provide better security and a user-friendly experience.”* Another official added, *“Whenever we introduce a new system, there is always resistance; people complain that it complicates their work”*. This demonstrates how people encounter mental blocks due to their preference for current habits, scepticism about digital technology, and concerns about adopting new methods. The resistance movement creates delays in implementation while simultaneously undermining the long-term sustainability of SANESR-driven reforms across various departments (OECD,2021).

The research showed that organisational and psychological elements create change resistance, rather than producing direct opposition to change. Workers believe that implementing new technology creates workplace instability because they worry that automated systems will take over their administrative work. As one participant noted, *“People think that once everything is automated, some of us will lose our jobs”*. The way people perceive these changes leads to passive resistance and decreased motivation, resulting in limited participation in system rollout.

The Logical Framework Approach (LOGFRAME) provides theoretical support for addressing these challenges, demonstrating that project success depends on the proper allocation of resources and capacity (inputs) to achieve system efficiency and transparency (outputs) through effective implementation processes. The organisation

fails to achieve its expected results because its weak ICT infrastructure, combined with insufficient human resources, disrupts the input–process linkage. The Theory of Change demonstrates that technological reform requires stakeholders to change their behaviour and for institutions to adopt new practices to achieve sustainable success. As one official stated, “*Some of our colleagues are not comfortable with the computers; they prefer doing things manually*”. Organisations need to change both their cultural and structural systems simultaneously when implementing educational reform through technology.

The ICT White Paper (2016) requires all institutions to receive equal access to ICT infrastructure and government capacity development at every institutional level. The research results indicate that the national education goal does not align with what actually occurs at the local level. The municipality faces challenges in achieving integrated e-government systems, as SANESR (2017) indicates that its current ICT systems operate separately and that its broadband network is limited.

From the perspective of the SERVQUAL model, these findings correspond to deficits in the reliability and assurance dimensions of service quality. Unreliable systems, along with delayed responses and unclear operational processes, create trust and satisfaction issues for citizens. The Institutional Theory further provides insight into why these challenges persist. It suggests that organisations often conform to traditional bureaucratic norms rather than adopt innovative practices, even when new technologies are introduced. Organisations continue to use manual procedures because institutional resistance prevents them from adopting SANESR systems.

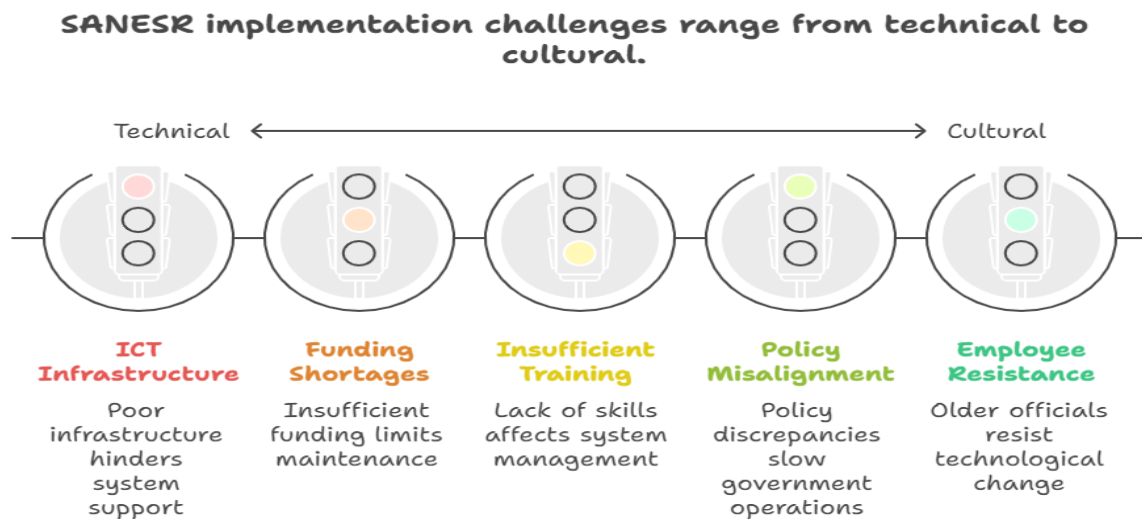
The lack of proper ICT infrastructure hinders the efficient operation of digital systems, creating challenges in their deployment and maintenance and ultimately leading to poor government service delivery. The study's findings are supported by Enaifoghe (2025), who highlighted that the technical differences between government systems and employee training levels pose a significant challenge, as staff often lack the skills to utilise digital tools effectively. e-Government projects require financial and structural solutions to establish stable technological systems that support municipal administration. The SANESR implementation process faces additional obstacles due to cultural and organisational barriers that hinder government officials' work. The

implementation of integrated digital governance is delayed by conflicting policies across departments, slowing decision-making processes (Ndzabela et al., 2025). The organisation's separate operational units work against each other because they fail to support essential e-government service delivery. The study is also consistent with Ayodele et al. (2025). Staff members often strongly oppose change because they want to maintain their existing workflows, which prevents them from adopting new technological solutions. Additionally, the organisation faces two major obstacles, as its resistance to change hinders digital transformation and blocks innovative development (Teti et al., 2024).

From a previous study's perspective, the main obstacle stems from outdated infrastructure systems, which, combined with insufficient technological resources, affect multiple government agencies (Nkgapele, 2024; Galushi & Malatji, 2022). Modern public procurement systems use outdated technology, enabling corruption because they cannot implement digital platforms, leading to service delivery problems (Mojaki et al., 2024). The government encounters two main barriers to achieving digital technology success: its personnel lack digital literacy and the required competencies. The implementation of e-Government initiatives faces additional obstacles because officials must deal with two major organisational problems: weak governance systems and insufficient accountability mechanisms. The digital service gap has become harder to resolve because rural areas and underserved communities face digital access barriers, which their local communities actively fight against (Galushi & Malatji, 2022).

The research findings show that SANESR implementation at OR Tambo Municipality faces multiple obstacles that affect both operational systems, financial resources, and staff behaviour. The policy achieves its national digital transformation targets, as evidenced by qualitative and quantitative data, but faces various local barriers that hinder its successful implementation. Public institutions need to maintain long-term funding for digital infrastructure while advancing policy consistency, employee skill development, and institutional cultural transformation.

Figure 35: Challenges range from technical to Cultural



Source: Authors' Own Compilation

The figure illustrates the various difficulties encountered in implementing SANESR through the South African National e-Government Strategy and Roadmap (SANESR), ranging from technical issues to cultural obstacles. The technical implementation of systems encounters difficulties due to inadequate ICT infrastructure and insufficient funding, hindering successful deployment and sustained maintenance. Organisations face financial barriers that prevent them from acquiring new ICT systems and performing system maintenance and updates. The technical gap between e-Government systems and their users widens because employees often receive inadequate training, hindering their effective use of digital systems.

The cultural side faces two main challenges because of conflicting policies and worker resistance, which create organisational and behavioural issues. Differing policies across departments create delays in decision-making by hindering the coordination needed for integrated digital governance. Staff members at the organisation resist change, preferring to maintain their current methods of work rather than adopt new technology. Organisations fail to achieve their transformation goals because cultural resistance to change prevents employees from adopting new ideas, which reduces their innovative potential. The figure shows that SANESR's success depends on

solving two essential problems: strengthening the government's technology system and preparing staff for the adoption of digital change.

5.5.3 Efficiency and Transparency of the SANESR from the Perspective of Government Officials

The third objective evaluates administrative operational changes and openness levels by using government officials' assessments of the SANESR Framework.

The finding revealed that the SANESR has led to significant improvements in administrative efficiency and transparency at the OR Tambo District Municipality; however, the level of impact varies across departments. The qualitative evidence suggests that Promun, SOLAR, and the Electronic Document Management System (EDMS) improve internal operations by streamlining workflows and enhancing data monitoring capabilities. One participant emphasised, *“Before, files could take a long time to reach the right office, but now approvals can be done electronically within a day.”* Another added, *“The system enables us to monitor document work assignments, which helps prevent corruption and shortens the overall process”*. The accounts demonstrate that SANESR began its transformation of administrative work by digitising paper-based manual systems into efficient digital workflows.

Quantitative data supported these findings. The research data showed that 76% of participants confirmed that SANESR tools reduced service request handling time, and 74% agreed that e-platforms improved operational transparency and accountability in administration. Additionally, 68% of participants reported that communication and coordination between departments had improved since the adoption of digital platforms **(Also see Figure 28)**.

The research results align with the SERVQUAL model, providing strong evidence of reliability and responsiveness. Implementing SANESR tools enables administrators to work more efficiently by providing better forecasting capabilities and shorter processing times, thereby meeting citizens' demands for reliable public services. The survey results indicate that participants require system transparency, as this feature enables them to trust the system. The service quality dimensions receive support from

digital transformation; however, full integration remains incomplete, and system outages occasionally occur because the process continues to evolve. The Logical Framework Approach (LOGFRAME) demonstrates that SANESR's inputs, comprising technological infrastructure, digital training, and policy reforms, yield quantifiable outputs, including shorter turnaround times and improved traceability. The achievement of enduring transparency and institutional trust faces obstacles because system usage remains unpredictable, technical problems occur, and data integration remains incomplete.

The Theory of Change (ToC) supports this interpretation by demonstrating that real efficiency and transparency result from long-term behavioural, institutional, and cultural changes rather than relying solely on technology. The system operates at its peak when all personnel maintain their commitment to using it, as any departmental delays will affect the entire process. Another employee stated that some staff members continue to use manual files, which hinders the smooth operation of our system. These excerpts highlight that technology alone cannot guarantee transparency or efficiency without corresponding shifts in work culture, accountability, and leadership. The ToC indicates that SANESR requires continuous user involvement and feedback-based learning, supplemented by monitoring systems, to achieve its planned results in the municipality.

The observed improvements in efficiency and transparency align with the ICT White Paper's (2016) recommendations, which support a digital public sector that operates through open systems, accessible services, and responsive delivery. The Electronic Communications and Transactions Act (ECTA, 2002) provide a legal framework for secure electronic transactions in government institutions, which supports SANESR's implementation goals. The Public Service Regulations (2016) support accountability, performance management, and integrity through digital audit trails and monitoring features, which SANESR utilises to achieve these objectives. The system now provides proof of all activities, so employees cannot dispute system records of their work. This transparency has not only improved internal accountability but also enhanced citizen trust, as information on service requests and responses is increasingly available through digital platforms.

The research findings validate Wirata (2025), who demonstrates that e-Government systems reduce corruption by enhancing transparency through their function of reducing direct contact between public officials and citizens. Ndamase et al (2025) found that South African municipal digitisation leads to improved administrative systems, enhanced monitoring capabilities, and faster decision-making processes. The research results from this study confirm previous findings but demonstrate that OR Tambo Municipality achieves different levels of efficiency because its departments operate independently, and internet access remains unreliable. The research by Mbae et al (2025) showed that digital transformation accelerated administrative work in Botswana's public sector, yet this study found different results. The divergence exists because South Africa maintains different levels of local government capability and infrastructure development between its urban and rural areas, especially in OR Tambo.

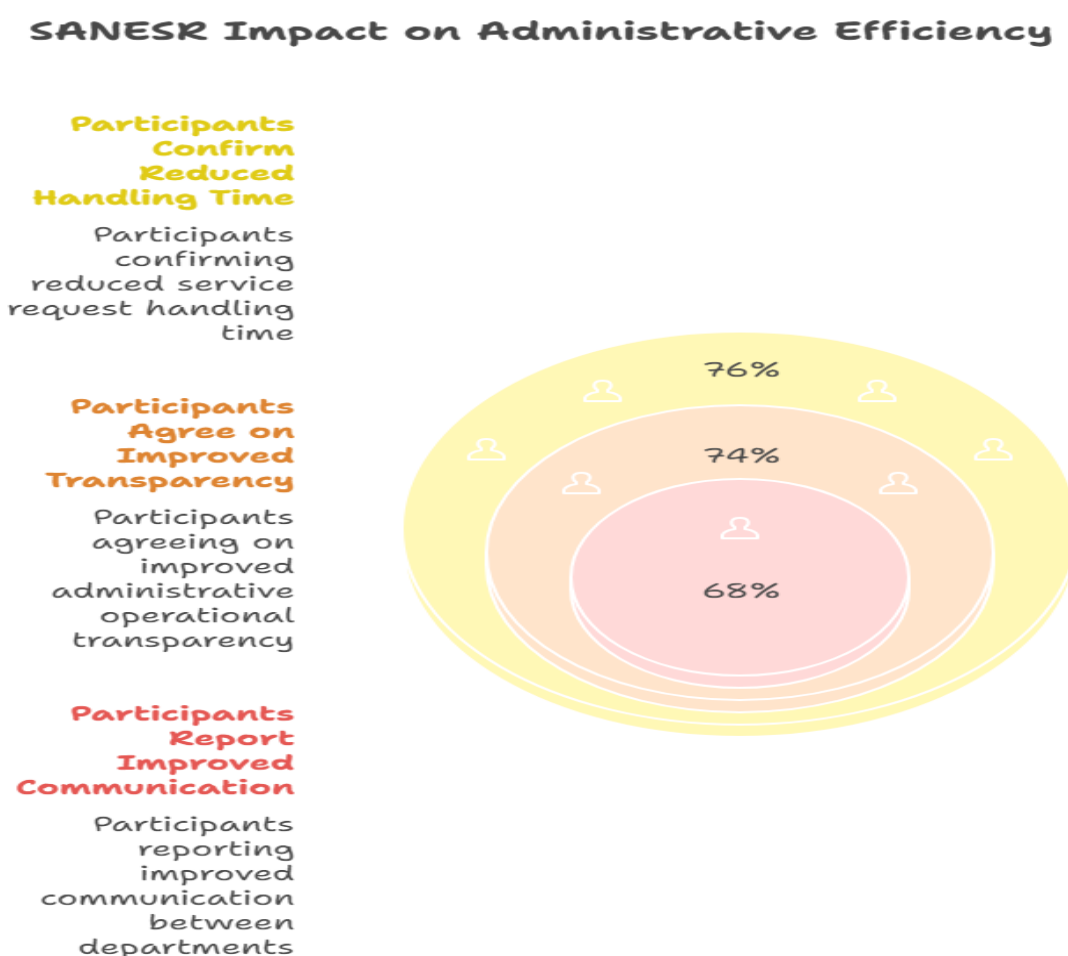
In support of the findings, Acquah (2024) argues that implementing e-Government improves public service delivery by enhancing operational efficiency and increasing service transparency. Digital technology integration enables process optimisation, creating an accountable governance system by enabling performance tracking through established metrics and benchmarks. The systems enable continuous evaluation of e-Government programmes through best-practice assessments to identify required changes and confirm that allocated funds achieve their intended results (Acquah, 2024). e-Government systems enable users to access government services through modern platforms, creating better opportunities for public interaction and enabling citizens to access government services (Nkgapele & Mokgolobotho, 2024). Digital service adoption creates conditions that reduce opportunities for corruption, but governments need to establish ethical governance systems to build public trust in their operations.

The research results confirm the National Development Plan (NDP, 2030), which describes a future developmental state that will operate through technological advancement and open governance systems. The OR Tambo District has made progress toward this objective through the implementation of SANESR, which enhances documentation systems, communication channels, and public monitoring capabilities. The ongoing technical problems and capacity shortages demonstrate that

national goals do not fully align with what municipalities can achieve, a phenomenon known as the "design–reality gap" (Fang, 2002) found in other developing nations.

The OR Tambo District Municipality has experienced substantial improvements in administrative efficiency and transparency through SANESR, and the system continues to evolve. The combination of qualitative and quantitative data, along with theoretical foundations and legal requirements, demonstrates that SANESR achieved its goals by creating more efficient workflows, reducing administrative delays, and enhancing the ability to track administrative activities. The system needs to achieve lasting progress through better institutional coordination, ongoing employee development, and dependable operational systems. The SANESR system will achieve its maximum potential through proper coordination between technological systems and human resources, as well as organisational frameworks that support the core values of efficiency, transparency, and accountability from South African e-government and public service reform initiatives.

Figure 36: SANESR Impact on Administrative Efficiency



Source: Authors' Own Compilation

The figure illustrates how participants perceived the South African National e-Government Strategy and Roadmap (SANESR) as impacting administrative efficiency. The system has achieved improved service request handling times, as confirmed by 76% of users, leading to faster administrative operations and enhanced system responsiveness. The strategy improved operational transparency, according to 74% of participants who observed this change, leading to enhanced administrative accountability. Furthermore, 68% of participants reported improved communication between departments, indicating that SANESR has facilitated better information flow and collaboration across organisational units. The data indicate that implementing

SANESR has led to positive changes in public sector operations, resulting in improved efficiency and transparency, as well as enhanced departmental coordination.

Participants' perceptions of the impact of the South African National e-Government Strategy and Roadmap (SANESR) indicate significant improvements in administrative efficiency and transparency across the OR Tambo District Municipality. Feedback collected indicates that 76% of users experienced reduced service request handling times, which aligns with the broader literature demonstrating that e-Government initiatives enhance operational efficiency. Such increased efficiency is supported by the rapid processing capabilities reported, including electronic approval systems that facilitate faster decision-making. This transition from manual systems to digital workflows exemplifies a successful shift toward more effective public service delivery, aligning with the global trend in which digital transformation significantly enhances administrative performance and transparency in governance (Balaji et al., 2025).

Additionally, 74% of participants noted improvements in operational transparency, with enhanced accountability mechanisms enabled by the new systems. This observation corroborates evidence from various studies indicating that integrating digital platforms into public administration is instrumental in fostering an accountable governance framework (Setyarto et al., 2025). Moreover, the positive feedback on enhanced inter-departmental communication, reported by 68% of participants, underscores the role of SANESR in improving collaboration across organisational units. Effective e-government systems can enhance governmental coordination and information flow by streamlining processes, promoting collaboration, and reducing bureaucratic silos (Nkgapele, 2024; Balaji, 2025).

5.5.4 Strategies to Overcome Obstacles in Adopting e-Government Services under the SANESR Framework.

The findings revealed that officials in the OR Tambo District Municipality are actively employing multiple adaptive strategies to address challenges associated with implementing SANESR. The qualitative data showed that organisations employed four strategic methods: combining capacity development with training, public-private

partnerships, digital awareness initiatives, and support for governance leaders. Municipal officials are creating a new collaborative work environment through these statements, which enables learning and adaptive practices for successful digital transformation.

The quantitative evidence verified every detail that appeared in these narratives.

The survey results showed that 74% of participants believed ICT capacity-building programs should continue because they are vital for successful SANESR implementation, and 68% recognised public–private partnerships as vital for solving infrastructure and technical challenges. The survey results show that 63% of respondents identified leadership support as the main factor that enables successful system adoption, and 59% of participants confirmed that digital literacy programs and citizen awareness campaigns enhance public acceptance of e-services.

The research findings support the Theory of Change (ToC) framework because institutional reform success depends on strategies that link resources to operational steps and desired results through ongoing learning and active stakeholder involvement. The implementation of training programs and awareness initiatives demonstrates that officials are actively working to change their institutional practices to achieve the SANESR goal. The Logical Framework Approach (LOGFRAME) supports this finding by showing that project implementation success depends on specific input activities, including training, partnership development, and leadership support, to achieve transparency, efficiency, and citizen trust. The official stated that system reliability improves through training programs and citizen participation, as citizens understand that their work contributes to organisational change.

The SERVQUAL model also appears in these results, particularly in the assurance and empathy dimensions. Digital tool training programs for employees build confidence through improved tool proficiency and staff self-assurance, and public outreach initiatives help users understand technology needs so that technology benefits people rather than organisational objectives. The dual approach of internal capability development and external partnership building provides a comprehensive service quality framework that supports SANESR's strategic direction.

The research findings are supported by both existing laws and established policies. The ICT White Paper (2016) emphasises that digital transformation must include everyone through access to technology, skills training, teamwork, and equal digital opportunities. The SANESR (2017) demands digital literacy in public service and among the citizenry through government-private sector collaboration. The Public Service Regulations (2016) and the National Development Plan (NDP) 2030 support professional capacity development and innovation in public administration by establishing essential elements for good governance. The municipality conducts ICT training and leadership engagement and awareness programs that show limited achievement of these policy requirements, but these initiatives lack consistency across departments.

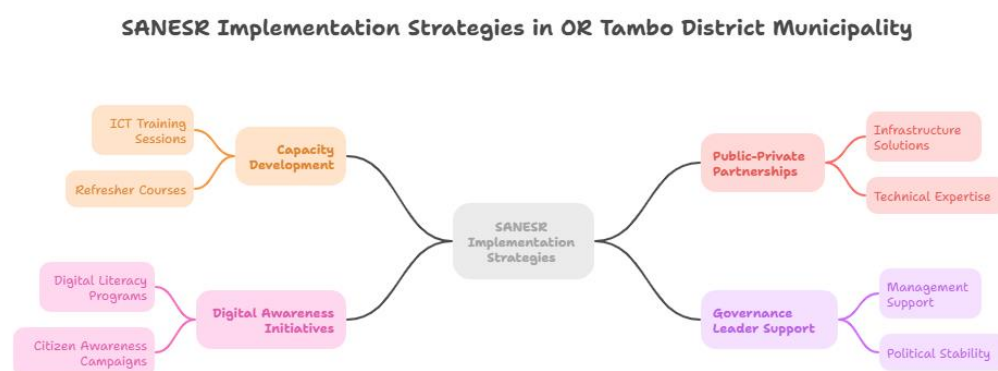
The results match those of previous studies. Bwalya (2018) explained that developing countries must sustain human capacity development and stakeholder collaboration to achieve successful e-government implementation. According to his research, Mutula (2015) found that ICT partnerships help local governments achieve better digital transition management. The research method in this study differs from that of Fang (2002), who explained digital reform failures in developing countries through institutional ownership issues, yet the OR Tambo case demonstrates how local leaders can achieve successful implementation. A survey participant reported that management now supports digital reporting and online communication, which they previously viewed as unorthodox. The government dedicates more resources to digital transformation; however, sustainability requires both sufficient funding and political stability.

The research showed that these strategies have made progress, but they encounter problems when trying to maintain stability and become permanent institutional practices. As one participant observed, *“Training is not regular, and sometimes new employees don’t receive induction on how to use the system”*. The success of partnerships, according to another source, depends on two factors: obtaining procurement approval and securing available funding. The current strategies show promise, but they exist as separate project-based initiatives that do not integrate into permanent municipal planning systems. The research by Nkohkwo and Islam (2013)

reveals that e-government projects in African municipalities often fail to sustain their progress due to inadequate planning systems and monitoring mechanisms.

The research results show that OR Tambo District Municipality government officials use effective methods that align with their local context to sustain SANESR implementation. The program includes four essential elements: human capacity development, partnership creation, citizen participation enhancement, and strengthening leadership dedication. The integration of qualitative data with statistical evidence and theoretical frameworks demonstrates that these strategies align with the Theory of Change and LOGFRAME model principles, enabling SANESR to create transparent, efficient, and participatory digital governance systems. The research shows that these strategies need to become permanent institutional practices through dedicated funding, ongoing training, and a national digital transformation framework to support achieving lasting results.

Figure 37: Strategies to Overcome Obstacles in Adopting E-Government



Source: Authors' Own Compilation

The figure presents the key strategies adopted for implementing the South African National e-Government Strategy and Roadmap (SANESR) in the OR Tambo District Municipality. The program focuses on four essential strategic areas: Capacity Development and Digital Awareness Initiatives, Public-Private Partnerships, and Governance Leader Support. The organisation builds employee capacity through ICT training programs and refresher courses, enabling staff to acquire new skills to

improve technical performance and enhance service delivery quality (**Also see figures 39 and 40**). Digital awareness initiatives aim to build citizen and employee understanding of e-government through digital literacy programs and awareness campaigns. Public–private partnerships enhance digital systems and innovation by delivering infrastructure solutions and technical expertise. Lastly, governance leader support emphasises the need for strong management backing and political stability to ensure sustained policy alignment and effective implementation. Together, these strategies reflect a comprehensive approach to fostering digital transformation and improving administrative efficiency within the municipality.

5.5.5 Enhancing digitisation through the implementation of e-Government policy

The research findings indicate that government officials agree on the need for an organised method to execute SANESR, which will facilitate the progress of digitisation in the OR Tambo District Municipality. The research participants demonstrated their understanding of digitisation requirements through their recognition of technological requirements, unified policy frameworks, leadership backing, and cultural evolution. The organisation requires one unified platform that enables all departments to exchange data and maintain communication, according to one respondent. The success of digitisation depends on continuous leadership support, proper infrastructure, and scheduled system maintenance. The officials understand that SANESR implementation demands complex operational management, which depends on successful system integration and organisational alignment.

The quantitative data analysis confirmed the study's findings by showing agreement among participant responses. The survey results showed that system integration, together with proper user training, represented essential factors for the success of SANESR digitisation, according to 77% of participants. The survey results indicated that 72% of participants supported digital policies with leadership backing, and 69% agreed that ICT training programs must continue to ensure digitisation remains sustainable. According to 66% of the officials, digital transformation success requires citizen involvement and digital awareness. The research indicates that officials

understand that digitisation success requires organisations to align their efforts across policy creation, technology deployment, and workforce development (**Also see figure 37**).

The Logical Framework Approach (LOGFRAME) demonstrates that digital transformation and service improvement require synchronised funding for infrastructure and skilled personnel, supported by appropriate implementation procedures. The Theory of Change (ToC) demonstrates that digital transformation requires continuous enablers, including leadership support, stakeholder endorsement, and ongoing learning programs, to yield lasting results. A study participant stated that digital transformation success requires organisations to create strategic plans that include employee training and continuous performance assessment. The ToC framework enables evidence-based institutional changes that result in behavioural and structural development and technological advancement.

The SERVQUAL model offers further insights into how digital transformation impacts service quality standards. The survey participants stated that digital services need to provide immediate access to communication and complete information disclosure, as well as basic system functionality, which aligns with the SERVQUAL dimensions of responsiveness and assurance. Digital technology integration, combined with training and leadership oversight, enables e-government platforms to deliver quick, reliable services, fostering trust with their users. The empathy dimension becomes evident when participants describe how digital service design should include operational features that support users who lack technical expertise. The official suggested that platforms maintain simplicity while supporting multiple languages, enabling users in all rural areas to access them without any problems. The model delivers services through human-centred service delivery, offering solutions that meet users' needs.

The research findings align with the national-level digital transformation policy guidelines that South Africa has developed. The ICT White Paper (2016) promotes digital inclusion through its program to create interoperability between all government departments. The SANESR (2017) outlines a strategy to achieve e-government integration through the development of shared digital infrastructure, departmental collaboration, and technological advancements. The Electronic Communications and

Transactions Act (ECTA, 2002) establish legal frameworks to protect electronic data transmission, enabling the municipality to undergo digital transformation. The National Development Plan (NDP, 2030) supports digital state transformation by requiring expert governance and modern technology to achieve its goals. The OR Tambo Municipality has achieved limited progress toward national targets because staff members started using SOLAR and Promun, and Employee Self-Service (ESS) platforms, yet system integration and digital skill development for employees

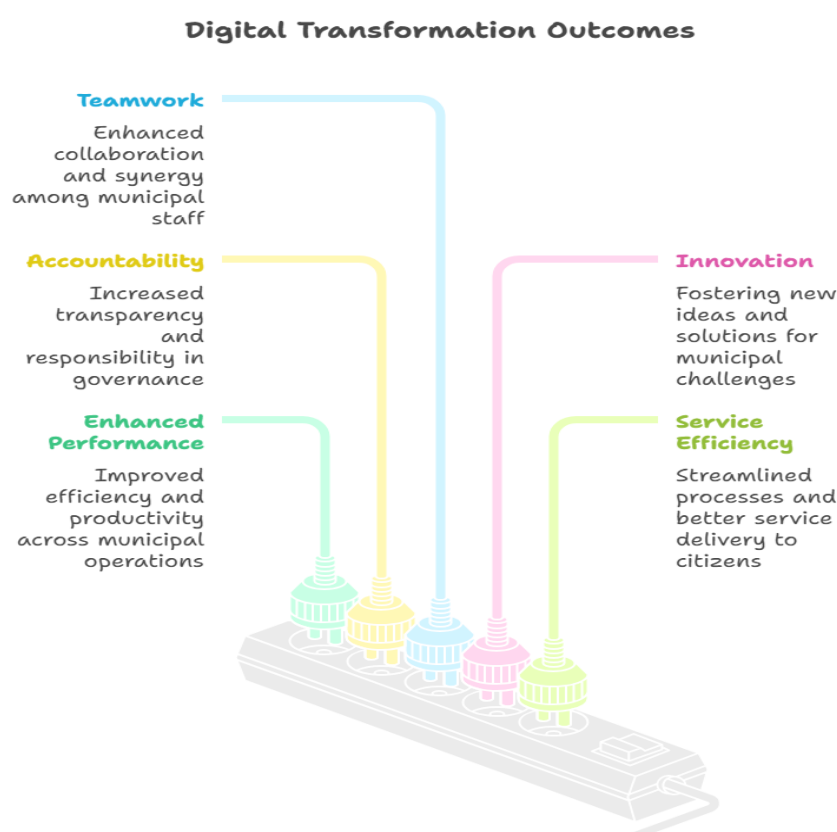
The findings confirm those of Okot-Uma (2016) and Mhlanga (2020), who explained that e-government success requires strong institutional leadership, clear digital strategies, and functional system connections. Bwalya (2018) found that African municipal digital readiness depends on three essential elements: ICT infrastructure, human capacity, and citizen readiness levels. The current research results differ from those of Ndou (2004), who stated that local governments in developing countries fail to understand e-government planning methods. The officials in OR Tambo demonstrated an understanding of SANESR and its functions, suggesting that the primary issue lies in implementing the system rather than a lack of knowledge. This indicates an evolution in digital governance maturity, with the focus shifting from conceptual awareness to implementation capacity.

The research shows that officials now understand digitisation needs to serve citizens while being financially sustainable. One participant commented, *"Digitisation should not only make our work easier but also make services accessible to the community at any time"*. Another stated, *"If we want people to use e-government services, we must involve them in planning and create platforms that respond to their needs"*. The provided excerpts demonstrate how SANESR's digital governance strategy, through citizen engagement, fosters trust among citizens and illustrates how government transparency works.

The findings revealed that implementing SANESR to advance OR Tambo Municipality's digitisation depends on three essential elements: technological integration, institutional alignment, and human capacity development. Research from both qualitative and quantitative methods shows that officials agree that digital transformation success depends on three core elements: strong leadership, integrated

systems, and citizen engagement. The research results align with the Theory of Change and LOGFRAME, demonstrating that institutional reform requires a continuous improvement process driven by active stakeholder involvement and data-driven decision-making. The research indicates that SANESR will achieve a complete digital transformation by integrating municipal departmental ICT platforms, promoting ongoing staff development, and adopting the national digital framework in local government systems.

Figure 38: Digital Transformation Outcomes

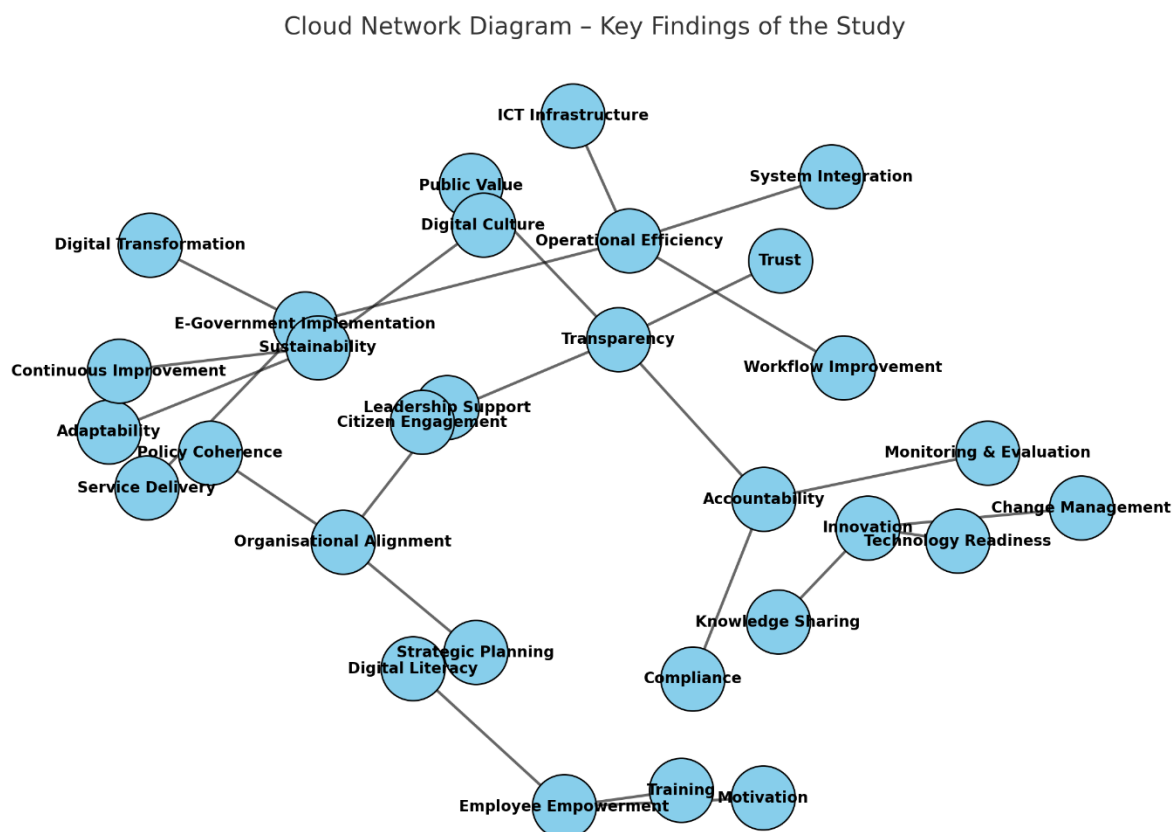


Source: Authors' Own Conceptualisation

The figure shows that digital transformation improves municipal governance through technological changes, boosting organisational performance and service delivery quality. The document presents five essential results, including enhanced teamwork for improved staff collaboration and accountability, as well as transparent governance and performance improvements that drive operational efficiency (**also see Figure 41**).

Additionally, it highlights innovation for digital solutions to address municipal problems and service efficiency for prompt citizen service delivery. The results demonstrate that digital transformation enables municipalities to collaborate more effectively, become more transparent and innovative, ultimately leading to increased public trust and improved administrative performance.

Figure 39: SANESR Implement enhancement Network



Source: Author's Own Compilation

The cloud network diagram illustrates the relationship between the key research findings on South Africa's National e-Government Strategy and Roadmap Framework within the OR Tambo District Municipality. The node directly connects to core outcomes, which include Operational Efficiency, Service Delivery, and Digital Transformation, as e-government success depends on the speed of digital systems for service delivery. The network core function of e-Government Implementation serves as the main goal for digital transformation in municipal governance. The second

network level comprises vital elements that support e-Government transformation programs in reaching their goals. The foundation for running efficient municipal operations lies in integrating digital tools and technical capacity, which foster relationships among Operational Efficiency and system integration, as well as ICT Infrastructure and Workflow Improvement.

The research demonstrates that organisations need to align organisational efforts with leadership support and Policy Coherence to create strategic direction and internal consistency, enabling ICT policies to be institutionalised in the municipality. The relationship between Employee Empowerment, digital Literacy, training, and Motivation exists because staff competence and morale are essential factors in maintaining technological progress (**Also see figure 41**). The outer network layer enables organisations to achieve sustainability, accountability, and innovation, which drive their need for ongoing transformation. The connection between Transparency and Accountability lies in Monitoring and Evaluation systems, Compliance mechanisms, and Citizen Engagement practices, demonstrating that public sector digital reforms require trust and citizen involvement. The Innovation element is connected to Technology Readiness, Knowledge Sharing, and Change Management because organisations must implement new digital systems and approaches to achieve operational transformation. The Sustainability cluster demonstrates how to establish a permanent innovation-based governance system through its components of Digital Culture and Adaptability, as well as Continuous Improvement, which builds organisational resilience. The system operates through interconnected elements that form an extensive ecosystem, delivering efficient e-government services through technology-based governance processes and people-based approaches, with a focus on citizen transparency.

5.5.6 A Model for enhancing the achievement of SANESR goals in the OR Tambo District Municipality

The study culminated in the development of a proposed model designed to strengthen the implementation and effectiveness of the South African National e-Government Strategy and Roadmap (SANESR) in the OR Tambo District Municipality. The qualitative research results showed that officials supported a governance system that

unites departments through coordinated efforts, fosters innovation, and delivers services that meet public needs. A participant described this vision as a unified system that connects the finance, HR, infrastructure, and administration departments to enable instant data exchange and accelerate decision-making. The selected excerpts demonstrate that SANESR requires a comprehensive model that integrates technology infrastructure with institutional capacity and governance culture to achieve its targets for efficiency, service excellence, and transparency.

The proposed model draws on the Logical Framework Approach (LOGFRAME), which defines how resources and capacity (inputs) lead to digital systems and training (outputs), resulting in efficiency and transparency (outcomes) that enable better service delivery. The Theory of Change (ToC) supports this approach by showing how digital transformation progresses through multiple stages, which include behavioural shifts, stakeholder partnerships, and organisational knowledge acquisition. The official stated that technology is one part of the transformation, as people need to adjust, policies need to be aligned, and leaders must direct the change process. The approach follows ToC principles, which support step-by-step adaptive changes in the system. The SERVQUAL model also informs the structure of the proposed model.

The proposed Model is supported by key legislative and policy frameworks. The ICT White Paper (2016) outlines fundamental principles for building an inclusive digital public sector through unified efforts, while SANESR (2017) explains the strategic approach for deploying an ICT governance system. The Electronic Communications and Transactions Act (ECTA, 2002) provide legal frameworks and security measures to protect digital transactions, while the National Cybersecurity Policy Framework (NCPF, 2012) safeguards government and citizen data. The research results confirm the findings of Bwalya (2018) and Mhlanga (2020), who stated that e-government sustainability depends on a unified system that integrates technological infrastructure with organisational capabilities and governance structures. Nkohkwo and Islam (2013) established that leadership commitment, together with interoperability, form the core requirements for e-government success in African public sector organisations.

The SANESR implementation requires multiple approaches which combine modern technology with public participation to achieve its established goals. The POPIA Act

2013 and the Electronic Communications and Transactions Act 25 of 2022 require immediate legislative development to establish vital rules governing the deployment of artificial intelligence and public service automation. The legal framework enables organisations to meet regulatory requirements while delivering better services through their combined platforms, according to Svärd et al. (2024) and Dovhan et al. (2022). The last step requires public institutions to establish digital literacy programmes and accessible technology systems, as these initiatives will enable citizens to use e-Government platforms effectively, thereby improving transparency and accountability in public service delivery (Mohale, 2024; Nokele, 2024). The strategic goals of South Africa's e-government roadmap will be achieved through a comprehensive systems approach, and this study proposes a model intended to advance the agenda.

5.7 Summary

Chapter 5 of the study analyses SANESR's effectiveness by assessing the OR Tambo District Municipality. The research combines qualitative and quantitative data to demonstrate how institutional capabilities, technological readiness, citizen adoption, and system integration issues impact digital governance development in the municipality. The research reveals that the municipality faces ongoing infrastructure issues, separate e-services, insufficient ICT expertise, and inadequate performance-tracking systems, all of which hinder its path toward citizen-oriented e-Government. The research reveals that digital transformation is present in specific areas, including Promun, ESS, and EDMS systems. However, the municipality faces significant challenges in terms of system integration, user-focused design, content management, and compliance with the SANESR pillar. The chapter establishes evidence-based connections between municipal operational facts, theoretical frameworks, and policy requirements.

The following chapter builds upon previous research by introducing the ENEGO-TRANSFORM Model, which integrates study results with theoretical knowledge to create a systematic framework for enhancing digital governance and SANESR transformation in the OR Tambo District Municipality.

Chapter 6

The ENEGO-TRANSFORM Model

6.1 Introduction

The previous chapter focused on empirical data analysis and laid the foundation for the model the student intends to develop. This chapter introduces the ENEGO-TRANSFORM Model, an Enhanced e-Government Transformation Model for Local Municipalities, based on data collected from the OR Tambo District Municipality (ORTDM) during this study. In keeping with Passey (2020), the model integrates research findings with legislative, conceptual, and theoretical frameworks that underpinned the study, which emerged from the complete research investigation.

The model is proposed to enhance the operationalisation of the South African National e-Government Strategy and Roadmap (SANESR, 2017) by resolving specific problems in e-Governance systems that affect municipal operations. The research applies theoretical frameworks, as illustrated in Figure 4, to real-world implementation by examining digital infrastructure development, human resource development, public trust creation, and institutional partnership management. The model can function as a transformative framework that enables municipalities to deliver better services through digital innovation, while promoting inclusivity, sustainability, and accountability.

The ENEGO-TRANSFORM Model emerged from the findings, the literature reviewed, the conceptual, legislative, and theoretical frameworks that guided the study, and the researcher's observations. The study revealed that ORTDM, with its local municipalities, operates e-Government systems through various e-platforms, including SOLAR, Promun, EDMS, ESS, and PayDay. However, these platforms were designed to reduce paperwork; the systems fail to reach their full potential due to three main obstacles: low digital skills, resistance to change, and limited public participation.

The model addresses critical e-Government system challenges by leveraging three theoretical frameworks that underpin the study and its design.

The Logical Framework Approach (LOGFRAME) provides a systematic method for organising e-Government projects into five core elements: inputs and activities, outputs, outcomes, and impacts. The project uses a particular approach which links all its stages through resources and activities that generate quantifiable results which achieve the project targets. The research results produced significant effects, improving the performance of e-Government initiatives while making their operations more sustainable.

The SERVQUAL Model provides an extensive service quality framework which organisations need to create and evaluate their digital systems. The model requires organisations to understand citizen requirements by assessing service quality across five service dimensions: reliability and responsiveness, assurance and empathy, and tangibles. The development of e-Government services should focus on these elements to achieve higher user satisfaction and participation levels.

The Theory of Change (ToC) serves as a conceptual framework that shows how digital interventions lead to institutional change. The document contains a prediction about governance events which these interventions will generate to improve governance outcomes and establish permanent public trust in public organisations. The ToC demonstrates how digital governance strategies establish cause-and-effect relationships that help stakeholders understand the governance system's effects, leading to sustainable governance practices that create lasting community benefits.

The three frameworks can provide organisations with a comprehensive system for creating, implementing, and evaluating e-Government initiatives that achieve their goals.

6.2 The ENEGO-TRANSFORM Model

The ENEGO-TRANSFORM Model (Enhanced E-Government Transformation Model for Local Municipalities) was developed from the literature reviewed, conceptual, theoretical and legislative frameworks, and the findings of this study on e-Government

implementation in the OR Tambo District Municipality (ORTDM). The initiative was developed to address ongoing organisational problems resulting from inadequate system connectivity, insufficient employee technical skills, and inadequate coordination and non-standard policy implementation that did not fulfil operational needs (Also **See figures 23 and 27**. The model utilises empirical data alongside theoretical constructs to develop an employee-focused system that enhances the success of e-Government programs, maintains operational efficiency, and ensures long-term viability. (Also **see figure 22**. The framework integrates the Logical Framework Approach (LOGFRAME) with SERVQUAL and the Theory of Change (ToC) to develop an extensive transformation model that connects resources to activities and results, as shown in **Figures 4 and 5**.

The development of the model is supported by a strong legislative and policy framework that includes the South African National e-Government Strategy and Roadmap (2017), ICT White Paper (2016), Electronic Communications and Transactions Act (2002), Science, Technology and Innovation White Paper (2019), and Cybercrimes Act (2020). The frameworks establish a framework that enables digital governance, institutional accountability, and secure data management. The Batho Pele Principles (1997), together with the Municipal Systems Act (2000), establish ethical, people-focused service-delivery standards for municipalities. The ENEGO-TRANSFORM Model supports digital transformation at the national level through its local government implementation framework, as in **Table 9**.

The model comprises six interconnected elements that serve as the foundation for institutional change. The six essential elements include:

- (1) Strategic Alignment and Governance, which maintains employee function alignment with national e-government targets (UN DESA, 2024; Fang, 2006))
- (2) ICT Infrastructure and System Integration, which enables data sharing and system interoperability
- (3) Human Capacity and Digital Literacy, which focuses on employee skill development.

- (4) Employee-Centric Service Quality and Performance, which enhances internal service delivery and employee accountability (Parasuraman, Zeithaml, & Berry, 1988).
- (5) Monitoring, Evaluation, and Feedback Loops, which establish performance-based learning systems.
- (6) Institutional Trust and Sustainability, which establishes employee trust through ethical practices, security measures, and sustainability initiatives.

See also Table 7 and Figure 36.

The three pillars create a comprehensive structure that supports sustainable digital governance through their behavioural, technical, and institutional elements.

The framework consists of two pillars, supported by both theoretical foundations and legal systems. The LOGFRAME serves as a planning tool that helps organisations track their performance, while SERVQUAL focuses on delivering quality service through employee interactions, and the Theory of Change defines how interventions produce their intended results. The POPIA (2013) and MFMA (2003) legislative frameworks establish institutional accountability systems, which the National Digital and Future Skills Strategy (2020) supports through its human capital development initiatives. Theoretical-policy integration enables transformation through technological changes, while organisations and individuals must simultaneously adjust their operations, conduct, and values. Also **see Table 9**.

The operational logic of the ENEGO-TRANSFORM Model is built on a sequential flow of inputs → processes → outputs → outcomes → impact (Fang, 2006). The system requires leadership support, together with ICT infrastructure and training resources, as its input components. The system requires three main processes: system integration, employee capacity development, and workflow optimisation. The system produces better digital adoption rates and operational efficiency as its main output. The system produces better performance levels and enhanced collaboration and innovation capabilities as its main outcome. Also **see Figures 8, 9, 10, 11, and 12**,

respectively. The system produces a digitally advanced institution that maintains transparency and earns trust from all stakeholders. The model operates through a continuous feedback system, enabling ongoing monitoring, learning, and adaptation for sustainable, long-term operations.

The model establishes operational roles for municipal actors through its institutional framework. Leadership establishes strategic direction and policy coherence through ICT units that operate technical systems, HR departments that deliver capacity-building programs, supervisors who monitor compliance and performance, and employees who operate systems to drive organisational change. The ENEGO-TRANSFORM Model establishes a collaborative framework that fosters an institutional culture supporting employee-led digital transformation through evidence-based practices that adhere to policy guidelines, aiming to achieve the NDP 2030 goal of developing a capable, ethical, and developmental local government in South Africa.

6.3 Core Pillars of the ENEGO-TRANSFORM Model (Employee-Centred Focus)

The ENEGO-TRANSFORM Model aims to enhance municipal performance through employee-led e-Government transformation, thereby improving institutional efficiency in implementing SANESR. **Also see Figure 41.**

The model demonstrates that municipal staff require an understanding of digital tools to enhance service delivery through technological systems. The six pillars below establish a foundation that enables behavioural, institutional, and systemic changes to convert existing disorganised manual systems into a digital, high-performance municipal governance system.

6.3.1 Pillar 1: Strategic Alignment and Governance

The organisation requires its staff members and leaders to maintain their focus on strategic goals while upholding governance stability, as outlined in this pillar.

The different e-government operations operated independently because they lacked connections to the Integrated Development Plan (IDP) and the Performance Management System (PMS). The Strategic Alignment and Governance Pillar establish a system which enables all municipal staff members to understand their work activities as part of organisational goals and national digital transformation directives. The research findings indicated that ORTDM staff members lacked understanding of the SANESR (2017) and its supporting policies.

The organisation needs to create systems that enable departmental collaboration while maintaining individual team performance accountability. The Logical Framework Approach (LOGFRAME) enables this pillar by requiring organisations to create performance indicators that link their inputs and activities to specific outcomes. The Municipal Systems Act (2000), together with the Municipal Structures Act (1998) and Public Service Act (1994), establishes legal frameworks that enable efficient service delivery through ethical coordination.

6.3.2 Pillar 2: ICT Infrastructure and System Integration

The current workplace environment requires municipalities to build suitable ICT infrastructure and integrate systems to enhance employee digital work productivity. The research findings demonstrated that SOLAR, Promun, EDMS, and ESS operate independently, hindering staff from sharing information or conducting business transactions efficiently. Organisations need to develop a single technological framework that connects all software applications, intranets, and communication systems. The Electronic Communications and Transactions Act (2002), together with the ICT White Paper (2016), provides legal frameworks that determine how electronic communications should be recognised and how digital ecosystems should develop. The theoretical framework indicates that this pillar serves as the LOGFRAME input-process phase, which necessitates digital solutions to enhance employee workflow operations. The system enables employees to provide precise, timely services because it functions properly, which supports the SERVQUAL reliability and tangibility dimensions.

6.3.3 Pillar 3: Human Capacity and Digital Literacy

Municipal organisations need their staff members to learn digital technology skills and demonstrate adaptability, as this enables them to develop their e-government services. The research results showed that staff required better ICT training because they faced difficulties with digital tools and exhibited resistance to change, driven by limited technological expertise and fear of job loss.

The organisation needs to maintain its professional development programs that teach employees ICT skills. The design of digital-literacy programs needs to address specific requirements that differ between various job roles. The system requires performance-based incentives to stimulate innovation in digital service delivery.

The Theory of Change (ToC) demonstrates that employee development, together with motivation and technology proficiency, leads to enhanced organisational performance and service delivery results. The SERVQUAL framework benefits from this pillar because trained staff members can effectively handle citizen requests while demonstrating confidence in their work.

6.3.4 Pillar 4: Employee-Centric Service Quality and Performance

e-Government success depends on employee service quality because it produces better results that benefit citizens. The third pillar transforms service quality evaluation into operational management, delivering vital resources, staff support, and motivation to achieve digital service excellence.

The institution needs to create workflows that achieve maximum efficiency by using systems that users can easily operate. The organisation needs to develop performance feedback systems that function alongside supportive supervision

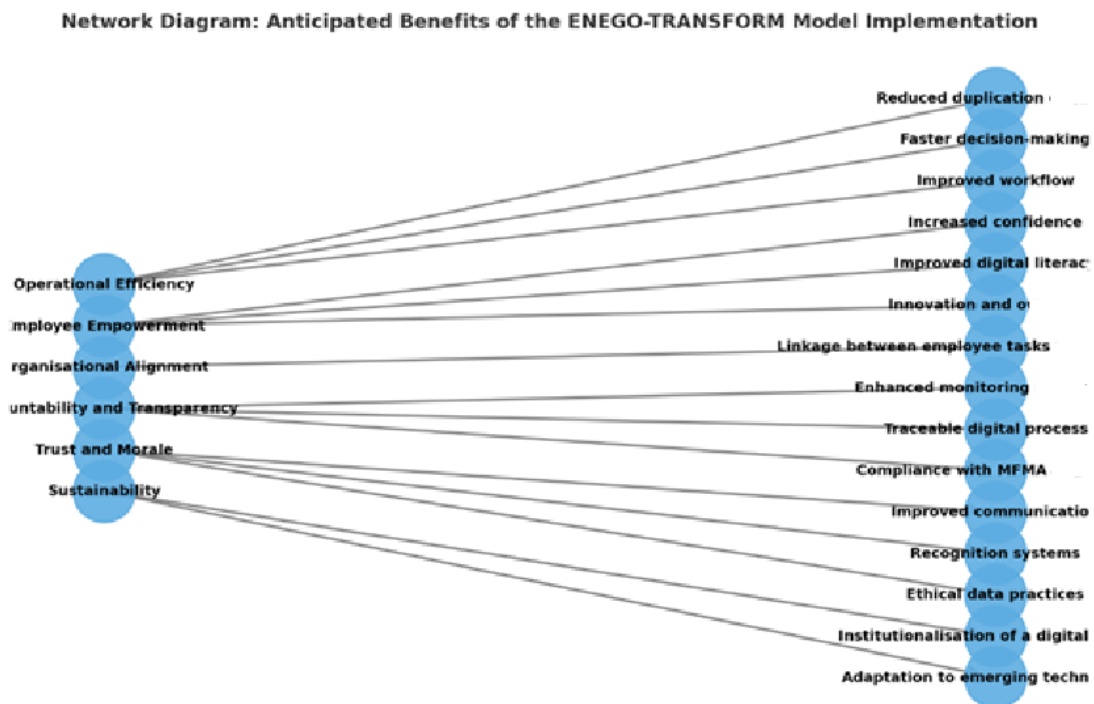
methods. The organisation supports innovation through its workplace culture, which promotes teamwork and holds employees accountable.

The first pillar implements SERVQUAL dimensions (reliability, responsiveness, assurance, empathy, and tangibles) to develop shared values across departments and between supervisors and employees, which will be available for citizen interaction. The Batho Pele Principles (1997) form the basis of this method, as they define "People First" values that staff members need to build their workplace culture. The Municipal Systems Act (2000), together with the Public Service Regulations (2016), establishes rules that require municipal staff to deliver their work to high standards while ensuring operational efficiency and transparency.

The strategic alignment vision leads the process through ICT integration, which develops essential tools and human capacity to support employee-centred service delivery. The system enhances operational performance and performance tracking, leading to organisational accountability, institutional trust, and sustained long-term success.

The ENEGO-TRANSFORM Model operates through a scheduled framework that enables municipalities to execute digital transformation by focusing on employees' change management requirements. The program operates through the Logical Framework Approach (LOGFRAME) and Theory of Change (ToC), which define operational structure and establish causal relationships.

Figure 40: Benefits of ENEGO



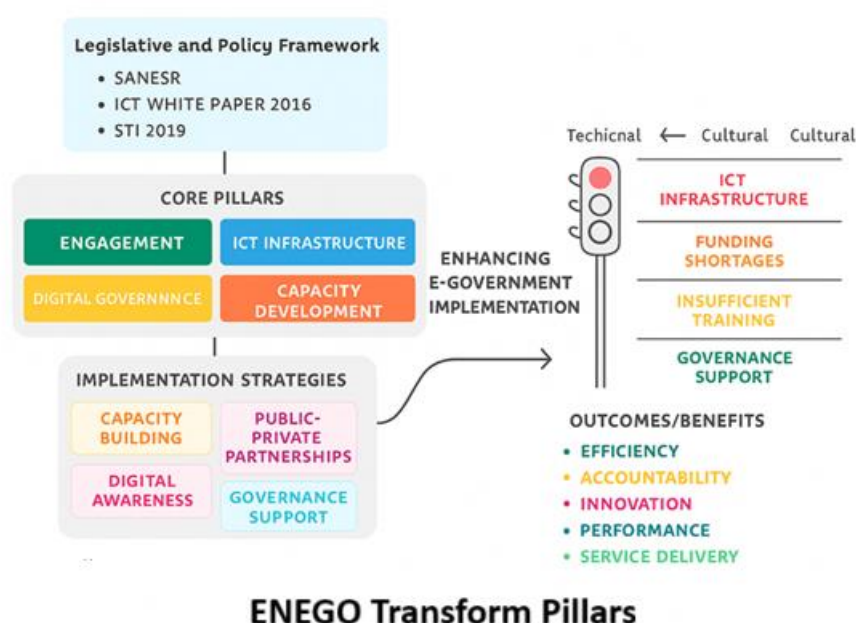
Source: Author's Own Compilation

This flow illustrates how resources and human capacity are systematically transformed into sustainable institutional change. The logic ensures that transformation is measurable, iterative, and adaptable across departments and municipalities.

6.4 Diagrammatic Representation of the ENEGO-TRANSFORM Pillars

Below is a textual description of the conceptual diagram to be illustrated in your thesis. (A graphic version can later be designed for publication or presentation.)

Figure 44: Pillars of the ENEGO-Transform Model



Source: Author's Own Compilation

The ENEGO Transform Pillars, as illustrated in the accompanying figure, provide a structured framework that connects essential legislative and policy directives such as SANESR, the ICT White Paper (2016), and the STI Policy (2019) to the practical components necessary for effective e-government implementation. At the core of this framework are four foundational pillars: Engagement (which focuses on enhancing stakeholder participation and citizen government interaction), ICT Infrastructure (which ensures the technological foundation required for digital services), Digital Governance (which fosters transparency, accountability, and data-driven decision-making), and Capacity Development (which aims to build the competencies of public officials). Supporting these pillars are various implementation strategies, including capacity-building programs, digital awareness campaigns, public-private partnerships, and governance support mechanisms, all designed to operationalise the framework. Additionally, the model acknowledges the technical and cultural barriers, such as inadequate ICT infrastructure, funding limitations, insufficient training, and governance challenges, that may hinder progress. When effectively addressed, these pillars collectively enhance e-government implementation, resulting in improved outcomes,

including increased efficiency, accountability, innovation, performance, and enhanced service delivery within municipalities.

ENEGO-TRANSFORM Model: A Framework for Digital Transformation

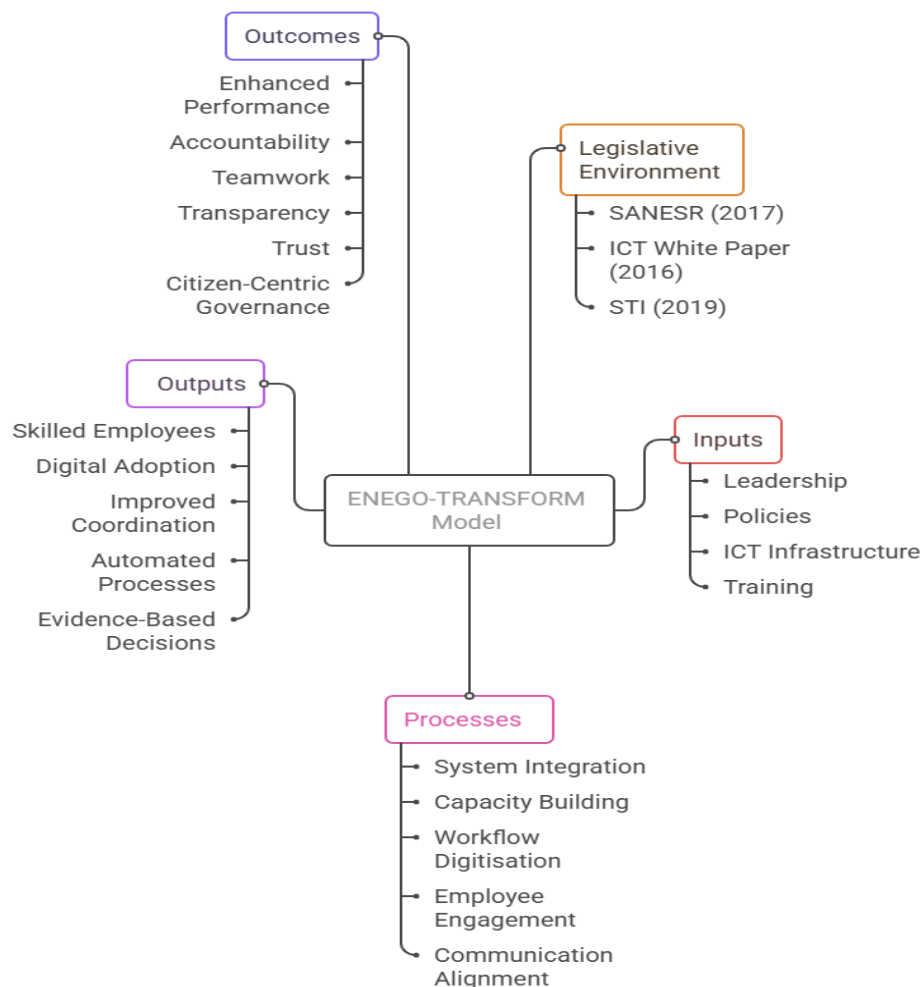


Figure 45: The Lukman ENEGO Model

The ENEGO-TRANSFORM Model demonstrates how digital transformation in municipal environments develops through legal frameworks, organisational elements, and operational procedures. The model starts with legislative foundations, which use SANESR (2017) and the ICT White Paper (2016) to establish digital governance guidelines and requirements. The policies establish performance criteria that measure digital readiness, service delivery, and system interoperability. The model identifies organisational enablers as essential to e-Government transformation, requiring

dedicated leadership, established policies, sufficient ICT infrastructure, and ongoing employee development.

The municipality achieves its digital goals through these inputs, which provide strategic direction, necessary resources, and skilled personnel. The model illustrates how organisational inputs drive essential business operations, encompassing system integration, capacity development, workflow automation, employee motivation, and communication system synchronisation. The successful operation of these processes yields specific results, including trained staff members, higher digital system adoption rates, enhanced unit coordination, automated operations, and data-driven decision-making. The transformation process depends on these organisational processes, which determine how well digital systems function together, how staff members use technology, and how operations transition from manual to automated systems. Organisations can measure their digital transformation success through specific, quantifiable results that reflect their outputs.

The outputs of digital transformation initiatives include performance improvements, enhanced accountability, improved teamwork, increased innovation, and greater service delivery efficiency. The complete achievement of digital transformation goals results in digital transformation initiatives producing their final outcomes, which become long-term effects. The model demonstrates that successful implementation yields three primary outcomes: a sustainable, trusted, and digitally mature municipality that delivers efficient, transparent, and citizen-centric services. The ENEGO-TRANSFORM Model illustrates the comprehensive transformation process from policy execution to impact delivery through its digital governance stages, thereby enhancing municipal performance and achieving SANESR transformation objectives.

The next chapter synthesises the study's key insights by drawing overall conclusions and reflecting on the implications of the findings for policy, practice, and future research.

Chapter 7

Chapters Overview, Conclusion, and Recommendations

7.1 Introduction

This chapter provides an overview of the study by synthesising the key findings in relation to the research objectives and theoretical frameworks underpinning the investigation. It revisits the central arguments presented throughout the preceding chapters, drawing together the empirical evidence and analytical insights to present coherent conclusions. Based on these conclusions, the chapter proposes practical, policy-oriented recommendations to enhance the effectiveness of the South African National e-Government Strategy and Roadmap Framework within the municipal context.

7.2 Chapter One: Introduction and Background of the Study

The study began by presenting an overview of South Africa's growing interest in digital governance, as outlined in the National e-Government Strategy and Roadmap (SANESR) of 2017. The policy framework set targets for implementing ICT to transform public services, improve operational efficiency, enhance transparency, and increase citizen participation. The introduction section provided background information, demonstrating that local government services continue to face delivery problems throughout the OR Tambo District Municipality. The study highlighted three main obstacles to e-government system adoption, which include digital access disparities and insufficient infrastructure and employee skills for using ICT systems.

The chapter establishes the research problem, defines the study's objectives, and explains its importance. The research showed that policy creation does not align with the actual delivery of e-government services provided by local government areas. The chapter established the research context through public sector reform and innovation, demonstrating why the evaluation of the SANESR framework became necessary. The report concluded by presenting three assessment tools: the Logical Framework

Approach (LOGFRAME), the SERVQUAL model, and the Theory of Change, which are used to evaluate policy coherence, service quality, and transformation outcomes.

7.3 Chapter Two: Literature Review and Theoretical Framework

This chapter synthesised global, regional, and national literature on e-government, focusing on frameworks that guide digital transformation within the public sector. The research tracked South African e-government development from its inception to the present day, evaluating SANESR's compliance with the United Nations E-Government Development Index and the African Union Digital Transformation Strategy requirements. The review established that program success requires evaluation of accessibility and transparency, efficiency, and citizen satisfaction. The chapter utilised the LOGFRAME, SERVQUAL, and Theory of Change frameworks to demonstrate how e-government implementation connects its inputs to processes that produce specific outcomes. The LOGFRAME system enabled organisations to create strategic plans and monitor their performance, while SERVQUAL assessed customer perceptions of service quality, and the Theory of Change focused on organisational learning to achieve enduring results. The frameworks provided a comprehensive analytical framework for evaluating employee involvement, organisational culture, and structural obstacles that affect e-government change in the OR Tambo District Municipality.

7.4 Chapter Four: Research Paradigm, Philosophy, and Methodology

The research methodology appears in Chapter Three of the study. The research combined qualitative employee interview data with quantitative results from standardised questionnaires through a mixed-methods approach. The study achieved greater reliability through triangulation by using statistical data to confirm qualitative findings. The research population consisted of municipal staff members from various departments, purposively sampled to ensure representative participation from key stakeholders involved in essential e-service delivery.

The chapter also discussed ethical considerations, data collection tools, and analysis techniques. The research study adhered to Walter Sisulu University's Research Ethics Policy, which protected participant confidentiality and required all participants to join voluntarily. Data analysis was performed using SPSS for quantitative data and thematic analysis for qualitative narratives. The research design employed rigorous methods to confirm the precision and dependability of the data for testing the SANESR framework in actual environments.

7.5 Chapter Five: Data Presentation, Analysis and Discussion of the findings

The chapter presents the research results derived from both qualitative and quantitative data collection methods. The research employed descriptive statistics to examine employee demographics, ICT usage patterns, and their evaluations of system operational efficiency. The research revealed that the municipality adopted digital tools at a moderate level, utilising SOLAR, Promun, and EDMS systems. The project faced three major obstacles: insufficient infrastructure, inadequate ICT training, and staff doubts about new technology systems. The research found that e-government systems improved document management and communication, but employees failed to maximise their use because their digital literacy skills were not uniform.

The qualitative findings provided rich insights into employees' experiences and perceptions. The survey participants identified three main problems: system reliability issues, poor departmental coordination, and insufficient digital capacity-building programs for all users. The chapter established the foundation for future interpretation and model development in the following sections.

The research data were interpreted in Chapter Five through analysis, which linked to both the study objectives and the existing academic literature. It demonstrated that the SANESR framework had partially achieved its intended outcomes at the local government level. The organisation demonstrated improved performance in communication, information sharing, and internal accountability; however, it did not

resolve its operational issues. The research findings were linked to the SERVQUAL dimensions, which showed that reliability and responsiveness performed poorly, while infrastructure and employee competence performed at an average level.

The research found that the ICT White Paper (2016), ECTA (2002), and Cybercrimes Act (2020) established effective legal frameworks; however, these policies have not led to actual local implementation. The research results confirmed that national digital policies need to align with the actual conditions that exist at the municipal level. The chapter concluded by identifying essential elements for success, which include dedicated leadership support, employee autonomy, ongoing oversight, and the successful implementation of new technology within existing administrative frameworks.

7.6 Chapter Six: The Proposed Model of the Study

The chapter used empirical evidence to develop the ENEGO-TRANSFORM Model, which aims to enhance e-government implementation in the OR Tambo District Municipality and other local governments with similar characteristics. The model consists of six essential components: Operational Efficiency, Employee Empowerment, Organisational Alignment, accountability and transparency, trust and morale, and Sustainability. The framework connects these elements to legal frameworks, enabling organisations to comply with rules, adjust their operations, and deliver services that meet citizen needs. The model identifies capacity building, digital leadership, and ethical use of ICT as essential elements that enable transformation. The ENEGO-TRANSFORM Model is expected to deliver multiple advantages, including improved workflow management, enhanced service delivery, increased staff motivation, and sustained adoption of a digital culture. The system enables ongoing learning and feedback through evaluation systems that comply with MFMA and PFMA requirements for monitoring and assessment. The chapter suggested that municipalities should implement this model to achieve complete transformation and develop innovative governance systems.

7.7 Overall Conclusion

The primary objective of this study was to investigate how the South African National e-Government Strategy and Roadmap Framework (SANESR, 2017) operate in the OR Tambo District Municipality (ORTDM) through assessments of awareness levels, implementation readiness, system performance, portal usability, accessibility, and adoption obstacles. The research design of this study employed a mixed-methods approach, drawing on established theoretical frameworks, including the Logical Framework Approach (LOGFRAME), the Theory of Change, and SERVQUAL. The study found that local government institutions underwent digital transformation at varying levels, as evidenced by both positive and negative changes in their organisational structure. The SANESR faces obstacles to its transformative goals because local government institutions exhibit both forward progress and structural barriers, as well as insufficient resources and opposition to change.

The findings suggest that ORTDM e-Government systems operate at a moderate level of efficiency; however, their performance varies across departments, with some utilising digital tools to varying degrees while others continue with traditional manual operations. The available digital platforms do not function optimally because they lack proper design and integration, as well as adequate maintenance, hindering improvements in operational workflows and service delivery outcomes. System downtime, slow portal navigation, and unreliable internet access, especially in rural areas, create multiple additional issues that negatively affect user experiences.

The findings indicate that e-portals are operational throughout municipalities; however, their implementation is hindered by barriers such as a lack of training among some staff, uneven digital competencies, inflexible organisational systems, and insufficient funding from relevant departments. The evaluation of Challenges yielded the highest score, with a 2.87 out of all assessed constructs, indicating that SANESR implementation faces significant obstacles. Research findings validate previous studies showing that South African municipalities lack the essential ICT infrastructure and organisational preparedness to establish extensive digital transformation programmes.

The results supported this finding because officials viewed SANESR as a national document which failed to adapt to the specific needs of their municipalities. The research revealed several ongoing issues stemming from poor change management systems, a lack of political backing, outdated systems, disorganised ICT governance, and poor departmental communication. The study participants stated that digital transformation requires municipalities to make fundamental changes in their management systems and organisational culture, which they have not yet accomplished. The situation requires a specific implementation framework that links national strategic plans to the operational needs of each local area.

The study adds to the body of knowledge in three significant ways. The research provides theoretical evidence on how the Logical Framework Approach, Theory of Change, SERVQUAL, and Institutional Theory interact to explain the success or failure of digital governance in local municipalities. The research shows that SANESR implementation requires organisations to establish specific inputs and process alignment, employee behaviour transformation, organisational approval, and performance-tracking systems. The research provides evidence-based insights into municipal operations, demonstrating specific areas where ICT systems require infrastructure development, staff need training, leaders require preparation, and public sector work habits need improvement. The research findings will help developers create more effective national and municipal digital governance policies by analysing contextual adaptation, capacity building, and monitoring system requirements.

The research establishes the ENEGO-TRANSFORM Model as an integrated framework which helps municipalities enhance their SANESR implementation and build advanced digital governance systems. The model combines research findings with academic concepts and legal structures to create a single system which drives change. The framework establishes that municipal digital transformation requires four essential drivers: Enablers, Governance, and Transformation Processes and Outcomes.

The Enablers consist of essential elements, which include ICT infrastructure, financial resources, digital skills development, leadership commitment, and staff understanding of the SANESR. These elements form the base which enables digital governance to

operate effectively. The research findings indicate that ORTDM faces significant challenges in its enablers, including insufficient skills, integration issues, and insufficient ICT funding.

The transformation process depends on governance mechanisms, which include accountability structures, ICT policies, data protection compliance, monitoring and evaluation systems, and strategic alignment. The research findings reveal that ORTDM faces two major challenges, including a weak ICT governance structure and inadequate digital policy enforcement, which lead to slow system implementation and interrupted digital project progress.

The transformation processes enable digital strategy execution through e-portals, process automation, change management, stakeholder engagement, and interdepartmental collaboration. The SANESR aims to streamline service delivery; however, the study found that transformation processes in ORTDM remain poorly coordinated. The ENEGO-TRANSFORM Model requires organisations to perform repeated transformation processes, which depend on ongoing learning activities, technological development, and leadership flexibility.

The outcomes of these initiatives will lead to improved service delivery, increased citizen satisfaction, enhanced operational efficiency, and increased adoption of digital platforms and transparency. The research findings demonstrate that current results do not meet the targets established by SANESR, confirming the need for a new model to address the identified organisational weaknesses. The ENEGO-TRANSFORM Model enables municipalities to create a digital governance system that unites separate digital practices into a permanent platform serving citizens.

The research establishes that SANESR functions as a practical national framework for digital transformation; however, the OR Tambo District Municipality faces multiple barriers to its implementation, including low awareness levels, insufficient infrastructure, limited ICT skills, and disorganised governance structures. The research findings demonstrate that digital tools alone cannot drive organisational transformation; organisations require effective leadership, strategic planning, institutional transformation, and continuous employee skill development. The ENEGO-

TRANSFORM Model, developed by this study, provides municipalities with a systematic approach to enhance their SANESR implementation and digital governance capabilities. The research establishes that South African local governments need to achieve digital transformation through policies that align with each other, organisations that prepare for change, employees who learn continuously through technological integration, and public sector institutions that support innovative practices. Without these, municipalities will continue to struggle to unlock the service-delivery benefits envisioned by the SANESR. The administrative systems of ORTDM and similar municipalities can evolve into more effective systems through their partnership, leading to improved public trust and more efficient service delivery to citizens.

7.8 Recommendations

The chapter presents strategic and operational suggestions derived from the research data, theoretical framework, and model construction of this study. The recommendations align with the main areas of e-government implementation, which include policy and institutional capacity, human resources, technology infrastructure, leadership, and citizen engagement, based on the ENEGO-TRANSFORM Model.

7.8.1 Strengthen Policy Coherence Across Levels of Government

The National e-Government Strategy and Roadmap (SANESR) must align with municipal Integrated Development Plans (IDPs) and ICT policies. The national strategy requires district and local-level implementation plans to operationalise its goals, which should consider local conditions, available resources, and community needs.

The policy framework will ensure uniform execution of government policy through its established accountability systems, which operate at all levels of public administration. Establish a Local e-Government Implementation Framework. The OR Tambo District

requires each municipality to develop its own e-government framework that translates national guidelines into operational targets. The framework requires specific definitions of the IT unit, service department, and administrative division's responsibilities to foster teamwork among these groups while maintaining budget stability through SMART performance indicators.

7.8.2 Invest in ICT Infrastructure and System Integration

Municipalities should allocate resources to build reliable ICT infrastructure, including broadband networks, servers, and data protection systems, to deliver effective e-services.

A single data architecture serves as the foundation, enabling operational efficiency and better decision-making. The system requires expanding platform integration among Promun, SOLAR, EDMS, and HR E-Systems to reduce duplicate work and improve departmental workflow efficiency and system communication. Municipalities need to develop robust data protection systems that comply with the Cybercrimes Act (2020) and the Protection of Personal Information Act (POPIA) regulations to combat the increasing digital security threats. The ICT department needs to establish a cybersecurity unit to protect sensitive data and create digital ethics standards to foster trust between individuals and digital platforms.

7.8.3 Implement Comprehensive Digital Skills Training Programmes

The research results indicate that staff members from different departments exhibit varying levels of ICT literacy, ranging from low to high proficiency. The municipality needs to create continuous training programs which teach digital literacy, e-service management, data analytics, and online communication tools to all staff members. The training program should provide educational content at various levels, starting with administrative staff and progressing to managerial and technical personnel, to target competence development.

7.8.4 Establish a Digital Leadership Development Programme

Leadership serves as the primary driving force enabling e-government transformation. Executive training programs should be available for senior and middle managers who require education in digital governance, innovation management, and strategic ICT planning. The National School of Government, in collaboration with Walter Sisulu University and other higher education institutions, should develop accredited short learning programmes (SLPs) to train leaders.

7.8.5 Foster a Digital-First Organisational Culture

The research identified change resistance as the main obstacle which prevents organisations from moving forward. Municipalities need to foster an environment that supports innovation, teamwork, and ongoing learning. Management needs to communicate their digital transformation targets to employees while recognising and rewarding innovative solutions and exceptional work performance. The digital champions from each department should act as transformation ambassadors, promoting adoption by educating colleagues about new systems.

7.8.6 Institutionalise the ENEGO-TRANSFORM Model

The ENEGO-TRANSFORM Model functions as a directional framework which helps organisations implement e-government solutions based on the proposed solution. The municipality needs to establish Operational Efficiency, Employee Empowerment, Organisational Alignment, Accountability, Transparency, Trust, Morale, and Sustainability as essential components for its annual strategic plans and performance agreements to reach sustainable outcomes.

7.8.7 Strengthen Governance Structures for ICT Oversight

The existing ICT Governance Committee needs expanded authority to lead digital project delivery, performance tracking, and compliance monitoring. The committee requires members representing finance and administration, IT, and community services to provide comprehensive oversight while adhering to the MFMA and PFMA legislative requirements. Enhance Monitoring and Evaluation Systems

The Logical Framework Approach (LOGFRAME) based digital M&E system enables continuous performance tracking and reporting through its built-in feedback systems. The performance management cycle requires conducting ICT audits at set intervals, quarterly progress checks, and citizen feedback surveys to measure impact and inform adaptive strategies.

7.8.8 Promote Citizen-Centred E-Government Platforms

The redesign of municipal e-portals, mobile applications, and social media platforms needs to create user-friendly experiences for citizens. The system must provide multilingual functionality with user-friendly navigation, enabling citizens to pay bills, submit complaints, and retrieve information without any challenges. The system requires improved feedback mechanisms to achieve optimal results through the full participation of all stakeholders throughout the process.

7.8.9 Bridge the Digital Divide in Rural Communities

Municipalities need to work with telecommunications companies and the Department of Communications and Digital Technologies to create rural and peri-urban internet networks that will help achieve digital equality. Community ICT centres and digital hubs need revitalisation to serve their original purpose as training facilities, e-service centres, and youth digital innovation hubs.

7.8.10 Institutionalise Digital Innovation Units

Municipalities need to establish Innovation and Research Units that will study modern technologies, including Artificial Intelligence (AI), Geographic Information Systems (GIS), and blockchain, to enhance service delivery. The established units serve as experimental facilities to develop new approaches, while monitoring project success and fostering national innovation systems through partnerships between universities and businesses.

7.8.11 Ensure Financial and Policy Sustainability

E-government initiatives require continuous financial support and enduring political backing to fulfil their expanding range of goals. The ICT budget requires protection from other spending priorities through ring-fencing protection. Municipalities need to form partnerships with donor organisations, private businesses, and educational institutions to secure financial backing and technical assistance for their digital transformation initiatives.

7.9 Recommendations for Future Research

1. Future studies may compare municipalities and regions that use SANESR in a longitudinal and comparative setting to identify trends, lessons learned, and best practices. The findings of this study will be relevant to municipalities at local and national levels, as well as to policies concerning ICT infrastructure and digital skills. The results can also be used to further refine the SANESR framework to better address the needs of rural and resource-poor areas.

2. It is essential for research studies to examine citizen perceptions regarding the implementation of e-Government. Such studies can facilitate the evaluation of digital service satisfaction, the usability of online platforms, and the levels of trust in the systems employed.
3. Future studies may include the development and application of a context-specific theoretical approach to foster the implementation of e-government in rural municipalities.
4. A study is also required to investigate the impacts of e-Government on outcomes such as efficiency, transparency, accountability and citizen participation related to Good Governance.
5. Future research should also address aspects of cybersecurity, data protection and ethics when assessing digital governance mechanisms to gain citizen trust in e-Government.

Note:

The purpose of the study is to enhance knowledge of digital governance while supporting better implementation of the SANESR. The study does not seek to undermine, criticise, or cast any negative aspersions on the OR Tambo District Municipality or its three local municipalities - King Sabata Dalindyebo, Nyandeni, and Port St Johns. The study's results, along with suggestions, aim to support municipal officials, municipalities, and policymakers in enhancing digitisation in Municipalities.

LIST OF REFERENCES

- Abdelhakim, D. & Idoughi, D. (2021). Citizen adoption of mobile and customisable E-government services: A literature review and conceptual framework. *International Journal of Information Systems in the Service Sector (IJISSS)*, 13(1), pp.31–53.
- Abdulla, I., & McArthur, B. W. (2018). Government-to-Government e-Government: A Case Study of Challenges Facing User Adoption in KwaZulu-Natal. *Alternation Journal*, 25(1), 154–186.
- Abdulnabi, S. M. (2024). Issues and challenges of implementing e-governance in developing countries: a comprehensive analysis of civil service models. *Cogent Business & Management*, 11(1), 2340579.
- Abdurahman, S. & Kabanda, S. (2024). Factors influencing the design and implementation of accessible e-Government services in South Africa. *The Electronic Journal of Information Systems in Developing Countries*, 90(4), p.e12317.
- Aboderin, O. (2025). Toward sustainable ICT integration in Nigerian secondary schools: a four-pillar framework for systemic reform. *Journal Plus Education*, 38(SI), 385-399.
- Acharya, R. (2025). Examining Interpretivism in Social Science Research: Exploring Subjectivity, Context, and Meaning in Social Inquiry. *Education Science & Technology*.
- Acquah, A. (2024). Digital inclusivity: exploring e-government use among businesses in Ghana. *Transforming Government: People, Process, and Policy*, 18(4), 856–873.
- Adam, I.O. & Alhassan, M.D. (2021). The linkages between ICT access, e-government, government effectiveness, and their effects on corruption. *International Journal of Technology, Policy, and Management*, 21(4), pp.344–362.
- Adams, S. O., & Paul, C. (2023). E-government development indices and attaining United Nations sustainable development goals in Africa: A cross-sectional data analysis. *European Journal of Sustainable Development Research*, 7(4), 1–11.
- AdeyinkaOjo, S. (2025). *Digital and strategic qualitative research methodology*. Notion Press.
- Adler, R. H. (2022). Trustworthiness in qualitative research. *Journal of Human Lactation*, 38(4), 598–602.

Adnan, M., Ghazali, M. & Othman, N.Z.S., (2022). E-Participation within the Context of e-Government Initiatives: A Comprehensive Systematic Review. *Telematics and Informatics Reports*, p.100015.

Ahmed, E. A. S. (2025). Exploring the Relationships between G2G, G2E and G2C E-government Interactions and Organizational Readiness for Citizen Centricity in the UAE Government: Organizational Culture as a Moderator.

Ahmad, M., & Wilkins, S. (2025). Purposive sampling in qualitative research: A framework for the entire journey. *Quality & Quantity*, 59(2), 1461-1479.

Ahmed, E. A. S. (2025). Exploring the Relationships between G2G, G2E and G2C E-government Interactions and Organizational Readiness for Citizen Centricity in the UAE Government: Organizational Culture as a Moderator.

Ahmed, S. K., Mohammed, R. A., Nashwan, A. J., Ibrahim, R. H., Abdalla, A. Q., Ameen, B. M. M., & Khedhir, R. M. (2025). Using thematic analysis in qualitative research. *Journal of Medicine, Surgery, and Public Health*, 6, 100198.

Ajala, O. (2023). Talent management programmes and cost leadership in deposit money banks in Lagos State, Nigeria. *Journal of Human Resource & Leadership*, 7(2), 58-75.

Ali, M. (2023). E-governance and E-democracy: a Digital Revolution. *Available at SSRN 4623414*

Al Shabasy, S., Roudijk, B., Abbassi, M., Finch, A., Stolk, E., & Farid, S. (2023). The Egyptian EQ-5D-5L Extensive Pilot Study: Lessons Learned. *Pharmacoeconomics*, 41(3), 329-338.

Albertus, R.W. and Hamman-Fisher, D., (2021). We are investigating information technology skills retention challenges in South Africa's public sector. *African Journal of Science, Technology, Innovation and Development*, 13(5), pp.541-549.

Alkraihi, A.I., (2020). Citizen satisfaction with mandatory E-government services: A conceptual framework and an empirical validation. *IEEE Access*, 8, pp.117253-117265.

Alkraihi, A., & Ameen, N. (2022). The impact of service quality, trust and satisfaction on young citizen loyalty towards government e-services. *Information Technology & People*, 35(4), 1239-1270.

Al-Ma'aitah, M., (2019). Drivers of e-government citizen satisfaction and adoption: The case of Jordan. *International Journal of E-Business Research (IJEER)*, 15(4), pp.40-55.

Almeida, L. F. A., de Souza, M. C., & de Souza Ferreira, J. C. (2024). BIDS IN THE MUNICIPALITY OF TEÓFILO OTONI/MG: MODALITIES AND THE EXISTENCE OF SUSTAINABILITY CRITERIA. *Revista de Gestão Social e Ambiental*, 18(1), 1-14.

Almusaed, A., Almssad, A., & Yitmen, I. (2025). Qualitative Data Collection and Management. In *Practice of Research Methodology in Civil Engineering and Architecture: A Comprehensive Guide* (pp. 417-454). Cham: Springer Nature Switzerland.

Alsaad, A., Alkhawaldeh, A., Elrehail, H., & Almomani, R. (2024). Linking e-government development and quality of governance to trust in government: evidence from oecd member countries. *Transforming Government: People, Process, and Policy*, 18(4), 575-593

Al-Shihi, H. (2006). Critical Factors in the Adoption and Diffusion of E-government Initiatives in Oman. *ResearchGate*.

Alvesson, M. and Sköldbberg, K., 2017. *Reflexive methodology: New vistas for qualitative research*. 3rd ed. London: SAGE Publications.

Anam, C. (2025). An Interpretative Exploration of Lived Experiences in Digital Public Service among Civil Servants and Citizens. *Proceedings of the Multidisciplinary Research Community*, 2(1), 1070-1079.

Anggara, R., Purnomo, E.P. & Khairunnisa, T., (2024). Comparison of Website Maturity in e-Government Implementation at the City Level in Indonesia. *Journal of Government and Civil Society*, 8(2), pp.264–288.

Apleni, A., & Smuts, H. (2020). An E-Government Implementation Framework: A Developing Country Case Study. In *Lecture Notes in Computer Science* (pp. 15–27).

Apleni, A., & Smuts, H. (2020, April). An e-government implementation framework: A developing country case study. In *Conference on e-Business, e-Services and e-Society* (pp. 15-27). Cham: Springer International Publishing.

Apleni, L., & Henama, U. (2020). The impact of events in boosting local economic development: A case study of Port St Johns, South Africa. *African Journal of Hospitality, Tourism and Leisure*, 9(1), 1-12.

Arbale, H. & Mutisya, D.N., (2024). Book Review:" Research Methods for Business Students" by Mark NK Saunders, Philip Lewis, and Adrian Thornhill (Pearson Education, 2019). *African Quarterly Social Science Review*, 1(2), pp.8-21

Arnold, E., & Wise, E. (2026). Evaluating transitions and missions: it's all about the theory. In *The New Role of the State for Transformative Innovation* (pp. 378-395). Edward Elgar Publishing.

Aseza, P. (2023). *An Analysis of Financial Administration of Municipal Infrastructure Grant in or Tambo District Municipality With Reference to Water and Sanitation* (Master's thesis, University of South Africa (South Africa)).

Assiri, H. (2022). *Design and implementation of a secure and efficient E-Governance model using blockchain for a developed country*. University of Technology Sydney (Australia).

Atobishi, T. and Mansur, H., 2025. Bridging Digital Divides: Validating Government ICT Investments Accelerating Sustainable Development Goals. *Sustainability*, 17(5), p.2191.

Avianto, B. N., Ismowati, M., & Amelia, N. (2022). Implementation E-Government in supporting of online-based Service Quality and Accessibility. *Journal Research of Social Science, Economics, and Management*, 2(5), 729-742.

Ayodele, O., Plantinga, P., Sanchez-Bentacourt, D., Dlamini, S., & Dlamini, N. (2025). How do researchers and public officials co-navigate e-participation implementation? An action-research experience with South African municipalities. *Systems*, 13(2), 125.

Azahar, A., Mohd Yusof, A. N., & Azhar, Z. I. (2023). A preliminary study to explore the informed consent approach and the ethical challenges in the Malaysian biobanking for Research. *Asian Bioethics Review*, 15(2), 141-154.

Babalola, O., Adedoyin, A., Ogundipe, F., Folorunso, A., & Nwatu, C. E. (2024). Policy framework for Cloud Computing: AI, governance, compliance and management. *Glob J Eng Technol Adv*, 21(02), 114-26.

Baig, M.I., Shuib, L. and Yadegaridehkordi, E. (2020). Big data in education: a state of the art, limitations, and future research directions. *International Journal of Educational Technology in Higher Education*, 17(1), pp.1-23.

Balaji, K. (2025). E-Government and E-Governance: Driving digital transformation in public administration. *Public governance practices in the age of AI*, 23-44.

Balbin-Romero, G., Carrera-Mija, E., Serrato-Cherres, A. & Cordova-Buiza, F., (2022). Relationship between e-banking service quality based on the e-SERVQUAL model and customer satisfaction: a study in a Peruvian bank. *Banks and Bank Systems*, 17(4), p.180.

- Baloyi, W. M., Meyer, N., & Rossouw, D. (2025). A critical review of the enablers and constraints of artificial intelligence in the South African public sector. *Journal of Contemporary Management*, 22(1), 380-403.
- Banyard, P. and Grayson, A. (2017). *Introducing psychological research*. Bloomsbury Publishing.
- Bao, Y., Cheng, X., Su, L., & Zarifis, A. (2025). Achieving employees' Agile response in E-Governance: exploring the synergy of technology and Group collaboration. *Group Decision and Negotiation*, 34(2), 209-234.
- Basamh, S. S., Qudaih, H. A., & Suhaimi, M. A. (2014). E-government implementation in the Kingdom of Saudi Arabia: An exploratory study on current practices, obstacles & challenges. *International Journal of Humanities and social science*, 4(2), 296-300.
- Basheer, N., Ahmed, V., Bahroun, Z., & Anane, C. (2025). Sustainability assessment in higher education institutions: exploring indicators, stakeholder perceptions, and implementation challenges. *Discover Sustainability*, 6(1), 252.
- Battaglia, F. (2024). From “listen and repeat” to “listen and revise”: how to transcribe interviews offline quickly and for free using voice recognition software. *International Journal of Qualitative Methods*, 23, 16094069241247473.
- Bawazir, T.K., (2022). *Modelling government service usage patterns: determinants and outcomes from users' perspective in Saudi Arabia* (Doctoral dissertation, Doctoral dissertation, RMIT University).
- Bayaga, A. (2022). RETRACTED: Examining the predictive relevance of security, privacy risk factors, and institutional logics for e-government service adoption. *The Electronic Journal of Information Systems in Developing Countries*, 88(1), e12201.
- Bekele, W. & Ago, F. (2022). Sample size for interview in qualitative research in social sciences: a guide to novice researchers. *Research in Educational Policy and Management*, 4(1), 42-50.
- Benali, M. & Ally, M. (2020). Towards a conceptual framework highlighting mobile learning challenges. *International Journal of Mobile and Blended Learning (IJMBL)*, 12(1), 51–63.
- Benlahcene, A., Awang, H., Mansor, N.S., Ghazali, O., Mohd Nadzir, M., Mat Yamin, F., Uba Haruna, I. and Tudu Shehu Malami, S., (2024). Citizens' E-participation through E-government services: a systematic literature review. *Cogent Social Sciences*, 10(1), p.2415526.

Bhalla, S., Bahar, N., & Kanapathy, K. (2023). Pre-testing semi-structured interview questions using expert review and cognitive interview methods. *International Journal of Business and Management*, 7(5), 11-19.

Bhamjee, A., Le Roux, T., Swanepoel, D. W., Graham, M. A., Schlemmer, K., & Mahomed-Asmail, F. (2022). Perceptions of telehealth services for hearing loss in South Africa's public healthcare system. *International Journal of Environmental Research and Public Health*, 19(13), 7780.

Bhana, A. (2024). Unlocking the power of convergent parallel designs and triangulation for enhanced management and leadership research: A comprehensive theoretical exploration. *Asian Journal of Management, Entrepreneurship and Social Science*, 4(04), 1770-1793.

Bhaskar, P., Vinay, M., & Joshi, A. (2021). E-government adoption among employees: a systematic review-derived conceptual framework. *Transforming human resource functions with automation*, 20-43.

Biesta, G., (2010). Pragmatism and the philosophical foundations of mixed methods research. In: A. Tashakkori and C. Teddlie, eds. *SAGE Handbook of Mixed Methods in Social and Behavioral Research*. 2nd ed. Thousand Oaks, CA: SAGE Publications, pp.95–118.

Bisaria, C., Madhubala Kumari, D. S. S., & Patel, B. K. (2026). *Research methodology: Tools and techniques*. BR Publications.

Bless, B. (2023). Democratic centralism: The root cause of poor municipal performance in South Africa. In *European Conference on Research Methodology for Business and Management Studies* (Vol. 22, No. 1, pp. 228-235).

Bolgeo, T., Matteo, R., Gardalini, M., Ruta, F., Iacrossi, L., Gambalunga, F., ... & Maconi, A. (2024). Environmental diseases, recognition for care: a qualitative study of nurses' perceptions. *Public Health Nursing*, 41(4), 684-689.

Bougherra, M., Shaikh, A. K., Yenigun, C., & Hassan-Yari, H. (2023). E-government performance in democracies versus autocracies. *International Journal of Organizational Analysis*, 31(7), 3275-3294.

Bougie, R., & Sekaran, U. (2025). *Research Methods for Business, with eBook Access Code: A Skill Building Approach*. John Wiley & Sons.

Braun, V., & Clarke, V. (2021). Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and psychotherapy research*, 21(1), 37-47.

Bryman, A., (2016). *Social research methods*. 5th ed. Oxford: Oxford University Press.

Bumdari, D. O., & Badamdash, D. (2023). Mongolia's experience in e-governance and current challenges. *Society and Security Insights*, 6(2), 71-89

Butt, M. and Katuse, P. (2023). Influence of porter's diamond firm strategy, structure and rivalry construct on Pakistan automotive sector. *International Journal of Research in Business and Social Science* (2147-4478), 12(7), 105-113.

Bwalya, K. J. (2018). *Decolonisation of e-government research and practice: exploring contextual issues and opportunities in Africa* (p. 360). OASIS.

Castro, C., Lopes, I. C., & von Rosing, M. (2025). Digital government and sustainable development. In *The Sustainability Handbook, Volume 2* (pp. 557-588). Elsevier.

Cele, M., Saritas, O., & Sokolov, A. (2024). South African Foresight for STI (SAForSTI): Background, Rationales, and Objectives. In *21st Century Foresight: Shaping the Future for Sustainable Social, Economic and Environmental Development in South Africa* (pp. 57-73). Cham: Springer Nature Switzerland.

Celiktas, B., Birgin, B., & Tok, M. S. (2025). An Analysis of Enterprise-Level Cloud Transition Barriers within the Technology-Organization-Environment (TOE) Framework and Strategic Solution Proposals. *Bilişim Teknolojileri Dergisi*, 18(4), 335-354.

Cervi, L. (2023). Tiktok use in municipal elections: from candidate-majors to influencer-politicians. *Más Poder Local*, (53), 8-29.

Chand, S. P. (2025). Methods of data collection in qualitative research: Interviews, focus groups, observations, and document analysis. *Advances in Educational Research and Evaluation*, 6(1), 303-317.

Chen, Y. and Li, Q. (2024). The impact of e-government on the new generation productive capacities: evidence from cross-country data. *Sustainability*, 16(8), 3233.

Chiwawa, N., & Uwizeyimana, D. E. (2025). Enhancing financial governance and compliance for sustainable service delivery in local government: A case of eThekweni metropolitan municipality. *International Journal of Applied Research in Business and Management*, 6(1).

Chohan, S.R. & Hu, G., (2022). They are strengthening digital inclusion through e-government: Cohesive ICT training programs to intensify digital competency. *Information technology for development*, 28(1), pp.16-38.

Chukwudi, C. E., Bello, W., & Adesemowo, M. M. (2023). E-Government and Democracy: A boost to sustainable development. *JPPUMA: Jurnal Ilmu Pemerintahan dan Sosial Politik UMA (Journal of Governance and Political UMA)*, 11(2), 110-118.

Chuma, K. G. (2025). 'A tough nut to crack': inconsistent standards as roadblocks to data interoperability of health information systems in public hospitals in the Gauteng Province of South Africa. *Oxford Open Digital Health*, oqaf013.

Claassen, D., Botha, G. & Linol, B., (2024). An integrated assessment of erosion drivers facilitating gully expansion rates—A near century multi-temporal analysis from South Africa. *Land Degradation & Development*, 35(11), pp.3675-3699.

Clifford, D. (2024). *Data protection law and emotion*. Oxford University Press.

Coetzer, S.G., 2022. *A comparative study of the e-Government Services of South Africa, Brazil, and Estonia* (Doctoral dissertation, Stellenbosch: Stellenbosch University).

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage.

Creswell, J.W. & Plano Clark, V.L., (2018). *Designing and conducting mixed methods research*. 3rd ed. Thousand Oaks, CA: SAGE Publications.

Creswell, J. W. (2021). *A concise introduction to mixed methods research*. SAGE publications.

Dagada, R. (2024). The advancement of 4IR technologies and increasing cyberattacks in South Africa. *Southern African Journal of Security*, 2, 27-pages.

Daher, W., (2023). Saturation in qualitative educational technology research. *Education Sciences*, 13(2), 98.

Das, D. K. (2024). Exploring the symbiotic relationship between digital transformation, infrastructure, service delivery, and governance for smart sustainable cities. *Smart cities*, 7(2), 806-835.

Davis, F. D. (1989). Technology acceptance model: TAM. *Al-Suqri, MN, Al-Aufi, AS: Information seeking behavior and technology adoption*, 205(219), 5.

de Waal, P. J. (2022). The protection of personal information act (POPIA) and the promotion of access to information act (PAIA): it is time to take note. *Current Allergy & Clinical Immunology*, 35(4), 232-236.

Denisov, Y., & Nemtsova, N. (2021). Transformation of the Ethics of Public Authority in the context of changing paradigms of public administration. In *SHS Web of Conferences* (Vol. 101, p. 02017). EDP Sciences.

Department of Economic. (2024). *United Nations E-Government Survey 2024: Accelerating Digital Transformation for Sustainable Development-With the addendum on Artificial Intelligence*. Stylus Publishing, LLC.

Department of Communications and Digital Technologies. (2024). *National Policy on Data and Cloud*. Government of South Africa.

Department of Communications and Digital Technologies. (2024). *National Data and Cloud Policy* (Government Gazette No. 50741). Government of South Africa. Retrieved from [Electronic Communications Act: National Data and Cloud Policy](#) [Accessed on 16/01/2026].

Department of Economic. (2024). *United Nations E-Government Survey 2024: Accelerating Digital Transformation for Sustainable Development-With the addendum on Artificial Intelligence*. Stylus Publishing, LLC.

Department of Public Service and Administration (DPSA). (2017). *National e-Government strategy and roadmap*. Government of South Africa.

Department of Public Service and Administration (DPSA). (2017). *National e-Government strategy and roadmap*. Government of South Africa.

Department of Public Service and Administration. (2017). *National e-Government Strategy and Roadmap*. Government of South Africa.

Department of Public Service and Administration. (2024). *Draft Digital Government Policy Framework*. Government of South Africa. Retrieved from <https://www.dpsa.gov.za/dpsa2g/documents/egov/2024/DRAFT%20DIGITAL%20GOVERNMENT%20POLICY%20FRAMEWORK.pdf> [Accessed 14/01/2026].

Department of Science and Innovation. (2019). *White Paper on Science, Technology, and Innovation*. Government of South Africa.

Department of Science and Technology. (2019). White paper on science, technology and innovation. *Government Gazette*, 41909.

Department of Telecommunications and Postal Services. (2016). *National Integrated ICT Policy White Paper*. Government of South Africa.

Department of Telecommunications and Postal Services. (2016). *National Integrated ICT Policy White Paper*. Government of South Africa.

Desveaud, K., & Bawack, R. (2026). Integrating the literature on AI adoption: A socio-technical framework. *International Journal of Market Research*, 68(2), 219-240.

Diakite, M. & Wandaogo, A.A., (2024). *Cross-Country Empirical Analysis of GovTech Platforms on Citizen Engagement*. World Bank.

Dias, G.P., (2019). Fifteen years of e-government research in Ibero-America: A bibliometric analysis. *Government Information Quarterly*, 36(3), 400–411.

Distel, B. & Lindgren, I., (2023). A matter of perspective: Conceptualizing the role of citizens in E-government based on value positions. *Government Information Quarterly*, p.101837.

Djatkiko, G. H., Sinaga, O., & Pawirosumarto, S. (2025). Digital transformation and social inclusion in public services: A qualitative analysis of e-government adoption for marginalized communities in sustainable governance. *Sustainability*, 17(7), 2908.

Dovhan, V., Yynyk, I., Kurchyn, O., Zhupnyk, V., & Moskalenko, S. (2022). Building legal mechanisms for electronic governance development. *Cuestiones Políticas*, 40(73), 172-191.

Drisko, J. W. (2025). Transferability and generalization in qualitative research. *Research on Social Work Practice*, 35(1), 102-110.

Dulal, T. D. (2025). Overview of Various Types of Research Philosophies and Their Importance. *Patan Pragya*, 14(1), 99-113.

Dzemydienė, D., Burinskienė, A., & Čižiūnienė, K. (2024). An approach of integration of contextual data in e-service system for management of multimodal cargo transportation. *Sustainability*, 16(18), 7893.

Enaifoghe, A. & Ndebele, N.C., (2023). Examining the barriers to the adoption and integration of information communication technologies as e-Government in Africa. *International Journal of Research in Business and Social Science*, 12(7), pp.383-393.

Enaifoghe, A. (2025). Bridging the digital divide in the South African public sector: Assessing digital literacy gaps and capacity-building strategies. In *Digital Equity and Literacy*. IntechOpen.

Enworo, O. C. (2023). Application of Guba and Lincoln's parallel criteria to assess trustworthiness of qualitative research on indigenous social protection systems. *Qualitative research journal*, 23(4), 372-384.

Erhueh, O. V., Nwakile, C., Akano, O. A., Esiri, A. E., & Hanson, E. (2024). Digital transformation in energy asset management: Lessons for building the future of energy infrastructure. *Global Journal of Research in Science and Technology*, 2(02), 010-037.

Esposito, G., Terlizzi, A., Guarino, M., & Crutzen, N. (2023). Interpreting digital governance at the municipal level: evidence from smart city projects in Belgium. *International Review of Administrative Sciences*, 90(2), 301-317.

Esselimani, S., Sağsan, M., & Kıralp, Ş. (2021). E-Government effect on participatory democracy in the Maghreb: indirect effect and Government-Led participation. *Discrete Dynamics in Nature and Society*, 1–13. doi:10.1155/2021/6642998

Ezeji, C.L., (2024). Cyber policy for monitoring and regulating cyberspace and cyber security measures for combating technologically enhanced crime in South Africa. *International Journal of Business Ecosystem & Strategy* (2687-2293), 6(5), pp.96-109.

Ezmeci, F., Akgul, E., & Akman, B. (2022). An Analysis of Children's Play Behaviors towards Toys Representing Diversity. *Pedagogical Research*, 7(3).

Faku, S. M., & Lukman, Y. (2025). Exploring infrastructure project delays in a selected Eastern Cape Municipality, South Africa. *Journal of Local Government Research and Innovation*, 6, 235.

Fan, Z. (2025). One issue, two interpretations: unpacking the role of issue definition in e-government implementation. *Public Management Review*, 27(10), 2383-2406.

Felder, F. (2025). Bridging the gap between knowledge and justice: Epistemic challenges in participatory disability research. *Theory and Research in Education*, 23(3), 268-283.

Fang, Z. (2002). E-government in digital era: concept, practice, and development. *International journal of the Computer, the Internet and management*, 10(2), 1-22.

Feleke, H. & Lessa, L. (2023). Maturity as a critical sustainability factor for e-government: toward a conceptual framework. *The Electronic Journal of Information Systems in Developing Countries*, 90(3).

Fernandez, A., Ratliff, J. B., Sandrone, S., & Ramani, S. (2024). Conceptual frameworks in neurology education research. *Neurology® Education*, 4(1), e200176.

Figuerola, V., Sánchez Crespo, L. E., Santos-Olmo, A., Rosado, D. G., & Fernández-Medina, E. (2025). Building a holistic cybersecurity framework for e-Government based on a systematic analysis of proposals: V. Figuerola et al. *International Journal of Information Security*, 24(3), 121.

Fink, A. (2024). *How to conduct surveys: A step-by-step guide*. SAGE publications.

Folorunso, A., Babalola, D., Nwatu, C., & Ukonne, U. (2024). Compliance and Governance Issues in Cloud Computing and AI: The USA and Africa. *Global Journal of Engineering and Technology Advances*, 21(2), 127-138

Fotiadis, K. & Chatzoglou, P., (2023). E-Government: citizens' intention to use a tax evasion reporting application. Evidence from Greece. *International Journal of Electronic Governance*, 15(2), pp.169-187.

Frans, C., & Pather, S. (2022). Determinants of ICT adoption and uptake at a rural public-access ICT centre: A South African case study. *African Journal of Science, Technology, Innovation and Development*, 14(6), 1575-1590.

Galushi, L.T. & Malatji, T.L., (2022). Digital Public Administration and Inclusive Governance at the South African Local Government, in Depth Analysis of E-Government and Service Delivery in Musina Local Municipality. *Academic Journal of Interdisciplinary Studies*, pp.116-126.

Galvan, M. C., & Pyrczak, F. (2023). *Writing empirical research reports: A basic guide for students of the social and behavioral sciences*. Routledge.

Gamage, A. N. K. K. (2025). Research design, philosophy, and quantitative approaches in scientific research methodology. *Sch J Eng Tech*, 2(1), 91-103.

Gangneux, J., & Joss, S. (2022). Crisis as driver of digital transformation? Scottish local governments' response to COVID-19. *Data & Policy*, 4, e26.

Gawali, R. B. (2023). *Research methodology and statistical methods*. Academic Guru Publishing House.

Ghamrawi, N., Shal, T., Ghamrawi, N. A., Abu-Tineh, A., Alshaboul, Y., & Alazaizeh, M. A. (2025). A step-by-step approach to systematic reviews in educational research. *European Journal of Educational Research*, 14(2), 549-566.

Gil-García, J.R. (2020). *Digital Government and Public Management*. Routledge.

Gilgun, J. F. (2019). Deductive qualitative analysis and grounded theory: Sensitising concepts and hypothesis-testing. *The SAGE handbook of current developments in grounded theory*, 107-122.

Grassi, P. A. (2020). *Digital identity guidelines*. National Institute of Standards and Technology (NIST), Special Publication 800-63.

Grecu, M. & Dicusar, I. (2021). Influence of the economic gap on the level of e-government in the developing countries – republic of moldova. *Pro Publico Bono - Magyar Közigazgatás*, 9(1), 16-29.

Greenhalgh, T. (2025). Case studies: a guide for researchers, educators, and implementers. *BMJ medicine*, 4(1), e001623.

Grigalashvili, V. (2022). E-government and E-governance: Various or Multifarious Concepts. *International Journal of Scientific and Management Research*, 5(01), 183-196.

Gudepu, B. K., & Gellago, O. (2019). Unraveling the Divide: How Data Governance and Data Management Shape Enterprise Success. *International Journal of Modern Computing*, 2(1), 50-59.

Guest, G., Bunce, A. & Johnson, L., (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), pp.59–82.

Gupta, C. P., & Mishra, M. (2024). The relation between intellectual honesty and research integrity as the fundamental principles of research. *RESEARCH AND*, 151.

Gwaka, L. T. (2025). Digital discourses: Exploring city-citizen engagement through city twitter handles in South Africa. *Information Development*, 02666669251328040.

Hakim, M., Rahayu, A., Ahman, E., & Wibowo, L. (2023). The effect of e-government quality (e-govqual) on local government e-government user satisfaction. *Jurnal Apresiasi Ekonomi*, 11(3),

Hakimi, M., Ghafory, H. and Fazil, A.W., (2024). Enterprise Architecture in E-Government: A Study of Integration Challenges and Strategic Opportunities. *International Journal Software Engineering and Computer Science (IJSECS)*, 4(2), pp.440-452.

Hall, E. (2024). *Just Enough Research 2024*. Mule Books.

Hans, N., & Rutenge, M. M. (2024). Evaluation of the Opportunities Presented by the Adoption of E-Government in Enhancing Local Government Authority Performance at Kinondoni Municipal Council in Tanzania. *African Journal of Empirical Research*, 5(4), 479-488.

Hassan, A. M., Ibrahim, A. A., Ali, F. D., Isse, A. Y., Ahmed, B. A., & Al-Turjman, F. (2024, June). Developing a Cloud-Based Association Management Platform to Enhance Member Engagement and Data-Driven Decision-Making. In *International*

Conference on Smart Applications and Sustainability in the Artificial Intelligence of Things (pp. 881-895). Cham: Springer Nature Switzerland.

Kromidha, E., & Cordoba-Pachon, J. R. (2014). Bridging the gaps between e-government practice and research: A meta-study for policy development. *International Journal of Public Sector Management*, 27(1), 66-84.

Harun, S. (2026). Policy implementation and regulatory challenges in managing civil service resources in the era of digital governance. *Golden Ratio of Social Science and Education*, 6(1), 01-17.

Hassan, M. S., Al Halbusi, H., Razali, A., Ariffin, R. N. R., & Williams, K. A. (2023). The Swedish gamble: trust in the government and self-efficacy in the battle to combat COVID-19. *Current Psychology*, 42(21), 17935-17950.

Hayes, B. K., & Heit, E. (2018). Inductive reasoning 2.0. *Wiley Interdisciplinary Reviews: Cognitive Science*, 9(3), e1459.

Hegazy, W. (2026). Digital Public Service Delivery as an Institutional Outcome: Data Governance and Interoperability in The Egyptian Public Sector.

Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social science & medicine*, 292, 114523.

Hofisi, C., & Chigova, L. E. (2023). Rethinking the Role of Local Government in Service Delivery in South Africa: Towards Digital Transformation. *E-Journal of Humanities Arts and Social Sciences*, 64-76.

Holma, K., & Huhtala, H. M. (2025). Habits of tolerance: the reformative power of pragmatism. *Educational Theory*, 75(3), 460-477.

Hooda, A., Gupta, P., Jeyaraj, A., Giannakis, M., & Dwivedi, Y. K. (2022). The effects of trust on behavioral intention and use behavior within e-government contexts. *International Journal of Information Management*, 67, 102553.

Hutahaeen, M., Eunike, I. J., & Silalahi, A. D. K. (2023). Do Social Media, Good Governance, and Public Trust Increase Citizens'e-Government Participation? Dual Approach of PLS-SEM and fsQCA. *Human Behavior and Emerging Technologies*, 2023(1), 9988602.

Ilieva, G., Yankova, T., Ruseva, M., Dzhabarova, Y., Zhekova, V., Klisarova-Belcheva, S., ... & Dimitrov, A. (2024). Factors influencing user perception and adoption of e-government services. *Administrative sciences*, 14(3), 54.

- Inamdar, T. A. (2025). Digital Divide: Analysing The Impact Of Unequal Access To Technology On Social Mobility. *Janus*, 16(2).
- Iruedo, J. O., & Pather, M. K. (2023). Time-to-treatment initiation in a decentralised community-care model of drug-resistant tuberculosis management in the OR Tambo District municipality of South Africa. *International Journal of Environmental Research and Public Health*, 20(14), 6423.
- Ishengoma, F., & Shao, D. (2025). A framework for aligning e-government initiatives with the sustainable development goals. *Journal of Innovative Digital Transformation*, 2(1), 73-89.
- Ivanova, M., Kulkaev, G., & Tanina, A. (2022, April). Improving the UN methodology of the e-government development index. In *International Scientific Conference "Digital Transformation on Manufacturing, Infrastructure & Service"* (pp. 111-129). Cham: Springer Nature Switzerland.
- Jakoet-Salie, A., (2020). E-government Strategies in South Africa. *Administratio Publica*, 28(3), pp.1-22.
- Jakoet-Salie, A., Draai, E., & Taylor, J. D. (2020). Creating a virtuous cycle for increased trust in local government. *TD: The Journal for Transdisciplinary Research in Southern Africa*, 16(1), 1-8.
- Jameel, A., Asif, M. and Hussain, A., (2019). Good governance and public trust: Assessing the mediating effect of E-government in Pakistan. *Lex Localis*, 17(2), pp.299-320.
- Janis, I. (2022). Strategies for establishing dependability between two qualitative intrinsic case studies: A reflexive thematic analysis. *Field Methods*, 34(3), 240-255.
- Jegade, O., & Ncube, C. (2021). Science, technology, innovation management for industrial development in South Africa: implications for the fourth industrial revolution. *Science*, 15(9), 1-10.
- Jejeniwa, T., Mhlongo, N., & Jejeniwa, T. (2024). Conceptualizing e-government initiatives: lessons learned from africa-us collaborations in digital governance. *International Journal of Applied Research in Social Sciences*, 6(4), 759-769.
- Jiang, H., Wang, S., & Yao, J. (2022). Structuration analysis of e-government studies: a bibliometric analysis based on knowledge maps. *Journal of Information Science*, 48(5), 676-685.
- Johnson, R.B. & Onwuegbuzie, A.J., (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), pp.14–26.

- Juma, C. (2016). *Innovation and its enemies: Why people resist new technologies*. Oxford University Press.
- Junianto, E., & Marlina, M. (2022). Profile of Deaf Students at Batubara Special School With Achievements in National Pantomime Field. *Edumaspul-Jurnal Pendidikan*, 6(2), 2418-22.
- Junjie, M. & Yingxin, M. 2022. The Discussions of Positivism and Interpretivism. *Online Submission*, 4(1), 10–14.
- Kadewandana, D. O. N. I. E., & Kaligis, R. A. (2024). The Role of Information and Communication Technology (ICT) in E-Government: A Literature Review of Sustainable Development Aspects. *CoverAge: Journal of Strategic Communication*, 14(2), 91-101.
- Kalita, L. (2026). Positivist, Interpretive. *Innovative Approaches to Social Research Challenges*, 71.
- Kamalov, F., Gheisari, M., Liu, Y., Feylizadeh, M., & Moussa, S. (2023). Critical controlling for the network security and privacy based on blockchain technology: a fuzzy dematel approach. *Sustainability*, 15(13), 10068.
- Kamanja, L. W., Mwenda, L., & Wachira, A. (2022). Effects of Self-Imposed Barriers Towards Career Advancement of Women in The Hospitality Industry, 3-5 Star Hotels in Nakuru County. *European Journal of Humanities and Social Sciences*, 2(3), 17-24.
- Kamau, G. (2022). ICT4D research in developing countries: A call for pragmatism approach. *International Journal of Computer and Information System (Ijcis)*.
- Karnsomdee, P. (2025). E-Government Adoption in Thai Public Sector Organizations: Citizens' Perspective. *Journal of Theoretical and Applied Electronic Commerce Research*, 20(2), 103.
- Kasabali, K., Polychronidou, P. and Kydros, D., 2024. Digitization and E-government: A Systematic Literature Review for the European Union (EU 27) and The United Kingdom. *Digital Economy and Green Growth: Opportunities and Challenges for Urban and Regional Ecosystems*, pp.131-144.
- Kassen, M., (2022). Blockchain and e-government innovation: Automation of public information processes. *Information Systems*, 103, p.101862.
- Katzef, A., Vumazonke, N. G., Chigona, W., Tuyeni, T. T., & Mtegha, C. Q. (2022, May). Factors affecting citizens' use of e-participation platforms: a case of GovChat platform in cape town municipality. In *International Conference on Social Implications of Computers in Developing Countries* (pp. 69-88). Cham: Springer International Publishing.

Kaushik, V. and Walsh, C.A., (2019). Pragmatism as a research paradigm and its implications for social work research. *Social sciences*, 8(9), p.255.

Kayyali, M. (2026). Research methodology: Qualitative, quantitative, and mixed methods. In *Navigating theory, methodology, and researcher development in doctoral research* (pp. 93-122). IGI Global Scientific Publishing.

Kenosi, C., Zlotnikova, I. & Sigwele, T., (2024). Industrial Revolution 4.0 technologies for democratic e-government services: A systematic review of transformational frameworks. *JeDEM-eJournal of eDemocracy and Open Government*, 16(3).

Kettl, D. F. (2015) *The transformation of governance: Public administration for the twenty-first century*. Baltimore, MD: Johns Hopkins University Press

Khalid, N. A., & Yang, Y. (2024). Multilevel perspective for the diffusion of e-democracy implementation: A systematic literature review. *JeDEM-eJournal of eDemocracy and Open Government*, 16(1), 213-251.

Khan, A., & Krishnan, S. (2021). Citizen engagement in co-creation of e-government services: a process theory view from a meta-synthesis approach. *Internet Research*, 31(4), 1318-1375.

Khan, H. F., Qayyum, S., Beenish, H., Khan, R. A., Iltaf, S., & Faysal, L. R. (2025). Determining the alignment of assessment items with curriculum goals through document analysis by addressing identified item flaws. *BMC medical education*, 25(1), 200.

Khan, S., Ullah, S. and Nobanee, H., (2024). ICT diffusion, E-governance, and sustainability in the digital era. *Sustainable Futures*, 8, p.100272.

Khan, S., Umer, R., Umer, S. & Naqvi, S. (2021), "Antecedents of trust in using social media for E-government services: an empirical study in Pakistan", *Technology in Society* 64, 101400,

Khene, C., Siebörger, I., Thinyane, M., & Simuja, C. (2021). Power participation in digital citizen engagement in South African local government: The case of MOBISAM. *arXiv preprint arXiv:2108.09798*.

Khorsand, P.N.N.H. and Peráček, T., (2023). Implementation of a Working Time Recording System as a Digital Management Tool in Public Administration. *Administrative Sciences*, 13(12), p.253.

Khumalo, M. (2022). *The effect of information and communications technologies deployment on citizen engagement in a South African metropolitan*

municipality (Master's thesis, University of the Witwatersrand, Johannesburg (South Africa))

Komna, L. and Mpungose, S., (2024). Enhancing digital transformation strategies: a framework for SITA. *International Journal of Business Ecosystem & Strategy* (2687-2293), 6(4), pp.235-252.

Kondlo, A., Leenen, L., & Vuuren, J. (2022). An ontological model for a national cyber-attack response in south africa. *European Conference on Cyber Warfare and Security*, 21(1), 130-149.

Kortteinen, J. E. (2024). Evaluating Linear Regression-Based Outlier Detection in Power Plant Process Data: A Case Study.

Kotzé, P. and Alberts, R., (2017). Towards a Conceptual Model for an e-Government Interoperability Framework for South Africa. In *ICEIS* (3) (pp. 493-506).

Laila, F., Adityarini, H., & Maryadi, M. (2023). Challenges and strategies in teaching english speaking skills to young learners: perspectives of teachers in indonesia. *Veles Voice of English Language Education Society*, 7(3), 542-556.

Lala, G., (2014). The emergence and development of the technology acceptance model (TAM). *Marketing from Information to Decision*, (7), pp.149–160.

Larkotey, W.O. & Ifinedo, P., 2022, May. Sociotechnical Factors that Shape E-Government Payment Portal Development in Ghana. In *International Conference on Social Implications of Computers in Developing Countries* (pp. 24-40). Cham: Springer International Publishing.

Laulita, N. B., Yulfiswandi, A., Agustino, M., Rusiana, N., & Lim, V. E. (2022). The effect of enterprise resource planning implementation on increasing company performance. *Universitas*, 1, 6.

Lea, R. B., & Cohen, B. H. (2025). *Introductory statistics for the behavioral sciences*. John Wiley & Sons.

Li, Y. & Shang, H., (2023). How Does E-government Use Affect Citizens' Trust in Government? Empirical Evidence from China. *Information & Management*, p.103844.

Lim, W. (2023). Philosophy of science and research paradigm for business research in the transformative age of automation, digitalization, hyperconnectivity, obligations, globalization and sustainability. *Journal of Trade Science*, 11(2/3), 3-30.

Lim, W. M. (2025). What is qualitative research? An overview and guidelines. *Australasian Marketing Journal*, 33(2), 199-229.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited. *The Sage handbook of qualitative research*, 4(2), 97-128.

Van Der Linde, D. (2024). An analysis of the offences relating to malicious communications and associated court orders under the Cybercrimes Act 19 of 2020. *SACJ*, 3.

Lindner, R., & Aichholzer, G. (2019). E-democracy: Conceptual foundations and recent trends. In *European e-democracy in practice* (pp. 11-45). Cham: Springer International Publishing.

Lnenicka, M., Luterek, M., & Majo, L. T. (2024). Analysis of e-government and digital society indicators over the years: a comparative study of the EU member states. *Digital Policy, Regulation and Governance*, 26(5), 560-582.

Lobo, A. and Noronha, S. (2022). E-governance in india: a qualitative analysis using the abcd framework and its impact on goodwill from social capital. *International Journal of Case Studies in Business It and Education*, 771-786.

Long, K.Y. and Phillips, J.O., (2023). The transformation of government employees' behavioural intention towards adopting E-government services: An empirical study. *Social Sciences and Humanities Open*, 7(1), 100485.

Lu, N. L., & Nguyen, V. T. (2016). Online Tax Filing—E-Government Service Adoption case of Vietnam. *Modern Economy*, 07, 1498–1504. doi:10.4236/me.2016.712135

Lyulyov, O., Pimonenko, T., Saura, J.R. and Barbosa, B., 2024. How do e-governance and e-business drive sustainable development goals? *Technological Forecasting and Social Change*, 199, p.123082.

Mabeka, N. Q., & Cassim, F. (2023). Interpreting the provisions of the Cybercrimes Act 19 of 2020 in the context of civil procedure: a future journey. *Obiter*, 44(1), 19-32.

Mabeka, N. Q. (2021). An analysis of the implementation of the caselines system in South African courts in the light of the provisions of section 27 of the electronic communications and transactions act 25 of 2002: a beautiful dream to come true in civil procedure. *Potchefstroom Electronic Law Journal/Potchefstroomse Elektroniese Regsblad*, 24(1).

Mabinane, L. T. (2022). *Integrated framework for measuring E-Government Developments in South Africa and its operational effectiveness*. University of Johannesburg (South Africa).

Mabizela, H., & Zwane, Z. (2023). Monitoring and evaluation as critical approach to enhance the performance of local government: South Africa. *International Journal of Research in Business and Social Science*, 12(7), 74-84.

Mabunda, L. T., Mvunabandi, J. D., & Chonco, C. M. (2023). Investigating the Effect of Financial Mismanagement on Municipalities Service Delivery: A Case Study of eThekweni Municipality-South Africa. *Journal of Accounting and Finance in Emerging Economies*, 9(4), 639-654.

Mahlangu, G., & Ruhode, E. (2020). Towards a multidimensional model for assessing e-government service gaps. *South African Journal of Information Management*, 22(1), 1-8.

Malahleha, M. A., & Ajam, T. (2024, March). *Enhancing the effectiveness of data management to improve data quality for evidence-based decision-making: A case study of Pelonomi Tertiary Hospital*.

Malik, I., Hu, B. & Noman, S.M., (2024), April. E-Voting as an E-Government Application: A Foundation Analysis. In *Proceedings of the International Conference on Decision Science & Management* (pp. 258-263).

Malik, S., & Rana, A. (2025). E-Government in Public Health: Using the Digital Health Concept for Every Person. In *Startup-Driven E-Government: Digital Innovation for Sustainable Ecosystems* (pp. 197-238). IGI Global Scientific Publishing.

Malodia, S., Dhir, A., Mishra, M., & Bhatti, Z. A. (2021). Future of e-Government: An integrated conceptual framework. *Technological Forecasting and Social Change*, 173, 121102.

Maluleka, S.M., Budree, A. & Van Belle, J.P., (2023), April. A Systematic Literature Review on South African Government to Harness Software as a Service for Enhanced E-Government. In *2023 Ninth International Conference on eDemocracy & eGovernment (ICEDEG)* (pp. 1-6). IEEE.

Mammen, J., Tyo, M., & Seshadri, S. (2025). Perspective Mapping: Tutorial for Collecting Quantifiable Qualitative Interview Data. *Journal of medical Internet research*, 27, e72622.

Mamokhere, J. & Meyer, D. (2022). Including the excluded in the integrated development planning process for improved community participation. *International Journal of Research in Business and Social Science* (2147-4478), 11(4), 286-299.

Manuel, L. B., & Erasmus, L. J. (2024). A sustainable differentiated funding model for South African district municipalities. *Journal of Local Government Research and Innovation*, 5, 163.

Manyazewal, T., Ali, M. K., Kebede, T., Magee, M. J., Getinet, T., Patel, S. A., ... & Fekadu, A. (2023). Mapping digital health ecosystems in Africa in the context of endemic infectious and non-communicable diseases. *NPJ Digital Medicine*, 6(1), 97.

Mapanoo, M. E. D., & Caballero, J. M. (2018). E-Government for human capability development program: An implementation of G2E System for enhanced government services. In *MATEC Web of Conferences* (Vol. 189, p. 10005). EDP Sciences.

Maphangwa, M. & van der Walddt, G., (2023). Towards a smart city model for local government: The case of South African metropolitan municipalities. *Administratio Publica*, 31(3), pp.61-84.

Maremi, K., Thulare, T. & Herselman, M., (2022), May. The benefits of digital transformation addressing the hindrances and challenges of e-government services in South Africa: A scoping review. In *2022 IST-Africa Conference (IST-Africa)* (pp. 1-8). IEEE.

Mariani, I., Mortati, M., Rizzo, F., & Deserti, A. (2025). *Design thinking as a strategic approach to e-participation: From current barriers to opportunities* (p. 121). Springer Nature.

Marler, J. H., & Dulebohn, J. H. (2005). A model of employee self-service technology acceptance. In *Research in Personnel and Human Resources Management* (Vol. 24, pp. 137-180). Emerald Group Publishing Limited.

Marlina, E. and Widyasuri, A., (2024), October. Exploring the Evolution of Data Management in E-Government: Bibliometric Analysis. In *2024 International Conference on Computer, Control, Informatics and its Applications (IC3INA)* (pp. 7-12). IEEE.

Martins, J., Silva, E., Marques, D., Baruwa, A., Caramês, J., Fernandes, F., ... & Versiani, M. (2023). Unveiling the performance of nickel-titanium endodontic instruments through multimethod research: a review. *Applied Sciences*, 13(12), 7048.

Marule, N. (2022). The role of technology commercialisation in the operationalisation of innovation and industrial policies in South Africa. *Triple Helix Journal*, 9(2), 119-137.

Marwala, T., (2022). The Fourth Industrial Revolution and Academic Library Practices. *Academic Libraries: Reflecting on Crisis, the Fourth Industrial Revolution and the Way Forward*, pp.1-12.

Mashau, N. L., & Kroeze, J. H. (2023). Challenges that affect smart city implementation in small and rural municipalities. *South african journal of information management*, 25, 1703.

Masiya, T., Davids, Y. D., & Mangai, M. S. (2021). Factors affecting the performance of South African municipal officials: Stakeholders' perspectives. *Commonwealth Journal of Local Governance*, (25), 97-115.

Masiya, T., Mazenda, A., & Gwabeni, T. N. (2021). Participatory budgeting in a South African local municipality. *International Journal of Management Practice*, 14(3), 325-342.

Matlala, L.S., (2025). E-governance in South Africa: barriers and enablers of virtual evaluation in the public sector. *Insights into Regional Development*, 7(2), pp.84-108.

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

Mbae, B. B., Dick-Sagoe, C., Odoom, D., & Adams, I. (2025). Digital Transformation and E-Service Delivery in African Public Sector Organisations: Insights into Botswana's Ministry of Agriculture. *Digital Society*, 4(2), 37.

McWilliams, E. R. (2025). *Axiology, Reflexivity, and Influence in Participatory Psychology Research* (Doctoral dissertation, University of Maryland, Baltimore County).

Medaglia, R., Rukanova, B., & Zhang, Z. (2024). Digital government and the circular economy transition: An analytical framework and a research agenda. *Government Information Quarterly*, 41(1), 101904.

Mego, M. L. S., Farroñan, R. L. S., Vásquez, E. E. B., & Rodriguez, V. H. P. (2023). New E-government Strategies in Peruvian Universities. *Journal of Law and Sustainable Development*, 11(2), e703-e703.

Mele, G., Capaldo, G., Secundo, G., & Corvello, V. (2024). Revisiting the idea of knowledge-based dynamic capabilities for digital transformation. *Journal of Knowledge Management*, 28(2), 532-563.

Mensah, I. K., & Mwakapesa, D. S. (2025). The impact of e-government information quality (EGIQ) dimensions on the adoption of electronic government services. *Information Development*, 41(2), 265-284.

- Mensah, I. K., & Adams, S. (2020). A comparative analysis of the impact of political trust on the adoption of E-Government services. *International Journal of Public Administration*, 43(8), 682-696.
- Merkebu, J., Geringer, J., & Samuel, A. (2025). Sampling Thoughtfully in Qualitative Research: Hallmarks of Rigour in Health Professions Education. *The Clinical Teacher*, 22(4), e70145.
- Mertens, D. M. (2023). *Mixed methods research: Research methods*. Bloomsbury Publishing.
- Meydan, C. H., & Akkaş, H. (2024). The role of triangulation in qualitative research: Converging perspectives. In *Principles of conducting qualitative research in multicultural settings* (pp. 98-129). IGI Global.
- Meyerhoff Nielsen, M., & Jordanoski, Z. (2023). Digital transformation, governance, and coordination in times of crisis: an analysis of Australia, Denmark, and the Republic of Korea. *Digital Government: Research and Practice*, 4(4), 1-20.
- Mfuphi, S. M. (2020). *A critical analysis of the South African integrated information and communication technology policy* (Master's thesis, University of South Africa (South Africa)).
- Mfuphi, S. M. (2020). *A critical analysis of the South African integrated information and communication technology policy* (Master's thesis, University of South Africa (South Africa)).
- Mishra, A.B., (2020). E-payment system: A rising trend of the economy. *New Paradigm in Business & Education*, 1, pp.1–6.
- Mkhatshwa, B. & Mawela, T. (2023). Cloud computing adoption in the south african public sector. *Indonesian Journal of Electrical Engineering and Informatics (Ijeei)*, 11(2).
- Mkhwanazi, T. and Futcher, L. (2024). National critical information infrastructure protection through cybersecurity: a national government perspective. *International Conference on Cyber Warfare and Security*, 19(1), 555-564.
- Mkhwanazi, T., & Futcher, L. (2025, May). Strengthening South Africa's Cybersecurity Strategy: Insights from a Thematic Analysis. In 2025 IST-Africa Conference (IST-Africa) (pp. 1-10). IEEE.
- Mkude, C. G., & Peter, M. (2024). Examining the interdependencies of e-government challenges using PESTELMO, DEMATEL and ANP: A case study of Tanzania. *Information Polity*, 29(3), 313-330.

Mncwango, T. & Mncwango, N., (2024). e-Governments in Africa: The Integration of Technology into Public Ministries. *Digital Policy Studies*, 3(1), pp.93-115.

Mngeni, A., Tembani, N., & Magayiyana, Z. (2023). International Journal of Environmental Impacts. *Journal homepage: <http://iieta.org/journals/ijej>*, 6(3), 135-141.

Mo, H., & Beh, L. S. (2025). Impact of citizen participation through e-government platforms on satisfaction and trust. *International Journal of Electronic Governance*, 17(1), 86-105.

Mofokeng, L. (2023). *The role of e-governance in the search for African solutions for African problems: The case of South Africa*. University of Johannesburg (South Africa).

Mohale, C., (2024). The Role of E-Government in Promoting Municipal Service Delivery in South Africa. *International Journal of Social Science Research and Review*, 7(3), 1–19.

Mollah, M. A. H. (2025). Technology and Innovation in Service Delivery. In *Service Delivery and the Pulse of Citizen Satisfaction in Urban Governance of Bangladesh* (pp. 65-81). Singapore: Springer Nature Singapore.

Molobela, T. (2025). Implementing e-participation platforms to enhance citizen engagement and participation within South African municipalities. *JeDEM-eJournal of eDemocracy and Open Government*, 17(1), 80-103.

Molobela, T.T., (2025). Reimagining Public Service Delivery in South Africa through Digital Governance. *African Journal of Development Studies* 15(1), pp.281-302.

Moloto, A. & Muchie, M., (2023). Factors That Affect the Effective Use of E-Government Procedures in Limpopo. *Journal of Service Science and Management*, 16(3), pp.221-248.

Moloto, N. (2025). Leveraging E-Government Infrastructure for Entrepreneurship Development and Economic Growth in Rural Communities: Addressing Challenges and Opportunities in South Africa. *International Journal of Applied Research in Business and Management*, 6(2).

Montesh, M. (2014). Chapter 12 of the National Development Plan 2030: a comparative analysis. *Journal of Public Administration*, 49(1), 229-246.

Morain, S. R., Barlevy, D., Joffe, S., & Largent, E. A. (2023). Physician-investigator, research coordinator, and patient perspectives on dual-role consent in oncology: A qualitative study. *JAMA Network Open*, 6(7), e2325477-e2325477.

Mosbah, A. (2024). Ensuring reliability and validity in qualitative social sciences research. In *Principles of conducting qualitative research in multicultural settings* (pp. 133-148). IGI Global Scientific Publishing.

Mosehlana, M. B. (2018). ICT Policy Development and Implementation in South Africa: Towards an Improved E-Government Implementation. International Conference on Public Administration and Development Alternatives 04-06 July 2018, Stellenbosch University, Saldahna Bay, South Africa.

Motadi, M. (2024). Challenges and opportunities. *International Journal of Public Administration in the Digital Age*, 11(1), 1-20.

Mtuze, S. & Musoni, M. (2023). An overview of cybercrime law in south africa. *International Cybersecurity Law Review*, 4(3), 299-323

Muhammad, A. S., & Kaya, T. (2023). Factors affecting the citizen's intention to adopt e-government in Nigeria. *Journal of Information, Communication and Ethics in Society*, 21(3), 271-289.

Muhammad, H., & Hromada, M. (2023). Evaluating a proposed E-government stage model in terms of personal data protection. *Applied Sciences*, 13(6), 3913.

Mukonavanhu, T. (2024). Electronic governance in South Africa: Challenges and benefits. *Journal of Law and Sustainable Development*, 12(6), e3322-e3322.

Mundzir, M. (2025). User Experience (UX) and User Interface (UI) Design for E-Government Services in East Kalimantan: Enhancing Public Service Adoption through User-Centered Design. *Multica Science and Technology (ACCREDITED-SINTA 5)*, 5(1), 30-35.

Municipalities.co.za (2025) *Map of OR Tambo District Municipality and local municipalities*, available at: <https://www.municipalities.co.za> (Accessed: 15 January 2026).

Municipalities.co.za. (2025). *Demographic information: OR Tambo District Municipality*. Retrieved January 2026, from <https://www.municipalities.co.za/demographic/106/or-tambo-district-municipality>

Municipalities.co.za. (2025). *Nyandeni Local Municipality profile*. Retrieved January 2026, from <https://www.municipalities.co.za>

Muñoz, S., Mayo, F., Martínez, A., & Benavides, D. (2025). A conceptual framework for implementing smart governance systems. *International Journal of Electronic Government Research*, 21(1), 1-25.

Muringa, T., & Shava, E. (2024). Examining the efficacy of core competencies of municipal leaders in transforming local government in South Africa. *International Journal of Public Leadership*, 20(3/4), 330-346.

Mushinzimana, L., Faisal, A., & Teressia, A. (2025). Strategy for evaluating the strengths, weaknesses, opportunities, and threats of the business community in Rwanda in adopting digital transformation to increase financial benefits. *Indiana Journal of Economics and Business Management*, 5(1), 64-96.

Mushtaq, S. & Shah, M., (2024). Critical Factors and Practices in Mitigating Cybercrimes within E-Government Services: A Rapid Review on Optimising Public Service Management. *Information*, 15(10), p.619

Mushtaq, S. and Shah, M., (2025). Mitigating Cybercrimes in E-Government Services: A Systematic Review and Bibliometric Analysis. *Digital*, 5(1), p.3.

Mustafa, G., Rafiq, W., Jhamat, N., Arshad, Z., & Rana, F. A. (2025). Blockchain-based governance models in e-government: a comprehensive framework for legal, technical, ethical and security considerations. *International Journal of Law and Management*, 67(1), 37-55.

Mutula, S. M. (2015). Factors influencing perceptions and attitudes of nurses towards the use of ICT in patient care in KwaZulu Natal Province, South Africa. *The African Journal of Information Systems*, 8(1), 1.

Mutula, S. M., & Mostert, J. (2010). Challenges and opportunities of e-government in South Africa. *The electronic library*, 28(1), 38-53.

Mwansa, G., Ngandu, M. R., & Mkwambi, Z. (2025). Bridging the digital divide: exploring the challenges and solutions for digital exclusion in rural South Africa. *Discover Global Society*, 3(1), 54

Mwapwele, S. D., Marais, M., Dlamini, S., & Van Biljon, J. (2019). Teachers' ICT adoption in South African rural schools: a study of technology readiness and implications for the South Africa connect broadband policy. *The African Journal of Information and Communication*, 24, 1-21.

Mweshi, G. K., & Sakyi, K. (2020). Application of sampling methods for the research design. *Archives of Business Review–Vol*, 8(11), 180-193.

Naeem, M., & Thomas, L. (2025). Case study research and artificial intelligence: A step-by-step process to using ChatGPT in the development of case studies in

qualitative research. *International Journal of Qualitative Methods*, 24, 16094069251371478.

Naqvi, S. K. H., Luqman, M., & Khan, G. (2023). Exploring the Role of E-Governance in the Economic Performance of Pakistan under Covid-19. *Journal of Development and Social Sciences*, 4(1), 194-203.

Natow, R. S. (2020). The use of triangulation in qualitative studies employing elite interviews. *Qualitative research*, 20(2), 160-173.

Naveena, K. (2025). Descriptive and Inferential Statistics in Abiotic Stress Management. *Foundations of Open-Source Tools & Statistical Methods for Data Analysis*, 1.

Nawaz, R., Yasin, G., & Lak, T. A. (2024). Occupational well-being in brick kiln industry: a sociological analysis of workers ' experiences in Punjab, Pakistan. *Journal of Social Research Development*, 5(2).

Nazir, H. and Fan, J. (2024). Revolutionising retail: examining the influence of blockchain-enabled IoT capabilities on sustainable firm performance. *Sustainability*, 16(9), 3534.

Ncamphalala, M., 2019. The role of ICT to promote smart governance in local governments. University of Johannesburg (South Africa).

Nciweni, N. (2023). *Prospects and challenges of community communication in the digital age, a case study of OR Tambo District Municipality, Eastern Cape, South Africa* (Doctoral dissertation, Cape Peninsula University of Technology).

Nciweni, N., & Abrahams, R. (2023). The role of digital transformation in enhancing communication: a case study of or Tambo District Municipality in South Africa. *Communitas*, 28, 166-176.

Ndamase, M., Totobayo, B. W., & Lukman, Y. (2025). Towards ideal local governments in South Africa: harnessing the 4IR. *International Journal of Business Ecosystem & Strategy* (2687-2293), 7(2), 163-173.

Ndou, V. (2004). E-Government for Developing Countries: Opportunities and Challenges. *The Electronic Journal of Information Systems in Developing Countries*, 18(1), 1–24.

Ndzabela, O. & Lukman, Y. (2023). The impact of gender inequality on economic development. *Insights Into Regional Development*, 5(4), 49-64.

Nel-Sanders, D., & Malomane, A. P. (2022). Challenges and best practices for e-municipalities. *Africa's Public Service Delivery and Performance Review*, 10(1), 646.

Netshakhuma, N. S. (2022). Impact of Electronic Communications and Transactions Act, No. 25 of 2002 Provision 27 in South Africa Education on Emerging Technologies. In *Handbook of Research on Global Education and the Impact of Institutional Policies on Educational Technologies* (pp. 226-242). IGI Global Scientific Publishing.

Nguar, K. D. A. (2022). A systematic review of technological innovation and e-government on public management reforms in developing countries. *International Journal of Electronic Governance*, 14(3), 339-360.

Ngumbela, X. (2021). Is South Africa Building a Capable State through Developmental Local Government?. *The Strategic Review for Southern Africa*, 43(2), 83-102.

Ngumbela, X. (2022). The relationship between policy, governance and service delivery in local government in South Africa. *International Journal of Innovative Technologies in Social Science*, (2(34).

Nguyen, N. T. H. (2024). Impact of ERP system implementation on accounting information quality in Vietnamese SMEs.

Nix, H. P., Weijer, C., & Taljaard, M. (2025). Are pragmatism and ethical protections in clinical trials a zero-sum game?. *Clinical Trials*, 22(1), 109-115.

Nkgapele, S. M. (2024). The usability of e-government as a mechanism to enhance public service delivery in the South African government: Lessons from practices. *Digital Policy Studies*, 3(1), 116-132.

Nkgapele, S. M., & Mokgolobotho, R. M. (2024). Developing Transformational Strategies to Improve the Accessibility of E-Governmental Services in South African Local Government. *International Journal of Law, Social Science, and Humanities*, 1(2), 56-58.

Nkgapele, S. M., & Mokgolobotho, R. M. (2024). Developing transformational strategies to improve the accessibility of e-governmental services in South African Local Government. *International Journal of Law, Social Science, and Humanities*, 1(2), 56-58.

Nkgapele, S.M., 2024. The Usability of e-Government as a Mechanism to Enhance Public Service Delivery in the South African Government: Lessons from Practices. *Digital Policy Studies*, 3(1), pp.116-132.

Nkohkwo, Q. N. A., & Islam, M. S. (2013). Challenges to the successful implementation of e-government initiatives in Sub-Saharan Africa: A literature review. *Electronic Journal of e-government*, 11(1), pp252-266.

Nokele, K.S. & Mukonza, R.M., 2021. The Adoption of E-Government in the Department of Home Affairs–Unpacking the Underlying Factors Affecting Adoption of E-Government within the Selected Service Centres in Limpopo Province, South Africa. *African Journal of Governance and Development*, 10(1), 98–117.

Noor, M. U., & Darmaningrat, E. W. T. (2023, October). Critical Realism as Innovative Approach for Social Science Research: Information Governance Practices Context. In *The 6th International Conference on Vocational Education Applied Science and Technology (ICVEAST 2023)* (pp. 612-624). Atlantis Press.

Nortje, J. G. J., & Myburgh, D. C. (2024). Impediments during the compilation of a search and seizure warrant for digital information by forensic investigators in South Africa. *Journal of Financial Crime*, 31(3), 476-488.

Nthibeli, M., Griffiths, D., & Bekker, T. (2022). Teaching learners with autism in the South African inclusive classroom: Pedagogic strategies and possibilities. *African Journal of Disability*, 11, 979.

Nugraha, M. A., Arisandi, D., & Perdana, N. J. (2021). Pengamanan Website E-Commerce Menggunakan Multi-Factor Authentication. *Jurnal Ilmu Komputer dan Sistem Informasi*, 9(1), 158-162.

Nusbaum, L., Douglas, B., Damus, K., Paasche-Orlow, M., & Estrella-Luna, N. (2017). Communicating risks and benefits in informed consent for research: a qualitative study. *Global qualitative nursing research*, 4, 2333393617732017.

Nyambuya, V. and Gopal, N. (2025). The influence of South Africa's democratic principles on its cybersecurity framework and cyber threat response. *Journal of Brics Studies*, 3(2), 55-71.

Nyansiro, J. B., Mtebe, J. S., & Kissaka, M. M. (2021). E-government information systems (IS) project failure in developing countries: Lessons from the literature. *The African Journal of Information and Communication*, 28, 1-29.

Odufuwa, Olukayode G., et al. "Household factors associated with access to insecticide-treated nets and house modification in Bagamoyo and Ulanga districts, Tanzania." *Malaria journal* 19.1 (2020): 220.

OECD. (2021). *The E-Leaders handbook on the governance of digital government*. OECD Publishing.

Okharedia, E. (2023). *The Role of Digital Technologies in Increasing Operational Efficiency in South Africa's Systems Integrator Information Technology Industries* (Master's thesis, University of South Africa (South Africa)).

Oladoyinbo, T. O., Oladoyinbo, O. B., & Akinkunmi, A. I. (2024). The Importance Of Data Encryption Algorithm In Data Security. *Current Journal of International Organization of Scientific Research Journal of Mobile Computing & Application (IOSRJMCA)*, 11(2), 1016.

Olofinbiyi, S. A. (2022). A reassessment of public awareness and legislative framework on cybersecurity in South Africa. *ScienceRise: Juridical Science*, (2 (20)), 34-42.

Omweri, F.S., (2024). A Systematic Literature Review of E-Government Implementation in Developing Countries: Examining Urban-Rural Disparities, Institutional Capacity, and Socio-Cultural Factors in the Context of Local Governance and Progress towards SDG 16.6. *International Journal of Research and Innovation in Social Science*, 8(8), pp.1173-1199.

OR Tambo District Municipality. (2025). *Public notices*. <https://ortambodm.gov.za/public-notice/> [Accessed on 14/01/2026]

Oranga, J., Matere, A., & Njurai, E. (2025). The mixed methods research approach: an overview. *Postmodernism Problems*, 15(1), 84-99.

Orione, M., Rubegni, G., Tartaro, R., Alberghina, A., Fallico, M., Orione, C., ... & Avitabile, T. (2025). Utilization of Apple Vision Pro in ophthalmic surgery: a pilot study. *European Journal of Ophthalmology*, 35(2), 715-721.

Othman, M. H., Razali, R., & Nasrudin, M. F. (2025). Towards Integrated E-Government Services: Key Contributing Factors from a Whole-of-Government Perspective. *Journal of Applied Science, Engineering, Technology, and Education*, 7(1), 102-113

Otutu, N., Otikal, K., Adyanga, F. A., & Ocan, J. (2023). Boosting Service Delivery through Strengthened Local Government Assessments: Insights from Uganda's LGMSD Framework.

Pajuk, E. D., Br Sinurat, K. F., Manalu, E. P., Ayu Eka, N. G., & Situmorang, K. (2024). Challenges encountered during the process of obtaining informed consent in human subject research: A Scoping Review. *Gaceta Médica de Caracas*, 132.), 305-329.

Pallant, J., (2020). *SPSS survival manual: A step-by-step guide to data analysis using IBM SPSS*. London: Routledge.

Panayiotou, N. A., & Stavrou, V. P. (2021). Government to business e-services—A systematic literature review. *Government Information Quarterly*, 38(2), 101576.

Pandey, J. K. (2023). Public trust and collaborative e-governance performance: a study on government institutions and services. *Transforming Government: People, Process and Policy*, 17(4), 510-531

Papel, M. S. I., Mridha, A. B. M. A., Rahman, A., & Ashrafuzzaman, M. (2024). Enhancing Government It Infrastructure: Develop Frameworks For Modernizing Government It Systems To Improve Security, Efficiency, And Citizen Engagement. *Innov. Eng. J*, 1(01), 151-170.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. *Journal of Retailing*, 64(1), 12-40.

Parasuraman, A., Zeithaml, V.A. & Berry, L.L., (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing*, 49(4), 41–50.

Park, Y.S., Konge, L. and Artino, A.R. (2020). The positivism paradigm of research. *Academic Medicine*, 95(5), pp.690-694.

Parker-Allie, F., Gibbons, M. J., & Harebottle, D. M. (2023). A conceptual approach to developing biodiversity informatics as a field of science in South Africa. *Frontiers in Ecology and Evolution*, 11, 1107212.

Passey, D. (2020). Theories, theoretical and conceptual frameworks, models and constructs: Limiting research outcomes through misconceptions and misunderstandings. *Studies in Technology Enhanced Learning*, 1(1).

PasseyProzesky, H., Mlitwa, A., & Redelinghuys, H. (2021). A systematic review of research on women staff at higher education institutions in South Africa, 2016-2018, 101-132.

Paul, S., (2023). Accessibility analysis using WCAG 2.1: evidence from Indian e-government websites. *Universal access in the information society*, 22(2), 663–669.

Pedersen, K. (2018). E-government transformations: challenges and strategies. *Transforming Government: People, Process and Policy*, 12(1), 84-109.

Pemmasani, P. K. (2023). National cybersecurity frameworks for critical infrastructure: Lessons from governmental cyber resilience initiatives. *International Journal of Acta Informatica*, 2(1), 209-218.

Petrova, E., Dewing, J., & Camilleri, M. (2016). Confidentiality in participatory research: Challenges from one study. *Nursing ethics*, 23(4), 442-454.

Petzer, E., Kruger, T., Sebake, N., Cooper, A. K., Ragoasha, M., & Napier, M. (2025). Smart Cities in South Africa—Can They Contribute to Spatial Transformation and Support Territorial Governance?. In *Territorial Governance and Spatial Transformation in Post-apartheid South Africa* (pp. 325-341). Cham: Springer Nature Switzerland.

Pitelis, C. N., Teece, D. J., & Yang, H. (2024). Dynamic capabilities and MNE global strategy: A systematic literature review-based novel conceptual framework. *Journal of Management Studies*, 61(7), 3295-3326.

Poedjiastutie, D. (2021). *a Closer Look of Qualitative Research (A handbook guide for novice researcher)* (Vol. 1). UMMPress.

POPIA, Act 4 of 2013; MFMA, Act 56 of 2003 (*trust, accountability and governance*)

Poucher, Z.A., Tamminen, K.A., Caron, J.G. & Sweet, S.N. (2020). Thinking through and designing qualitative research studies: A focused mapping review of 30 years of qualitative research in sport psychology. *International Review of Sport and Exercise Psychology*, 13(1), pp.163-186

Protection of Personal Information Act 4 of 2013 (POPIA)

Puentes-Poloche, M., Rincon, A. G., & Cala-Vitery, F. (2023). Study about the implementation of E-government and digital government policies from the G2G approach: Systematic review. *International Journal of Electronic Governance*, 15(3), 214-233.

Puentes-Poloche, M., Rincon, A. G., & Cala-Vitery, F. (2023). Study about the implementation of E-government and digital government policies from the G2G approach: systematic review. *International Journal of Electronic Governance*, 15(3), 214-233.

Pureti, N. (2023). Encryption 101: How to Safeguard Your Sensitive Information. *International Journal of Advanced Engineering Technologies and Innovations*, 1(01), 242-270.

Pyrozhkova, A. S., Domrina, M. K., & Kovtun, M. S. (2025). Elektronne vriaduvannia v Ukraini: innovatsii, vyklyky ta perspektyvy rozvytku [E-governance in Ukraine: innovations, challenges and development prospects]. *Naukovyi visnyk Uzhhorodskoho natsionalnoho universytetu. Serii: Pravo*, 71, 1-5.

Qaissi, A. (2024). Exploring thematic analysis in qualitative research. In *Data collection and analysis in scientific qualitative research* (pp. 253-294). IGI Global Scientific Publishing.

Raaff, E., Rothwell, N., & Wynne, A. (2022). Aligning South African data and cloud policy with the POPI Act. *International Conference on Cyber Warfare and Security*, 17(1), 279-287.

Raaff, E., Rothwell, N., & Wynne, A. (2022, March). Aligning South African data and cloud policy with the POPI Act. In *International Conference on Cyber Warfare and Security* (Vol. 17, No. 1, pp. 279-287). Academic Conferences International Limited.

Ramadhani, R., Armanto, D., Syahputra, F. P., & Eliawati, T. (2023). Practical and social interaction justice of online learning during the COVID-19 pandemic. *Int J Eval & Res Educ ISSN*, 2252(8822), 8822.

Rasyiddin, A., Ridha, A., & Fatimah, F. (2022). Implementation of the five principles of personality through programs and activities of students at Pondok Modern Darussalam Gontor. *Ahlussunnah: Journal of Islamic Education*, 1(2), 75-83.

Reddy, N. (2023). Should the electronic communications and transactions act be amended to include electronic signatures for the sale of immovable property in south africa?. *South African Law Journal*, 140(4), 795-812.

Reissig, L., Stoinescu, A. & Mack, G. 2022. Why farmers perceive e-government services as an administrative burden: A conceptual framework on influencing factors. *Journal of Rural Studies*, 89, pp.387–396.

Republic of South Africa. (2020). *Cybercrimes Act 19 of 2020*. Government Printer. Retrieved from <https://www.gov.za/documents/acts/cybercrimes-act-19-2020-english-afrikaans-01-jun-2021> [Accessed 14/01/2026]

Retnowati, N. D., & Nugraheny, D. (2021). G2C (Government to Citizen) Digital Interaction And C2G (Citizen to Government) on The Jogja Smart Service Application. *Sainstek: Jurnal Sains dan Teknologi*, 13(2), 90-96.

Roduner, D., Schläppi, W., & Egli, W. (2008). Logical Framework Approach and Outcome Mapping, A Constructive Attempt of Synthesis. *Rural Development News*, 2(1), 1-24.

Roulston, K. ed., 2023. *Quests for Questioners: Inventive Approaches to Qualitative Interviews*. Myers Education Press.

RSIS International. (2023). A Systematic Literature Review of E-Government Implementation in Developing Countries: Examining Urban-Rural Disparities,

Institutional Capacity, and Socio-Cultural Factors in the Context of Local Governance and Progress towards SDG 16.6. *International Journal of Research and Innovation in Social Science*, 7(1)

Rusadi, B. & Rahmadany, A. (2023). Analyzing supporting and inhibiting factors in the optimization of e-government in pontianak city. *Journal of Computer Science and Technology Studies*, 5(4), 22-31.

Sahrin, M. A., Herianysah, R., & Sartika, D. (2023). *IMPLEMENTASI SINGLE SIGN-ON (SSO) MENGGUNAKAN PROTOKOL OPENID CONNECT (OIDC) PADA VIRTUAL PRIVATE SERVER (VPS)* (Doctoral dissertation, Universitas Indo Global Mandiri).

Salvatore, C. (2023). Inference with non-probability samples and survey data integration: a science mapping study. *Metron*, 81(1), 83-107.

Sambasivan, M., Patrick Wemyss, G., & Che Rose, R. (2010). User acceptance of a G2B system: A case of electronic procurement system in Malaysia. *Internet Research*, 20(2), 169-187.

Samsor, A. M. (2021). Challenges and Prospects of e-Government implementation in Afghanistan. *International Trade, Politics and Development*, 5(1), 51-70.

Samuel, G., & Lucivero, F. (2022). Bringing ethics into governance: The case of the UK COVID-19 contact tracing app. *International journal of health governance*, 27(2), 180-193.

Sanchez, M.A. & Zuntini, J.I., (2021). How Incumbents Respond Strategically to Emerging Digital Platform-Mediated Settings?: Analysis of Enterprise Software Vendors. In *Disruptive Technology and Digital Transformation for Business and Government* (pp. 172-195). IGI Global.

Sánchez-Torres, J.M. & Miles, I., (2017). The role of future-oriented technology analysis in e-Government: a systematic review. *European Journal of Futures Research*, 5, pp.1-18.

Sanromà-Giménez, M., Lázaro Cantabrana, J. L., Usart Rodríguez, M., & Gisbert-Cervera, M. (2021). Design and validation of an assessment tool for educational mobile applications used with autistic learners. *Journal of new approaches in educational research*, 10(1), 101-121.

Sasere, O. & Makhasane, S. (2023). Adult learning theory tenets: a panacea to ict skills gaps among educators in south africa. *Journal of Education*, (92), 58-75.

Schneider, G. B. C. (2025). The Importance of Cybersecurity in Digital Government Implementations. *COGNITIONIS Scientific Journal*, 8(1), e585-e585.

Schreier, M., (2018). Sampling and generalisation. *The SAGE Handbook of qualitative data collection*, pp.84–97.

Shaba, E., Ong'ong'a, D., & Irungu, F. (2024). Influence of TikTok use on road safety campaigns: a case of the Rwanda police's Gerayo Amahoro in Kicukiro district. *African Journal of Empirical Research*, 5(4), 1208-1219.

Shao, Deo, Fredrick R. Ishengoma, Charalampos Alexopoulos, Stuti Saxena, Anastasija Nikiforova, and Ricardo Matheus. "Integration of IoT into e-government." *foresight* 25, no. 5 (2023): 734-750.

Sharma, B. (2025). Use of information and communication technology (ict) and e-governance in Dhangadhi Sub-Metropolitan city, *NEPAL*. *NPRC Journal of Multidisciplinary Research*, 2(10), 40-63.

Sharma, R. and Panigrahi, P.K., (2015). Developing a roadmap for planning and implementation of interoperability capability in e-government. *Transforming Government: People, Process and Policy*, 9(4), pp.426-447.

Sharmin, S., & Chowdhury, R. H. (2025). Digital transformation in governance: The impact of e-governance on public administration and transparency. *Journal of Computer Science and Technology Studies*, 7(1), 362-379.

Shava, E., & Muringa, T. P. (2024). Curbing bureaucratic limitations through continuous learning in local government in South Africa. *Frontiers in Political Science*, 6, 1435414.

Shava, E., & Vyas-Doorgapersad, S. (2021). Information Communication Technology (ICT) and smart service delivery in the Fourth Industrial Revolution: A case of the City of Johannesburg. *Journal of Public Administration*, 56(4.1), 986-1001.

Shava, E., & Vyas-Doorgapersad, S. (2022). Fostering digital innovations to accelerate service delivery in South African Local Government. *International Journal of Research in Business and Social Science (2147-4478)*, 11(2), 83-91.

Shaxnoza, J. (2024). Impact of e-governance on public service efficiency. *International Journal of Law and Policy*, 2(10), 31-47.

Sheoran, S.& Vij, S. (2022). A review of e-government assessment frameworks: e-readiness, adoption, citizen engagement and quality. *Jedem - Ejournal of Edemocracy and Open Government*, 14(2), 197-213

Sheoran, S., & Vij, S. (2022). A Review of E-Government Assessment Frameworks: E-Readiness, Adoption, Citizen Engagement and Quality: E-Readiness, Adoption, Citizen Engagement and Quality. *JeDEM-eJournal of eDemocracy and Open Government*, 14(2), 197-213.

Shibambu, A., & Ngoepe, M. (2025). Enhancing service delivery through digital transformation in the public sector in South Africa. *Global Knowledge, Memory and Communication*, 74(11), 63-76.

Shibambu, A. (2024). Transformation of digital government services in the public sector in South Africa. *Africa's Public Service Delivery and Performance Review*, 12(1), 753.

Shoemaker, T. E., & Reid, R. A. (2005). Applying the TOC thinking process: a case study in the government sector. *Human Systems Management*, 24(1), 21-37.

Sibuyi, I. N., de la Harpe, R., & Nyasulu, P. (2022). A stakeholder-centered mHealth implementation inquiry within the digital health innovation ecosystem in South Africa: MomConnect as a demonstration case. *JMIR mHealth and uHealth*, 10(6), e18188.

Sikaonga, S., & Tembo, S. (2020). E-Government readiness in the civil service: a case of Zambian ministries. *International Journal of Information Science*, 15-28

Simion, M. (2025). *Knowledge-first epistemology: A defence*. Cambridge University Press.

Singh, A. (2023). E-governance: Moving towards digital governance. *Vidya-A Journal of Gujarat University*, 2(1), 204-215.

Singh, S., & Travica, B. (2018). E-G overnment systems in S outh A frica: A n infoculture perspective. *The Electronic Journal of Information Systems in Developing Countries*, 84(4), e12030.

Sithole, V.E. and Van der Walddt, G., 2016. E-Governance Training Model for Public Managers. *Administratio Publica*, 24(1), pp.137-162.

Smith, R., & Marx, B. (2022). Corporate governance practices in large and medium-sized auditing firms in South Africa. *International Journal of Management and Sustainability*, 11(4), 202-220.

Snail, S. L. (2007). An overview of South African e-consumer law in the context of the Electronic Communications and Transactions Act (part 2). *Juta's Business Law*, 15(2), 54-60.

South African Department of Telecommunications and Postal Services. (2017). National e-Government Strategy and Roadmap. Retrieved from <https://lib.uct.ac.za/government-publications/articles/2017-11-14-national-e-government-strategy-and-roadmap>UCT Libraries+1UCT Libraries+1

South African Government. 2017. *National e-Government Strategy and Roadmap*. Government Gazette No. 41241. Available at: <https://www.gov.za/documents/notices/electronic-communications-and-transactions-act-national-e-government-strategy-and> [Accessed 31 August 2025]

Stake, R. E. (1995). *The art of case study research*. Sage.

Statistics South Africa. (2022). *Census 2022 results: OR Tambo District Municipality* [Dataset]. Statistics South Africa. Retrieved January 2026, from <https://www.statssa.gov.za> Accessed [15/01/2026].

Stavrianos, A. (2025). Unveiling the layers of reality: An exploration of critical realism in interdisciplinary research. *Educational Theory*, 75(5), 913-935.

Stefanovic, D., Milicevic, A., Havzi, S., Lolic, T. and Ivic, A., 2021, March. Information systems success models in the E-government: context: A systematic literature review. In *2021 20th International Symposium INFOTEH-JAHORINA (INFOTEH)* (pp. 1-6). IEEE.

Su, N. (2018). Positivist qualitative methods. *The Sage Handbook of Qualitative Business and Management Research Methods*. London: Sage Publications Ltd, 17-32.

Subedi, M. (2023). Sampling and trustworthiness issues in qualitative research. *Dhaulagiri Journal of Sociology and Anthropology*, 61-64.

Susilowati, T., Hartati, S., Mardiyanto, M., & Prabowo, B. (2024). Improving the community services through electronic management of east pringsewu subdistrict administration. *jods*, 2024(1).

Swartz, A., LeFevre, A. E., Perera, S., Kinney, M. V., & George, A. S. (2021). Multiple pathways to scaling up and sustainability: an exploration of digital health solutions in South Africa. *Globalization and health*, 17(1), 77.

Takalani, H., & Lavhelani, P. N. (2024). The administrative effects of political killings of officials in South African Municipalities. *Journal of Local Government Research and Innovation*, 5, 161.

Tamminen, K. A., & Poucher, Z. A. (2020). Research philosophies. In *The Routledge international encyclopedia of sport and exercise psychology* (pp. 535-549). Routledge.

- Tang, G. (2025). Using mixed methods research to study research integrity: Current status, issues, and guidelines. *Accountability in Research*, 32(5), 807-828.
- Tang, L., Omar, S. Z., Bolong, J., Wirza, J., & Zawawi, M. (2022). Well-being in using TikTok amongst young people in China. *International Journal of Academic Research in Business and Social Sciences*, 12(6), 518-532.
- Tangi, L., Janssen, M., Benedetti, M. and Noci, G., 2021. Digital government transformation: A structural equation modelling analysis of driving and impeding factors. *International Journal of Information Management*, 60, p.102356.
- Tanlaka, E. F., & Aryal, S. (2025). Interpretivist constructivism: A valuable approach for qualitative nursing research. *Open Journal of Therapy and Rehabilitation*, 13(1), 8-19.
- Tark, A., Estrada, L., Stone, P., Baernholdt, M., & Buck, H. (2022). Systematic review of conceptual and theoretical frameworks used in palliative care and end-of-life care research studies. *Palliative Medicine*, 37(1), 10-25.
- Tashakkori, A. & Teddlie, C., 2010. *SAGE handbook of mixed methods in social & behavioral research*. 2nd ed. Thousand Oaks, CA: SAGE Publications.
- Tavana, M., Shaabani, A., Vanani, I., & Gangadhari, R. (2022). A review of digital transformation on supply chain process management using text mining. *Processes*, 10(5), 842.
- Terrance, M.T., 2023. E-government and E-participation on Improving E-service Delivery in Bushbuckridge Local Municipality, South Africa. *Journal of African Films & Diaspora Studies*, 6(2), pp.99-120.
- Tian, S., He, R., Huang, C., Feng, Q., & Jiang, F. (2021). A SCI Analysis Model: Research on Influencing Factors of Local E-Government Responsiveness in China. *Discrete Dynamics in Nature and Society*, 2021(1), 6654354.
- Tiika, B., Tang, Z., Azaare, J., Dagadu, J., & Otoo, S. (2024). Evaluating e-government development among africa union member states: an *analysis of the impact of e-government on public administration and governance in ghana*. *Sustainability*, 16(3), 1333.
- Ting, H., Memon, M. A., Thurasamy, R., & Cheah, J. H. (2025). Snowball sampling: A review and guidelines for survey research. *Asian Journal of Business Research*, 15(1).
- Tran, T. K. P., & Nguyen, Q. L. H. T. (2024). Impact of e-government on citizen engagement: the role of government reputation and digital divide. *Journal of Information, Communication and Ethics in Society*, 22(4), 419–433.

Tshuma, G., Kritzing, E. & Singh, S., 2024, May. A Framework for Promoting Digital Transformation and the Adoption of Enterprise Architecture in South Africa's Public Sector. In *International Conference on Implications of Information and Digital Technologies for Development* (pp. 16-30). Cham: Springer Nature Switzerland.

Twinomurinzi, H., Zwane, M. G., & Debusho, L. K. (2012). SERVQUAL as a Socio-Technical Approach to Measuring e-Government Service Quality and Guiding e-Governance Strategies. *The African Journal of Information and Communication (AJIC)*, (12), 84-108.

Twizeyimana, J. D., & Andersson, A. (2019). The public value of E-Government – A literature review. *Government Information Quarterly*, 36(2), 167–178.

Umbach, G. & Tkalec, I., 2022. I am evaluating e-governance through e-government: Practices and challenges of assessing the digitalisation of public governmental services—evaluation and program planning, 93, p.102118.

United Nations e-government survey 2018: *Gearing e-government to support transformation towards sustainable and resilient societies*. New York: United Nations

United Nations E-Government Survey. (2016).

United Nations. (2006). UN E-Government Survey 2006: E-Government Readiness for the Knowledge Society. United Nations Department of Economic and Social Affairs.

United Nations. (2014). *United Nations e-government survey 2014: E-government for the future we want*. New York: United Nations.

United Nations. (2024). UN E-Government Survey 2024: Accelerating Digital Transformation for Sustainable Development. United Nations Department of Economic and Social Affairs. Retrieved from <https://digitallibrary.un.org/record/4061269>

Upadhyay, H. P., & Pradhan, B. L. (2023). Sample Size Estimation in Medical Research Based upon Study Design. *Journal of College of Medical Sciences-Nepal*, 19(2), 237-45.

Uwizeyimana, D.E., (2020). The log frame is a monitoring and evaluation tool for government interventions in a chaotic and complex environment. *Africa's Public Service Delivery and Performance Review*, 8(1), pp.1-12.

van der Hoogen, A., Fashoro, I., Calitz, A. P., & Luke, L. (2024). A digital transformation framework for smart municipalities. *Sustainability*, 16(3), 1320.

Van der Waldd, G. (2016). Towards an e-governance competency framework for public service managers: The South African experiment.

Van der Waldd, G., 2020. We are constructing conceptual frameworks in social science research. *TD: The Journal for Transdisciplinary Research in Southern Africa*, 16(1), pp.1-9.

van Eck, M., & Agbeko, F. (2023). *Electronic persons in contracts*. *Obiter*, 44(4), 808-827.

Vargas-Murillo, A.R., Pari-Bedoya, I.N.M.D.L.A., Gordillo Bedoya, S.M., Arcos Flores, Y.M., Trujillo Pajuelo, M.L. and Morales Cauti, G.P., 2024, October. Digital Open Data Governance: Enhancing E-Government Accountability and Transparency. In *Proceedings of the 2024 8th International Conference on E-Society, E-Education and E-Technology* (pp. 74-78).

Vincent, C., & Stephen, C. (2015). Local government capacity building and development: Lessons, challenges and opportunities. *Journal of Political Sciences & Public Affairs*, 3(1), 1-5

Visagie, J., & Turok, I. (2021). Rural–urban inequalities amplified by COVID-19: evidence from South Africa. *Area Development and Policy*, 6(1), 50-62.

Viswanath, P., Philip, B. O., Verma, N. K., & Desai, G. M. (2025). *Research Methodology: Analytical Processes and Strategies*. Academic Guru Publishing House.

Wakoli, L. W. (2024). Secure Sockets Layer/Transport Layer Security for E-Commerce. *International Journal of Scientific Research and Management (IJSRM)*, 12(12), 8047-8052.

Wang, J., Mao, W., & Wenjie, W. (2023). The Ethics of Artificial Intelligence: Sociopolitical and Legal Dimensions. *Interdisciplinary Studies in Society, Law, and Politics*, 2(2), 27-32.

Wang, Y., Umair, M., Oskembayev, Y. and Saparova, A., 2024, October. Digital government initiatives for sustainable innovations, digitalization, and emission reduction policies to balance conservation impact. In *Natural Resources Forum*. Oxford, UK: *Blackwell Publishing Ltd*.

Wangang, S. N. (2024). The Use of ToC & LFA vs Considerations for a Unified Logic Model Approach (ULMA) in Humanitarian and Development Interventions. *International Journal of Innovative Science and Research Technology (IJISRT)*, 9(07), 2923-2968.

Warf, B., 2025. Four Trends in the Changing Spatialities and Consequences of Global E-Government and Urban E-Planning. In *Recent Advances and Prospects in Urban E-Planning* (pp. 1-20). IGI Global Scientific Publishing.

Watson, A. (2025). A postmodernist qualitative research approach: Choosing between descriptive and interpretive phenomenology. *Journal of Advanced Nursing*, 81(10), 6968-6973.

West, B. T., Heeringa, S. G., & Berglund, P. A. (2025). *Applied survey data analysis*. Chapman and Hall/CRC.

Wirata, G., Gunawan, M. S., Judijanto, L., Sarmento, A. D. A., & Permono, A. R. (2025). The Role of E-Government Innovation in Enhancing Public Service Performance and Strengthening Transparent Governance. *International Journal of Accounting and Economics Studies*, 12(6), 710-717.

World Bank (2004). *E-Government Handbook for Developing Countries*. InfoDev

World Bank. (2016). *E-Government and public sector transformation*. The World Bank Group. Retrieved from <https://documents.worldbank.org/curated/en/909111481710598153/pdf/ITM00184-P161086-12-14-2016-1481710595448.pdf>. Accessed [20/02/2024]

World Bank. (2016). *E-government and public sector transformation*. Washington, DC: World Bank.

Xia, Y., Li, B., Yang, J., Guo, W., Sun, J., Zeng, X., & Zheng, J. (2025). Sustainable service quality assessment of Chinese healthcare e-government: a multi-criteria decision framework based on SERVQUAL model and entropy-weight TOPSIS method. *Frontiers in Digital Health*, 7, 1611979.

Yadav, A. & Yadav, A., 2025. E-Government and Cloud Technology Enhancing Digital Governance and Public Administration. In *Embracing the Cloud as a Business Essential* (pp. 21-40). IGI Global Scientific Publishing.

Yang, Y., Adnan, H. M., & Sarmiti, N. Z. (2023). Influencing Factors of Trust in Zibo Government in the Context of TikTok Use among Chinese Young Adults. *Медиаобразование*, (3), 504-510.

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage.

Zeb, I., Khan, A., & Yan, Z. (2025). Exploring the influence of core self-evaluation on students' academic self-efficacy: a qualitative study considering anxiety and interpersonal responses. *Journal of Applied Research in Higher Education*, 17(1), 526-541.

Zeng, X. & Jing, Y. (2023). Analysis of the impact of big data and artificial intelligence technology on supply chain management. *Symmetry*, 15(9), 1801

Zhang, M. & Kaur, M. (2024). Toward a theory of e-government: Challenges and opportunities, a literature review. *Journal of Infrastructure, Policy and Development*, 8(10), 7707.

Zhang, X., Sun, D., Wang, Z., & Qin, N. (2022). Triggers and coping strategies for fear of cancer recurrence in cancer survivors: A qualitative study. *Current Oncology*, 29(12), 9501-9510.

Zhao, G., & Bailey, L. E. (2025). *Foundations of inquiry: Linking paradigms and methodologies in social research*. Sage Publications.

Zindi, B., & Majam, T. (2024). Leadership in the Age of Digital Transformation: Building Capacities for Public Servants in South African Municipalities. *Journal of Public Administration*, 59(3), 379-397.

Annexure A: Ethical Clearance Application



Private Bag X1290, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Fax: 018 299-4910
Web: <http://www.nwu.ac.za>

Basic and Social Sciences Research Ethics
Committee (BaSSREC)

Faculty of Humanities Ethics Office for Research,
Training and Support
Tel: 018 285 2457

Email: Erhabor.Idemudia@nwu.ac.za

Senate Committee for Research Ethics
Tel: 016 103 4446

Email: Feziwe.Mseleni@nwu.ac.za

18 July 2025

ETHICS APPROVAL LETTER OF STUDY

Based on approval by the Basic and Social Sciences Research Ethics Committee (BaSSREC) on 17/07/2025, the Basic and Social Sciences Research Ethics Committee hereby approves your study as indicated below. This implies that the North-West University Senate Committee for Research Ethics (NWU-SERC) grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: The efficacy of the South African National e-Government Strategy and Roadmap Framework: A Case of OR Tambo District Municipality.

Study Leader/Supervisor (Principal Investigator)/Researcher: Prof. K. Phago

Student/Research Team: Y. Lukman (49771647)

Ethics number:

N	W	U	-	0	0	9	3	5	-	2	5	-	A	7
Institution				Study Number						Year		Status		

Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation

Application Type: Single study

Commencement date: 17/07/2025

Risk: Low

Expiry date: 17/07/2026

Approval of the study is initially provided for a year, after which continuation of the study is dependent on receipt and review of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation.

Special in process conditions of the research for approval (if applicable):

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, the following general terms and conditions will apply:

- *The study leader/supervisor (principal investigator)/researcher must report in the prescribed format to the BaSSREC:*
 - *annually (or as otherwise requested) on the monitoring of the study, whereby a letter of continuation will be provided, and upon completion of the study; and*
 - *without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.*

- The approval applies strictly to the proposal as stipulated in the application form. Should any amendments to the proposal be deemed necessary during the course of the study, the study leader/researcher must apply for approval of these amendments at the BaSSREC, prior to implementation. Should there be any deviations from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.
- Annually a number of studies may be randomly selected for an external audit.
- The date of approval indicates the first date that the study may be started.
- In the interest of ethical responsibility, the NWU-SCRE and BaSSREC reserves the right to:
 - request access to any information or data at any time during the course or after completion of the study;
 - to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process;
 - withdraw or postpone approval if:
 - any unethical principles or practices of the study are revealed or suspected;
 - it becomes apparent that any relevant information was withheld from the BaSSREC or that information has been false or misrepresented;
 - submission of the annual (or otherwise stipulated) monitoring report, the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and / or
 - new institutional rules, national legislation or international conventions deem it necessary.
- BaSSREC can be contacted for further information or any report templates via [BaSSREC-Admin@nwu.ac.za](mailto:Admin@nwu.ac.za).

The BaSSREC would like to remain at your service as scientist and researcher, and wishes you well with your study. Please do not hesitate to contact the BaSSREC or the NWU-SCRE for any further enquiries or requests for assistance.

Yours sincerely



Prof. E. Idemudia

Chairperson NWU Basic and Social Sciences Research Ethics Committee

Original details: (22351930) C:\Users\22351930\Desktop\ETHICS APPROVAL LETTER OF STUDY.docm
8 November 2018

File reference: 9.1.5.4.2

Annexure B: Letter to OR Tambo District Municipality



Private Bag X6001, Potchefstroom

South Africa 2520

Tel: (018) 299-1111/2222

Web: <http://www.nwu.ac.za>

Focus Area: Social Transformation

Scientific Committee

**The Municipal Manager
OR Tambo District Municipality
Eastern Cape, Mthatha
5099**

Dear Sir/Madam,

Request for Permission to Conduct Research

My name is Dr Yusuf Lukman, and I am a doctoral candidate at North West University. I am researching the topic: "The Efficacy of the South African National e-Government Strategy and Roadmap Framework: A Case of OR Tambo District Municipality."

My research aims to evaluate the implementation and effectiveness of the e-Government Strategy within your municipality. This study aims to identify the successes, challenges, and areas for improvement in the current framework to provide valuable insights that could enhance the delivery of e-Government services.

I kindly request permission to conduct my research within the OR Tambo District Municipality to achieve this. The research will collect data through interviews and surveys. I assure you that all information gathered will be treated with the utmost confidentiality and used solely for academic purposes. Additionally, I am committed to ensuring that the research process will not disrupt the daily operations of the municipality.

I would appreciate the opportunity to discuss this request further and address any questions or concerns you may have. Please feel free to contact me anytime.

Thank you for considering my request. I look forward to your positive response.

Yours sincerely,

Dr Y Lukman (0723063414)

A handwritten signature in black ink, appearing to be 'Y. Lukman'.

Annexure C: Gate Keepers Letter from OR Tambo District Municipality

O. R. TAMBO DISTRICT MUNICIPALITY

87

OFFICE ADDRESS:
O.R. Tambo District
Municipality House
Nelson Mandela Drive

POSTAL ADDRESS:
Private Bag X 6043
MTHATHA
5100



TEL: (047) 501 6400
(047) 501 7000

FAX: (047) 531 2700

E-mail: ortambodm@ortambodm.org.za

04 February 2025

**Directorate of Research
North West University
Potchefstroom Campus
Private Bag X6001**

Dear Dr. Yusuf Lukman

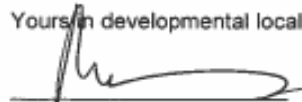
REQUEST TO CONDUCT RESEARCH STUDY

The above matter bears a reference

This office received your communicate dated 03 February 2025, requesting to do a research study in O.R. Tambo District Municipality. We felt very grateful for choosing our Municipality in conducting the research Study '*The efficacy of the South African National e-Government Strategy and Roadmap Framework: A case of O.R. Tambo District Municipality*'.

You are hereby granted permission to conduct the research study in our municipality. Please be advised that an official will be assigned to assist you.

Yours in developmental local government


**B. MASE
MUNICIPAL MANAGER**



Annexure D: Letter to KSD Municipality



NORTH-WEST UNIVERSITY
YUNIBESITHI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

Private Bag X6001, Potchefstroom

South Africa 2520

Tel: (018) 299-1111/2222

Web: <http://www.nwu.ac.za>

Focus Area: Social Transformation

Scientific Committee

**The Municipal Manager
King Sabatha Dalindyebo Local Municipality
Eastern Cape, Mthatha
5099**

Dear Sir/Madam,

Request for Permission to Conduct Research

My name is Yusuf Lukman, and I am a doctoral candidate at North West University. I am researching the topic: "The Efficacy of the South African National e-Government Strategy and Roadmap Framework: A Case of OR Tambo District Municipality."

My research aims to evaluate the implementation and effectiveness of the e-Government Strategy within your municipality. This study aims to identify the successes, challenges, and areas for improvement in the current framework to provide valuable insights that could enhance the delivery of e-Government services.

I kindly request permission to conduct my research within the OR Tambo District Municipality to achieve this. The research will collect data through interviews and surveys. I assure you that all information gathered will be treated with the utmost confidentiality and used solely for academic purposes. Additionally, I am committed to ensuring that the research process will not disrupt the daily operations of the municipality.

I would appreciate the opportunity to discuss this request further and address any questions or concerns you may have. Please feel free to contact me anytime.

Thank you for considering my request. I look forward to your positive response.

Yours sincerely,

Dr Y Lukman (0723063414)

A handwritten signature in black ink, appearing to read 'Y. Lukman'.

Annexure E: Gate Keepers Letter from KSD Municipality

ISEBE LOLAWULO INGXOWA EYODWA X 5083 MTHATHA 5099		CORPORATE SERVICES DEPARTMENT PRIVATE BAG X 5083 MTHATHA 5099
IFONI: 047 – 495 1198 FRAUD HOTLINE 0800 360 8634		TELEPHONE: 047 – 495 1198
Enquiries: B. Mfazwe 0836968682		28 February 2025

**Ref: 9/3/1/1
CKM/nn**

**NORTH WEST UNIVERSITY
PRIVATE BAG X6001
PORTCHEFSTROOM
SOUTH AFRICA
2520**

Dear Dr Lukman

Re: APPROVAL TO CONDUCT RESEARCH – YUSUF LUKMAN

Reference is made to your letter dated 27 February 2025 regarding your request to conduct the research in the municipality.

This serves to inform you that permission to conduct academic research for Dr Yusuf Lukman as per your request is granted and he may commence the research in due time.

It should be emphasised that he must maintain strict confidentiality, observe professionalism and ethical consideration when conducting the research.

Yours in Developmental Local Government,



**C.K. MAGADLA (MR)
DIRECTOR: CORPORATE SERVICES**

Annexure F: Letter to Nyandeni Local Municipality



NORTH-WEST UNIVERSITY
YUNIBESITHI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

Private Bag X6001, Potchefstroom

South Africa 2520

Tel: (018) 299-1111/2222

Web: <http://www.nwu.ac.za>

Focus Area: Social Transformation

Scientific Committee

**The Municipal Manager
Nyandeni Local Municipality
Eastern Cape, Mthatha**

Dear Sir/Madam,

Request for Permission to Conduct Research

My name is Dr Yusuf Lukman, and I am a doctoral candidate at North West University. I am researching the topic: "The Efficacy of the South African National e-Government Strategy and Roadmap Framework: A Case of OR Tambo District Municipality."

My research aims to evaluate the implementation and effectiveness of the e-Government Strategy within your municipality. This study aims to identify the successes, challenges, and areas for improvement in the current framework to provide valuable insights that could enhance the delivery of e-Government services.

I kindly request permission to conduct my research within the Nyandeni Municipality to achieve this. The research will collect data through interviews, and surveys. I assure you that all information gathered will be treated with the utmost confidentiality and used solely for academic purposes. Additionally, I am committed to ensuring that the research process will not disrupt the daily operations of the municipality.

I would appreciate the opportunity to discuss this request further and address any questions or concerns you may have. Please feel free to contact me anytime.

Thank you for considering my request. I look forward to your positive response.

Yours sincerely,

Dr Y Lukman (0723063414)

A handwritten signature in black ink, appearing to be 'Y. Lukman'.

Annexure G: Gate Keepers Letter from Nyandeni Municipality

NYANDENI LOCAL MUNICIPALITY
Municipality Building,
B.N. Nomandela Drive,
Libode 5160



NYANDENI
LOCAL MUNICIPALITY
Building a better future with the people

T 047 555 5000
E nyandeni@nyandenilm.gov.za
www.nyandenilm.gov.za

Enquiries: L. Silanda – 047 555 5016 **Date:** 16 July 2025

Yusuf Lukman
Walter Sisulu University
Mthatha

REQUEST TO CONDUCT RESEARCH STUDY

The above matter refers.

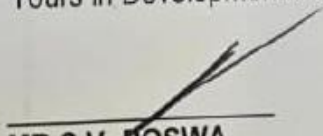
This office acknowledges receipt of your correspondence, in which you requested permission to conduct a research study within the Nyandeni Local Municipality.

We appreciate your interest in our municipality and commend your decision to focus your research on the topic: "The efficacy of the South African National e-Government Strategy and Roadmap Framework: A Case of O.R. Tambo District Municipality."

Kindly be informed that permission is hereby granted for you to carry out the research study within our jurisdiction.

We wish you success in your study and look forward to the outcomes of your research.

Yours in Developmental Local Government


MR S.V. POSWA
ACTING MUNICIPAL MANAGER

Annexure H: Letter to PSJ Local Municipality



NORTH-WEST UNIVERSITY
YUNIBESITHI YA BOKONE BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

Private Bag X6001, Potchefstroom

South Africa 2520

Tel: (018) 299-1111/2222

Web: <http://www.nwu.ac.za>

Focus Area: Social Transformation

Scientific Committee

**The Municipal Manager
Port Saint John's Local Municipality
Eastern Cape, Mthatha**

Dear Sir/Madam,

Request for Permission to Conduct Research

My name is Dr Yusuf Lukman, and I am a doctoral candidate at North West University. I am researching the topic: "The Efficacy of the South African National e-Government Strategy and Roadmap Framework: A Case of OR Tambo District Municipality."

My research aims to evaluate the implementation and effectiveness of the e-Government Strategy within your municipality. This study aims to identify the successes, challenges, and areas for improvement in the current framework to provide valuable insights that could enhance the delivery of e-Government services.

I kindly request permission to conduct my research within the Port Saint John's Municipality to achieve this. The research will collect data through interviews and surveys. I assure you that all information gathered will be treated with the utmost confidentiality and used solely for academic purposes. Additionally, I am committed to ensuring that the research process will not disrupt the daily operations of the municipality.

I would appreciate the opportunity to discuss this request further and address any questions or concerns you may have. Please feel free to contact me anytime.

Thank you for considering my request. I look forward to your positive response.

Yours sincerely,

Dr Y Lukman (0723063414)

A handwritten signature in black ink, appearing to read 'Y. Lukman'.

Annexure I: Gatekeepers' Letter from PSJ Local Municipality

PHYSICAL ADDRESS PORT ST. JOHNS LOCAL MUNICIPALITY ERF 257 MAIN ROAD PORT ST. JOHN'S POSTAL ADDRESS: P.O. BOX 2 PORT ST. JOHN'S 5120	 PORT ST JOHNS MUNICIPALITY OUR HERITAGE. OUR PEOPLE	TEL: 047 564 1208 047 564 0700 FAX: 047 564 1206 www.psjmunicipality.gov.za info@psjmunicipality.gov.za

Private Bag X6001, Potchefstroom
South Africa 2520

13 August 2025

Dear Sir

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH ON THE EFFICACY OF THE SOUTH AFRICAN NATIONAL e-GOVERNMENT STRATEGY AND ROADMAP FRAMEWORK: A CASE OF THE OR TAMBO DISTRICT MUNICIPALITY.

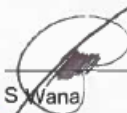
This serves to refer to your correspondence dated 13 August 2025 in which you requested permission to conduct research on the Efficacy of the South African National e-Government Strategy and Roadmap Framework: A case of the OR Tambo District Municipality.

The Port St Johns Municipality hereby grants you the permission in the terms and conditions set in your concept document. You can contact Ms F Mshiywa @ 060 526 6192 (Acting Manager PP & Council Support) for assistance.

We trust that the above is in order and will assist in whatever form.

Thank you in advance.

Yours sincerely


S. Wana
Acting Municipal Manager

 Port St. John's Local Municipality

Annexure J: Informed Consent



DATE: 18 July 2025

BaSSREC Authorisation

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke, is written over a horizontal line.

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

Title of the research project	The efficacy of the South African National e-Government Strategy and Roadmap Framework: A Case of OR Tambo District Municipality
Ethics number	NWU-00935-25-A7
Principal investigator	Yusuf Lukman
Student number	49771647
Address	No 67, Reis Avenue, Extension 6, Butterworth.
Email address	ylukman@wsu.ac.za
Contact number	0723063414

You are invited to participate in a research project in my study. Please take some time to read the information provided here, which will explain the details of the project. Feel free to ask if you have any questions about any part of this project. You must fully understand this research and how you could be involved. Your participation is entirely voluntary, and you can refuse to participate. If you choose not to participate, it will not affect you adversely in any way. You are also free to withdraw from the study at any point, even if you initially agree to take part. You may also withdraw the data you generate before the study's results are published or when publication is in process. This study will align with the North West University code of conduct.

What is this research study all about?

- The study aims to evaluate the success of implementing the South African National e-Government Strategy and Roadmap Framework in the OR Tambo District Municipality.

Annexure K: Interview Schedule

INTERVIEW SCHEDULE

Dear Respondent,

I am Yusuf Lukman, a doctoral student at North West University, undertaking research for my doctoral degree. The research title is “The efficacy of the South African National e-Government Strategy and Roadmap Framework: A Case of OR Tambo District Municipality”.

Your participation will be invaluable to the study's contribution. I assure you that the information requested will be used solely for academic purposes and that our institution's ethical policies, which aim to protect the autonomy, safety, privacy, and welfare of human research subjects, will be strictly adhered to. In this regard, your anonymity is guaranteed, and we will not solicit your personal information. However, demographic information will be requested. Participation is purely voluntary, and I will be available to clarify any points.

I appreciate your participation in this survey in advance.

Yusuf Lukman

February 2025

INSTRUCTIONS TO RESPONDENTS

Your participation in this survey is voluntary, and you may opt out at any time if you believe it compromises your safety or integrity.

This interview is divided into three (3) sections, and you are expected to answer all sections - Bio Data/Demographics, Structured and Non-Structured (open-ended), and follow-up interview.

In the Structured Question, you must only cross the answer box once. In the non-structured, you must provide as much information as possible.

Section 1:

RESPONDENTS – (BIO-DATA AND DEMOGRAPHIC)

1. **Informed Consent** – Kindly confirm whether you agree to participate in this research su

Yes	No

2. Gender?

Male	Female

3. Age?

18-29	30-39	40-49	50-65

4. Which of the following matches your educational level?

Matric	Diploma	Advanced Diploma	Degree	Honours Degree	Master's degree	Doctorate

5. What is your position in the Municipality?

Senior Management	Mid-level Management	IT/Technical Staff	Administrative Staff

6. How long have you been working in the Municipality?

1 to 6 Months	1 Year	1- 3 years	3 – 5years	5years and above

Section 2:

1. How familiar are you with the South African National E-Government Strategy and Roadmap?

.....
.....
.....

2. How would you describe your municipality's official e-portal? What services or information does it provide?

.....
.....
.....

3. How was SANERS introduced or communicated within your department municipality?

.....
.....
.....
.....

4. Has the strategy been implemented in your institution or municipality? If yes, which components have been prioritised?

.....

.....

.....

5. Which municipal services are currently available online (e.g., bill payments, permit applications, service requests)?

.....

.....

.....

6. How would you describe the level of buy-in or support from leadership and staff?

.....

.....

.....

.....

7. How would you explain the user-friendliness of government e-portals?

.....

.....

.....

8. Since the implementation of the e-Government Strategy, have there been improvements in service delivery? Please elaborate.

.....

.....

.....

.....

9. What changes have been noticed in turnaround time, accessibility, or satisfaction?

.....

.....

.....

10. Have citizens been able to effectively use e-Government services provided? What has been their feedback?

.....
.....
.....

11. What kind of digital infrastructure was available before the implementation, and what has changed since then?

.....
.....
.....

12. Do you think the current ICT infrastructure is adequate to support the e-government services?

.....
.....
.....

13. Has staff received adequate training to manage and sustain these digital services?

.....
.....
.....

14. How effective is the municipality in keeping online information accurate and up to date?

.....
.....
.....

15. What digital channels (e.g., emails, SMS, social media, online chat, Facebook, X) does the municipality use to communicate with citizens?

.....
.....
.....

16. How have issues like digital literacy, internet connectivity, and cybersecurity been addressed?

.....

.....
.....

17. Have any measurable outcomes or key performance indicators been tracked since implementation?

.....
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.....

18. In your opinion, what has worked well in implementing the SANRSR Strategy?

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.....

19. Have you ever attended or participated in a government-organised online event or consultation? (Share your experience.)

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.....
.....

20. In your view, what key improvements could be made to enhance the effectiveness of:

- E-portals?
- E-information?
- E-communication?
- E-events?
- E-services?

Thank you for your participation!

Survey

Dear Respondent,

I am Yusuf Lukman, a doctoral student at North West University, undertaking research for my doctoral degree. The research title is “The efficacy of the South African National e-Government Strategy and Roadmap Framework: A Case of OR Tambo District Municipality”.

Your participation will be invaluable to the study's contribution. I assure you that the information requested will be used solely for academic purposes and that our institution's ethical policies, which aim to protect the autonomy, safety, privacy, and welfare of human research subjects, will be strictly adhered to. In this regard, your anonymity is guaranteed, and we will not solicit your personal information. However, demographic information will be requested. Participation is purely voluntary, and I will be available to clarify any points.

I appreciate your participation in this survey in advance.

Yusuf Lukman

February 2025

INSTRUCTIONS TO RESPONDENTS

Your participation in this survey is voluntary, and you may opt out at any time if you believe it compromises your safety or integrity.

This survey is divided into three (3) sections, and you are expected to answer all three sections - Bio Data/Demographics, Structured and Non-Structured (open-ended), and follow-up interview.

In the Structured Question, you must only cross the answer box once. In the non-structured, you must provide as much information as possible.

RESPONDENTS – (BIO-DATA AND DEMOGRAPHIC)

7. **Informed Consent** – Kindly confirm whether you agree to participate in this research survey.

Yes	No

8. Gender?

Male	Female

9. Age?

18-29	30-39	40-49	50-65

10. Which of the following matches your educational level?

Matric	Diploma	Advanced Diploma	Degree	Honours Degree	Master's degree	Doctorate

11. What is your position in the Municipality?

Senior Management	Mid-level Management	IT/Technical Staff	Administrative Staff

12. How long have you been working in the Municipality?

1 to 6 Months	1 Year	2- 3 years	3 – 5years	5years and above

Section 2:

Perceived Effectiveness of the SANESR Framework

13. Are you familiar with the South African National E-Government Strategy and Roadmap (SANESRS)?

14. How has the South African National e-Government Strategy and Roadmap framework impacted efficiency in your department?

- Significantly improved
- Improved
- No change
- Decreased
- Significantly decreased

15. Are you using any official government e-portals?

Yes ☐ No ☐

16. How user-friendly is the platform that you use?

☐ Very Good ☐ Good ☐ Average ☐ Poor ☐ Very Poor

17. Are the portals accessible from mobile devices?

☐ Yes ☐ No ☐ Not Sure

18. What are the significant challenges faced in implementing the e-Government strategy in your department?

- Limited technical expertise
- Budget constraints
- Resistance to change
- Inadequate digital infrastructure
- Other (please specify): _____

19. Is using the e-Government system easy, and does it not require considering the level of skill, knowledge or experience of the citizen accessing it?

☐ Yes ☐ No ☐ Not Sure

20. Do government e-portals provide timely and up-to-date information?

☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

21. What channels of communication have you used? (You may tick more than one.)

- ☐ Email
- ☐ WhatsApp or SMS
- ☐ Web-based forms
- ☐ Team
- ☐ Zoom
- ☐ Facebook

22. Have e-Government initiatives improved transparency in public service operations?

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree

23. Rate the ease of navigating e-portals:

☐ Very easy ☐ Easy ☐ Neutral ☐ Difficult ☐ Very difficult

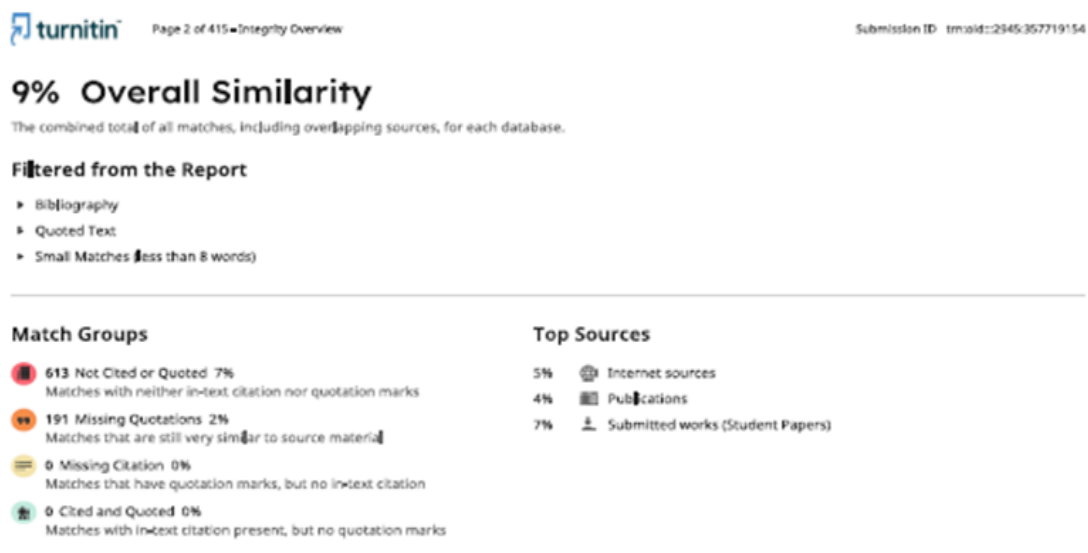
24. What support (resources, training, policy changes) would enhance implementation of the e-Government strategy?

- 25.** Do you receive email/SMS notifications for updates on services or documents?
☐ Always ☐ Sometimes ☐ Rarely ☐ Never
- 26.** Have you ever registered for or attended a government event (e.g., webinar, consultation, town hall) via an online platform?
☐ Yes ☐ No
- 27.** Were event materials (e.g., recordings, slides, notes) made accessible afterwards?
☐ Yes ☐ No ☐ Not applicable
- 28.** Have you ever completed any government service online?
☐ Yes ☐ No
- 29.** How secure do you feel when entering your personal information online?
☐ Very secure ☐ Secure ☐ Neutral ☐ Insecure ☐ Very insecure
- 30.** In your view, what key improvements could be made to enhance the effectiveness of the SANERS/ e-Government strategy (tick your options):
☐ E-portals?
☐ E-information?
☐ E-communication?
☐ E-events?
☐ E-services?
- 31.** Any final thoughts on the future of e-government in your municipality?

.....
.....

Thank you for your participation!

Appendix M: Similarity report



Appendix N: Language



Department of Marketing, Public Relations and Communication

~~Ujika~~ Campus, Butterworth.

Phone: 047 401 6000

Cell: 060 871 8202

Email: smatenda@wsu.ac.za

06/02/2026

To whom it may concern,

RE: CONFIRMATION OF LANGUAGE EDITING.

This serves to confirm that I have edited a dissertation written by Y. Lukman (49771647) to be submitted to North West University. *The thesis is titled 'Towards Implementation of the South African National e-Government Strategy and Roadmap Framework: A Case of Selected Municipalities in the Eastern Cape Province, South Africa.'*

The scope of my editing comprised:

- Spelling
- Tenses
- Vocabulary
- Punctuation
- Word usage |
- Language and sentence structure

If you need any further information, kindly contact me using the details provided above.

Yours faithfully,

Stanford Matenda. PhD (Communication Science), Certificate in Editing (Stellenbosch University).

Walter Sisulu University